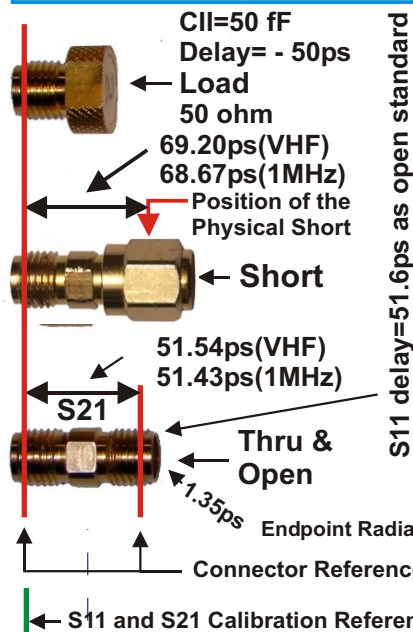
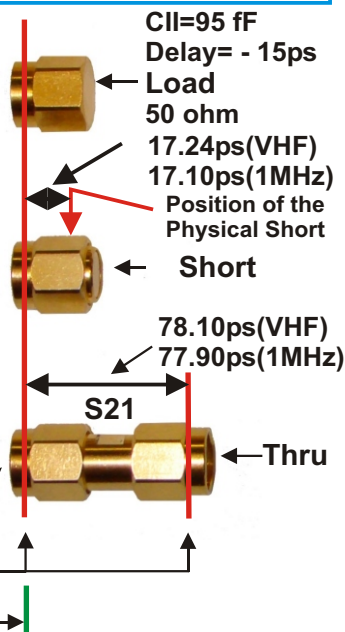


Female Calibration Kit



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.

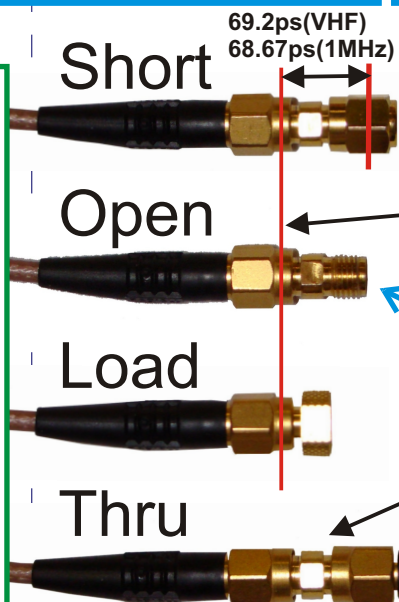
- Please note that if you want to calibrate to the Reference plane of the VNWA Female TX SMA connector on the cabinet, then use the settings for the "SMA Male Reference Plane".
- When using testcables and measuring both S11 and S21, then the Thru adaptor is used, during S21 calibration, but removed during 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.
- Always set Delay Thru to 0 ps else transmission and reflection is not "in sync" any longer.

SMA Male-Female Adaptor



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

Female Calibration Kit

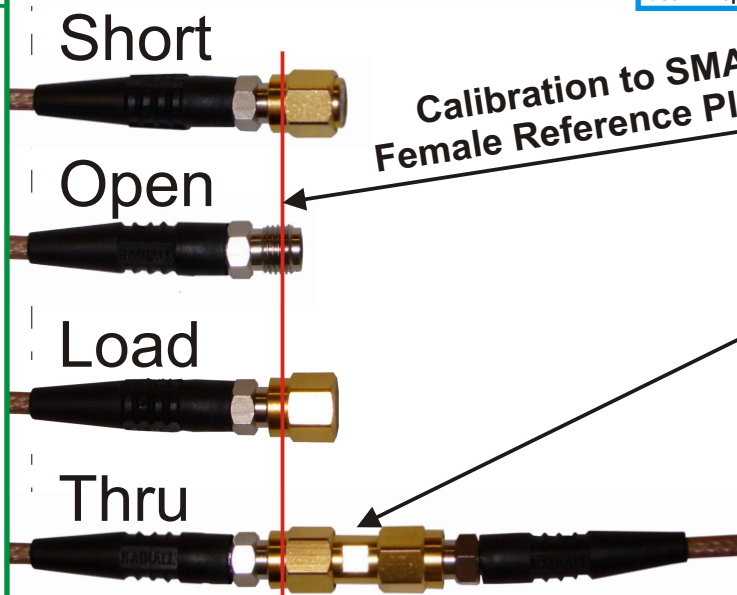


The DC Resistance value of the Load must be measured by YOU preferable with a four point measurement. Enter that value in Calibration Settings. If not possible then use 50.00 ohm and it will be 1% accurate.

Calibration to SMA Male Reference Plane

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.

