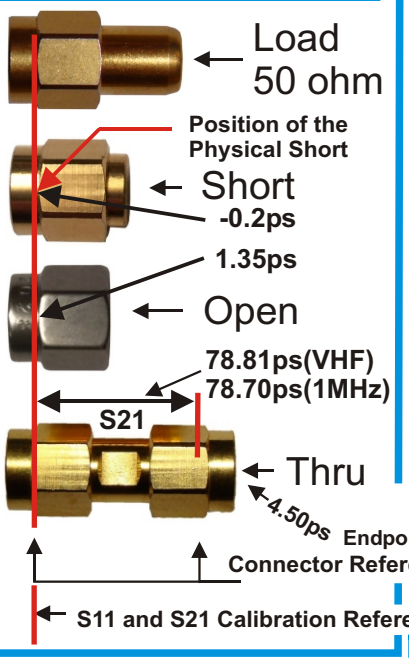
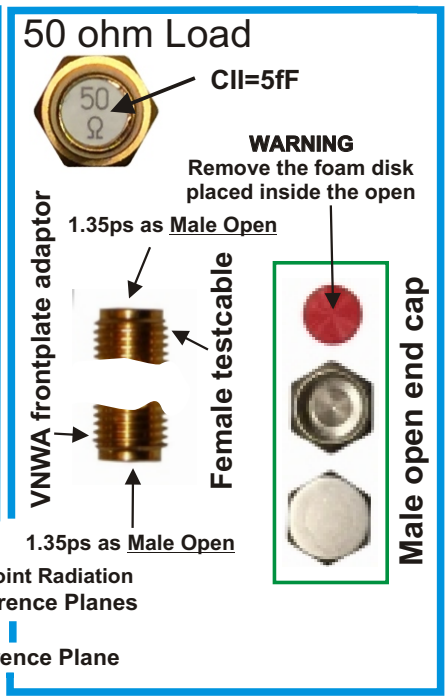
SDR-Kits Male Calibration kit of Rosenberger/Fairview Parts for the DG8SAQ VNWA

by Kurt Poulsen OZ7OU *of May 29-2017 Page1*

Calibration Kit parts





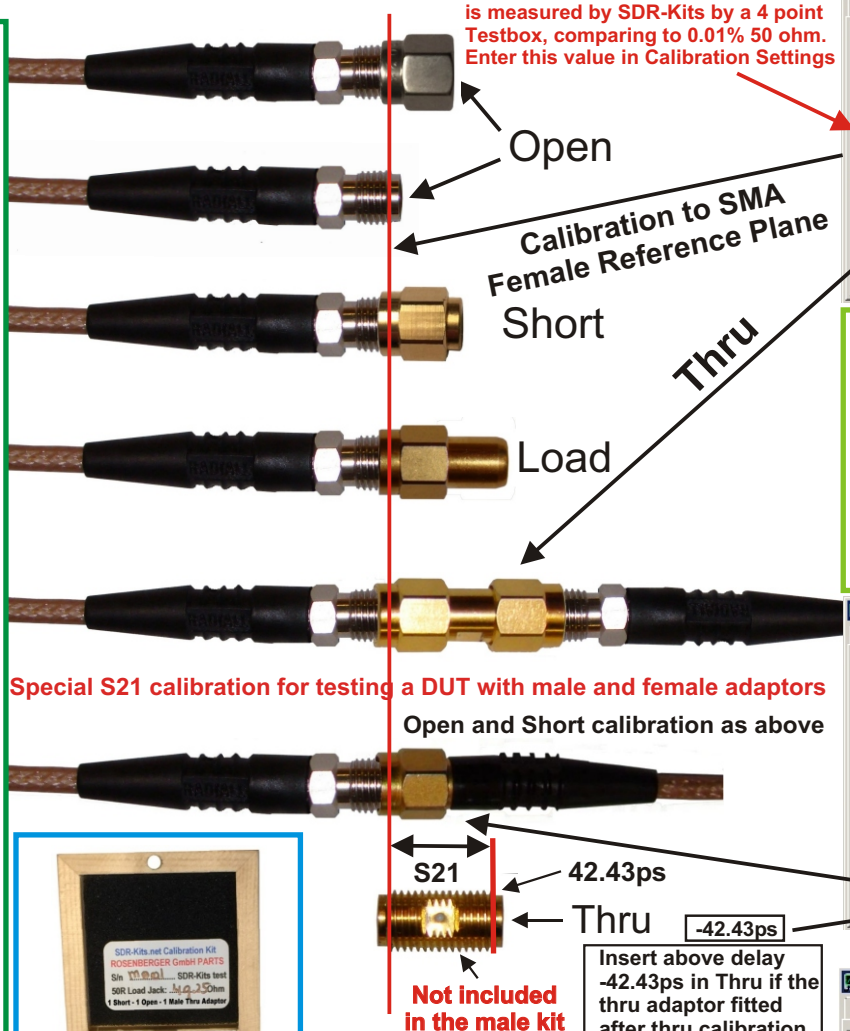
On this sheet you will find the settings required in "Calibration Settings" and "Simple SOLT" for the Reflection (S11/S22) and Transmission (S21/S12) calibrations.

