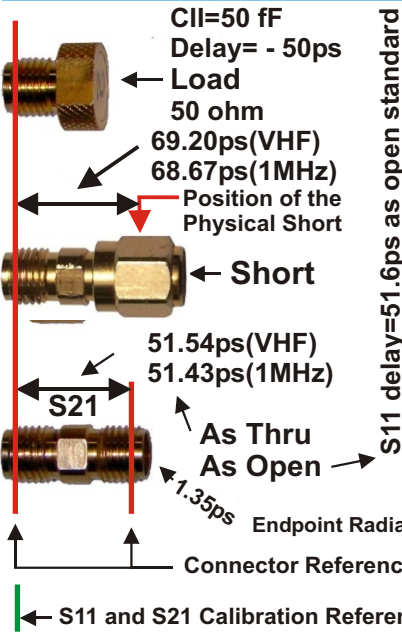
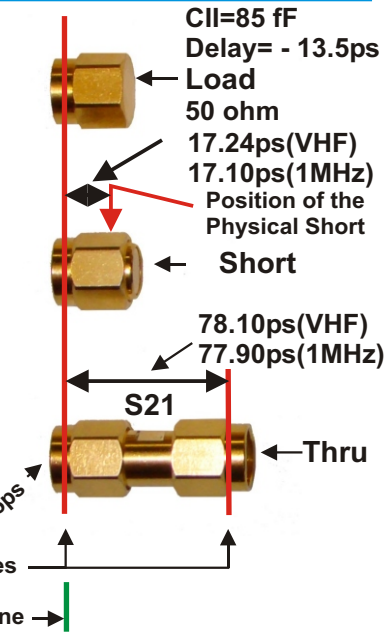


Female Calibration Kit

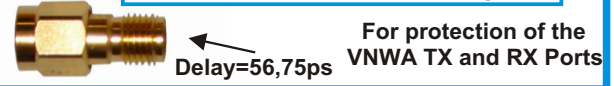


Male Calibration Kit



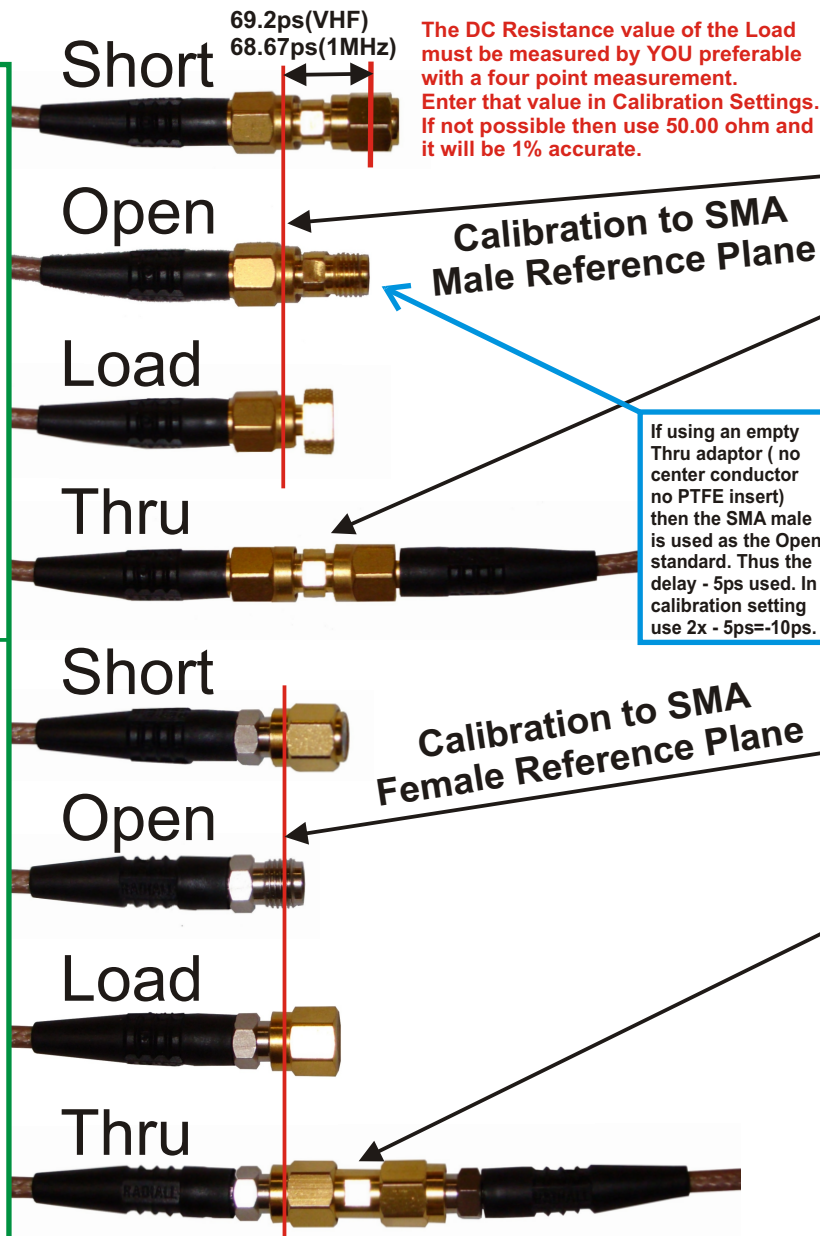
On this sheet you will find the settings required in "Calibration Settings" and "Simple SOLT" for the Reflection (S11/S22) and Transmission (S21/S12) calibrations. Find on page 2 arbitrary calibration settings.
 - Please note that if you want to calibrate to the Reference plane of the VNWA Female TX SMA connector on the cabinet, then use the settings for the "SMA Male Reference Plane".
 - 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.