Male Calibration Kit



Calibration to SMA Female Reference Plane

Calibration Settings

General Settings | Simple SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measure

OSL Calibration Standard Setup

OPEN: Delay = -103.2 ps => one way electrical length = -10.836mm

SHORT: Delay = -138.4 ps => one way electrical length = -14.532mm

LOAD: R = 50.00 Ohms CII = 50 fF

Note: The Delays above are correction values, i.e. the NEGATIVE of the delays of the standards!

THRU Calibration Standard Setup

THRU: Transmission Factor = 1 => attenuation = 0.000 dB

THRU: Transmission Delay = 51.34 ps => electrical length = 10.781mm

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**

Calibration Settings

General Settings | Simple SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measure

OSL Calibration Standard Setup

OPEN: Delay = -2.70 ps => one way electrical length = -0.283mm

SHORT: Delay = -34.48 ps => one way electrical length = -3.620mm

LOAD: R = 50.00 Ohms CII = 95 fF

Note: The Delays above are correction values, i.e. the NEGATIVE of the delays of the standards!

THRU Calibration Standard Setup

THRU: Transmission Factor = 1 => attenuation = 0.000 dB

THRU: Transmission Delay = 78.10 ps => electrical length = 16.401mm

Please check Delay Thru is set to 0 ps

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

Calibration Settings

General Settings | Simple SOLT Model Settings | SOLT Simulation Settings | Special Settings | Measure

Velocity factor for calculation of calibration standard length

Velocity Factor = 0.7

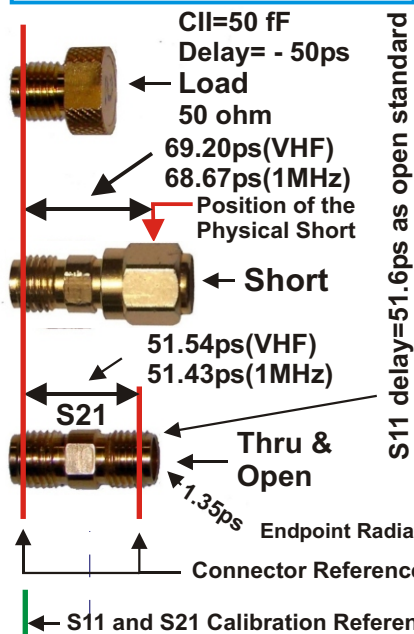
Compatibility setting to previous software versions. If unused set to zero!

Note: This setting shifts transmission and reflect calibration planes against each other. It acts as a port extension and will only be active if port extensions are enabled.

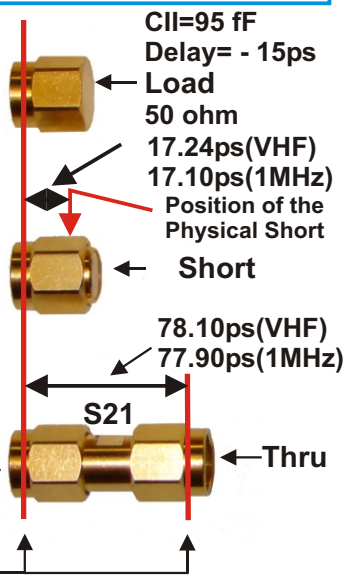
Delay Thru (formerly in Port Extensions) = 0 ps

Delay S21 = 0.00ps

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: $Y = 0.0200 + i * w * 50e-15$. As the load has a parasitic capacitance of 50fF in parallel with the 50 ohm resistance, it is convenient to express them as Y parameters. 0.0200 equals the resistance 1/50 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 0.0200 and it will be within 1%.

SMA Male-Female Adaptor



Delay=56,75ps

For protection of the VNWA TX and RX Port

Female Calibration Kit

Calibration Settings

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

OPEN SHORT LOAD THRU Low Loss C

S = 1

S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -103.2 ps => one way electrical length = -10.836 mm

Male Calibration Kit

Calibration Settings

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

OPEN SHORT LOAD THRU Low Loss C

S = 1

S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -2.7 ps => one way electrical length = -0.283 mm

Calibration Settings

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

OPEN SHORT LOAD THRU Low Loss C

S = -1

S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -138.4 ps => one way electrical length = -14.532 mm

Calibration Settings

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

OPEN SHORT LOAD THRU Low Loss C

S = -1

S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -34.48 ps => one way electrical length = -3.620 mm

Calibration Settings

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

OPEN SHORT LOAD THRU Low Loss C

Y = $0.0200 + i * w * 50e-15$

S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -50 ps => one way electrical length = -5.250 mm

Calibration Settings

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

OPEN SHORT LOAD THRU Low Loss C

Y = $0.0200 + i * w * 95e-15$

S normalized to 50 Ohms, impedances in Ohms, admittances in S, press CR to compile

Delay = -15 ps => one way electrical length = -1.575 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 = 51.34 ps => electrical length = 10.781 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 = 16.401 mm