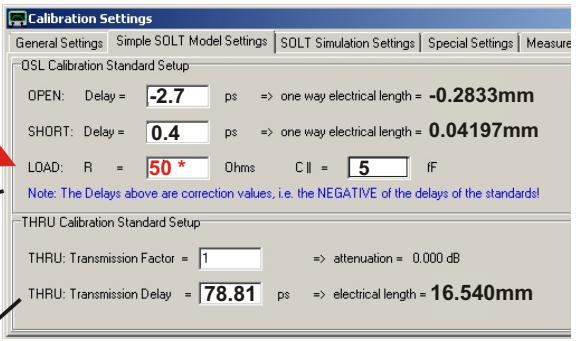
- Please note that if you want to calibrate to the Reference plane of the VNWA Female TX SMA connector on the cabinet, then you must use a male Calibration Kit. Else look at the "How to..." below.

- When using testcables and measuring both S11 and S21, then the Thru adaptor is used, during S21 calibration, but removed during real measurements. To compensate for the changed transmission delay between the TX and RX port, you have to enter the delay for the Thru adaptor in the calibration settings. When doing so the reference planes for both reflection and transmission remain "in sync" at the chosen testcable's calibration plane.
- When the test cables have Male SMA at the testing end, the Female Calibration Kit data is used, and likewise for Female SMA the Male Calibration kit data is used.
- Do not use the Crosstalk Calibration for general use.

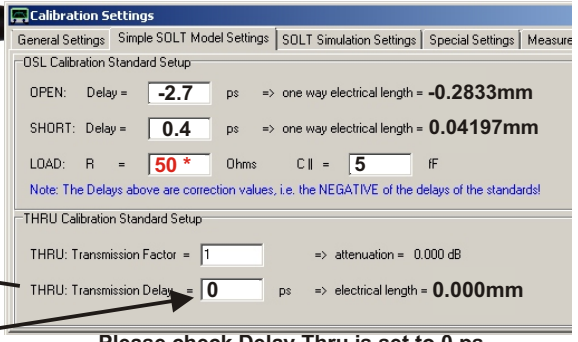
The Rosenberger Female-Female adaptor has a delay of 42.35ps.
The Rosenberger Male-Male adaptor has a delay of 78.81ps, however falling from VHF to 76.7ps at 1MHz
See also S21 calibration for test by male-female adaptors

Male Calibration Kit



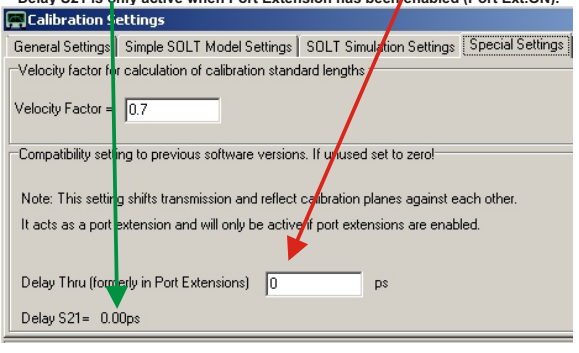


If you have a male SMA test cable and want to measure a device (DUT) with different SMA adaptors on the input and output then just perform the thru calibration with a 0ps delay for the thru adaptor in calibration settings as shown below.
Likewise if you calibrated the female TX adaptor on the VNWA front with the male kit and want to measure a DUT with SMA male adaptor on the input and output and you do not have a female testcable connected to the RX port you just connect a female thru adaptor and during the thru calibration use in the calibration setting the negative S21 dealy for the thru. Then the "phase sync" for S11 and S21 is maintained for the measurements of the DUT.