SMA Male-Female Adaptor



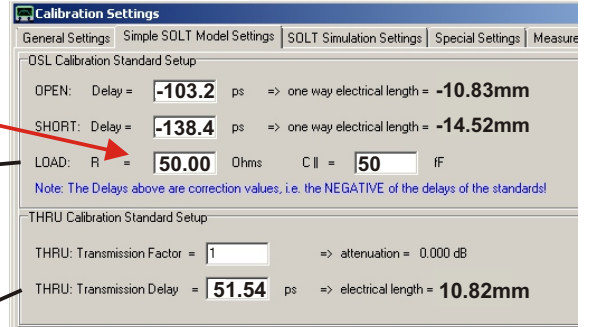
Female Calibration Kit

Male Calibration Kit

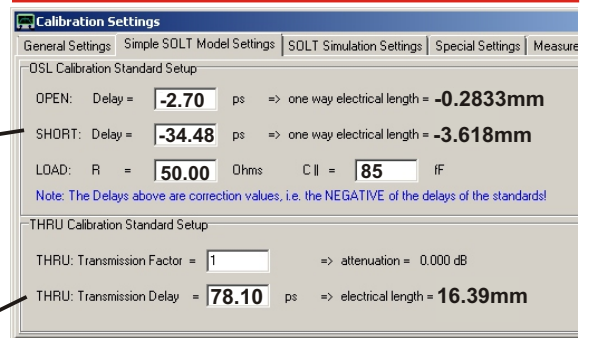


The DC Resistance value of the Load must be measured by YOU preferable with a four point measurement. Enter that value in Calibration Settings. If not possible then use 50.00 ohm and it will be 1% accurate.

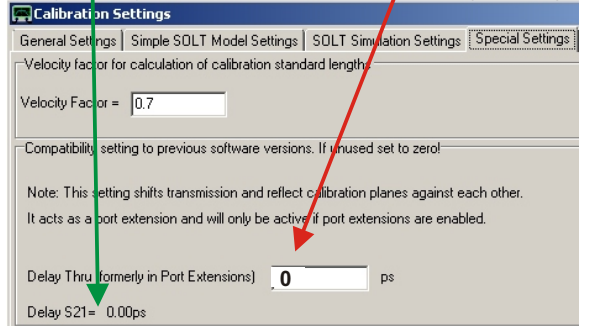
If using an empty Thru adaptor (no center conductor no PTFE insert) then the SMA male is used as the Open standard. Thus the delay - 5ps used. In calibration setting use 2x - 5ps=-10ps.



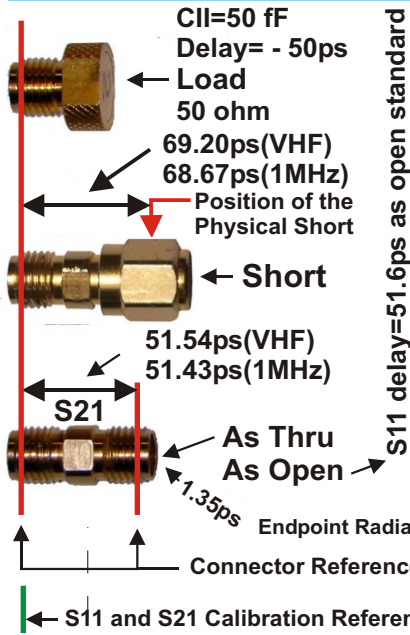
A few Hints:
 The calibration Plane can be moved forward and backward by using Measure/Port Extensions. Port 1 used for the forward direction (S11 and S21), and Port 2 used for the reverse direction (S22/S12). During reverse direction the DUT is reversed. For a positive delay the Calibration Plane is 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**