Please check Delay Thru is set to 0 ps

Delay S21 is only active when Port Extension has been enabled (Port Ext.ON).



Rev.1 updated: 29/05/2017

A few Hints:
The calibration Plane can be moved forward and backward by using Measure/Port Extensions.
Port 1 used for the forward direction (S11 and S21), and Port 2 used for the reverse direction (S22/S12).
During reverse direction the DUT is reversed.
For a positive delay the Calibration Plane is moved away from the TX port and Vice Versa.
If the TX level is changed the calibration is also changed slightly. *READ ALSO THE HELP FILE*

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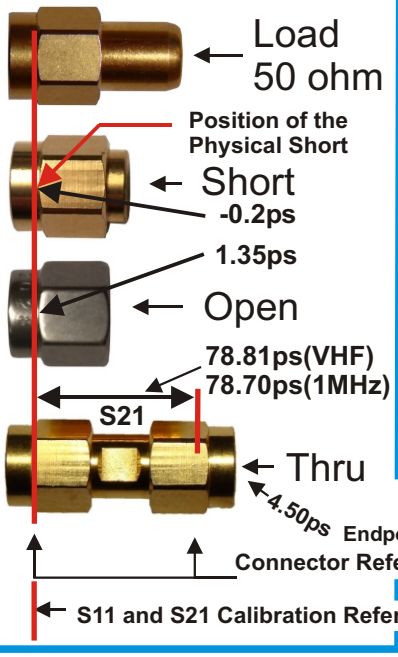
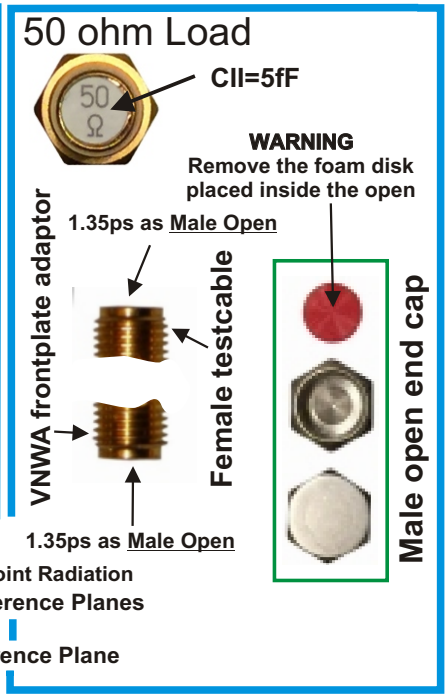
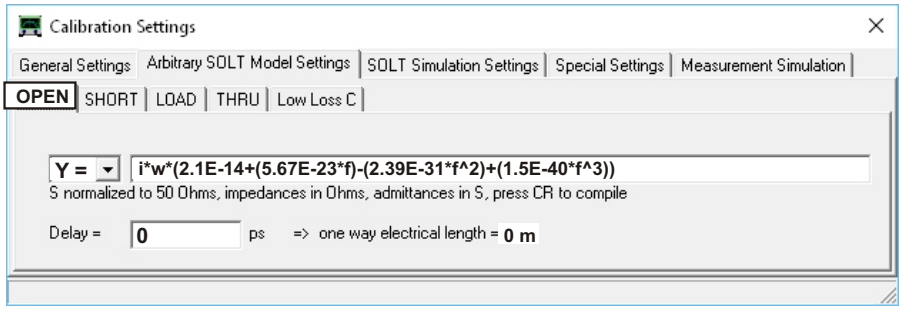
Calibration Kit parts