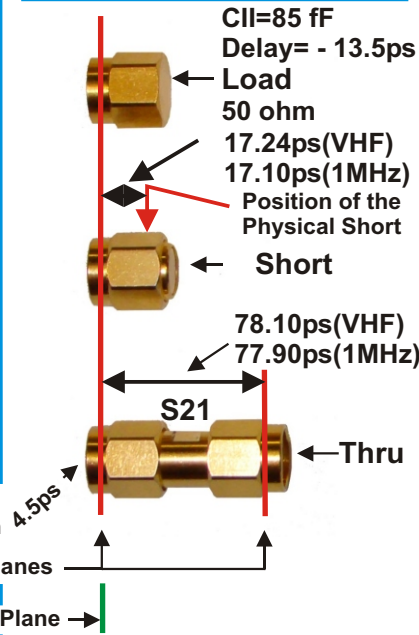
Please check Delay Thru is set to 0 ps
 Delay S21 is only active when Port Extension has been enabled (Port Ext.ON).



Female Calibration Kit



Male Calibration Kit



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 female load is the following: $Y = (1/50) + i * w * 50e-15$. As the load has a parasitic capacitance of 50fF in parrallel with the 50 ohm resistance, it is convenient to express them as Y parameter (1/50) equals the admittance of 0.0200 and the capacitors admittance is $i * w * 50e-15$. i is the same as j, expressing we are delaing with an imaginary component. w equals to $2 * \pi * \text{freq}$ and $50e-15$ is the capacitance of 50 fF. Please note you must enter your loads with measured resistance (4 point measurement). If not known use (1/50) or 0.0200 and it will be within 1%.

SMA Male-Female Adaptor



For protection of the VNWA TX and RX Port
Delay=56,75ps

Female Calibration Kit (VHF)

Calibration Settings

General Settings | Arbitrary SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measurement Simulation

OPEN | SHORT | LOAD | THRU | Low Loss C

$Y = i * w * (2.23E-14 - (4.2E-23 * f) + (2.12E-31 * f^2) - (2.72E-40 * f^3) + (2.3E-14))$
S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -102 ps => one way electrical length = -10.7 mm

Male Calibration Kit (VHF)

Calibration Settings

General Settings | Arbitrary SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measurement Simulation

OPEN | SHORT | LOAD | THRU | Low Loss C

$Y = i * w * (2.1E-14 + (5.67E-23 * f) - (2.39E-31 * f^2) + (2.0E-40 * f^3))$
S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = 0 ps => one way electrical length = 0 m

Calibration Settings

General Settings | Arbitrary SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measurement Simulation

OPEN | SHORT | LOAD | THRU | Low Loss C

$Z = i * w * (1.39E-10 - (1E-18 * f) + (2.036E-27 * f^2) - (1.41E-36 * f^3))$
S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -138.52 ps => one way electrical length = -14.53 mm

Calibration Settings

General Settings | Arbitrary SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measurement Simulation

OPEN | SHORT | LOAD | THRU | Low Loss C

$Z = i * w * (5.7E-12 - (8.96E-21 * f) - (1.1E-29 * f^2) - (4.12E-38 * f^3))$
S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -34.2 ps => one way electrical length = -3.589 mm

Calibration Settings

General Settings | Arbitrary SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measurement Simulation

OPEN | SHORT | LOAD | THRU | Low Loss C

$Y = (1/50) + i * w * 50e-15$
S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -124.6 ps => one way electrical length = -13.07 mm

Calibration Settings

General Settings | Arbitrary SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measurement Simulation

OPEN | SHORT | LOAD | THRU | Low Loss C

$Y = (1/50) + i * w * 85e-15$
S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -13.5 ps => one way electrical length = -1.417 mm

Calibration Settings

General Settings | Arbitrary SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measurement Simulation

OPEN | SHORT | LOAD | THRU | Low Loss C

S21=S12= 1
S11=S22= 0
S normalized to 50 Ohms, press CR to compile

Transmission Delay = 51.54 ps => electrical length = 10.82 mm

Calibration Settings

General Settings | Arbitrary SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measurement Simulation

OPEN | SHORT | LOAD | THRU | Low Loss C

S21=S12= 1
S11=S22= 0
S normalized to 50 Ohms, press CR to compile

Transmission Delay = 78.1 ps => electrical length = 16.39 mm