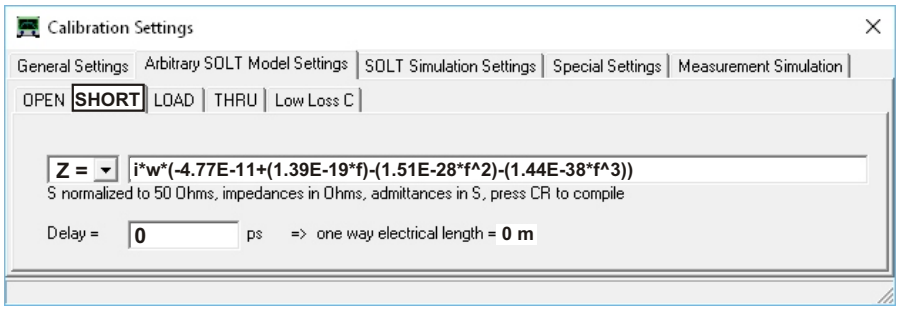


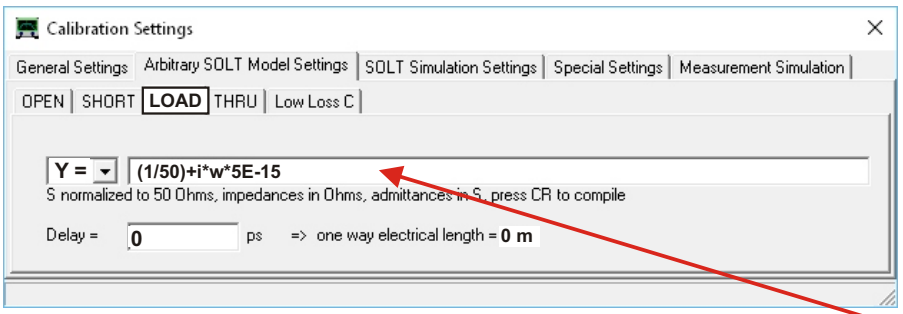


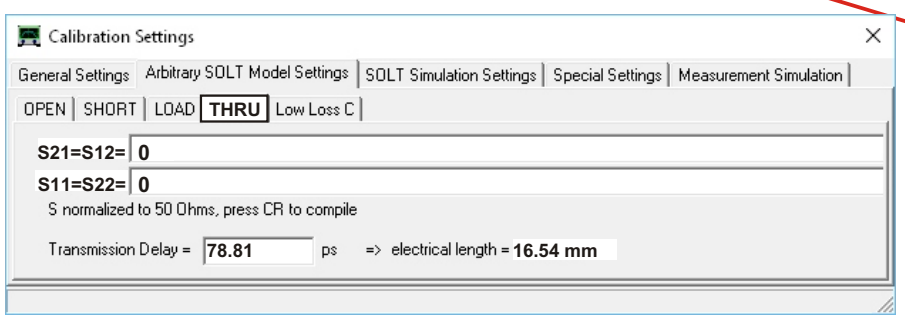
On this sheet you will find the settings required in "Calibration Settings" and "Arbitrary calibration" for the Reflection (S11/S22) and Transmission (S21/S12) calibrations.
- Please note the general guidelines described in Page 1 are also valid for arbitrary calibration.
- The speciality for arbitrary calibration is that more complex information can be entered for the open, short, load and thru calibration standards, such as e.g. a delay can be entered for the load, and for all calibration standard a formula can be entered which describes the frequency dependant parameters for a calibration standard.
- As an example the expression for the male load is the following: Y = (1/50)+i*w*5e-15 . As the load has a parasitic capacitance of 5fF in parrallel with the 50 ohm resistance, it is convenient to express it as Y parameters. The load admittance 1/50 (equal 0.02) and the capacitors admittance is i*w*5e-15. i is the same as j, expressing we are dealing with an imaginary component. w equals to 2*pi*freq and 5e-15 is the capacitance of 5 fF.
Please note you must enter your loads with measured resistance (4 point measurement). If not known use (50) or 0.0200 and it will be within 3%.
Use the value provided by SDR-Kits as measured against a 0.01% resistor

Arbitrary calibration settings (VHF)

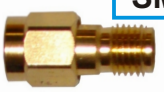








SMA Male-Female Adaptor



Delay=56,75ps

For protection of the VNWA TX and RX Port

The DC Resistance value of the Load is measured by SDR-Kits by a 4 point Testbox, comparing to 0.01% 50 ohm. Enter this value in Calibration Settings

Revision 1 updated: 29/05/2017