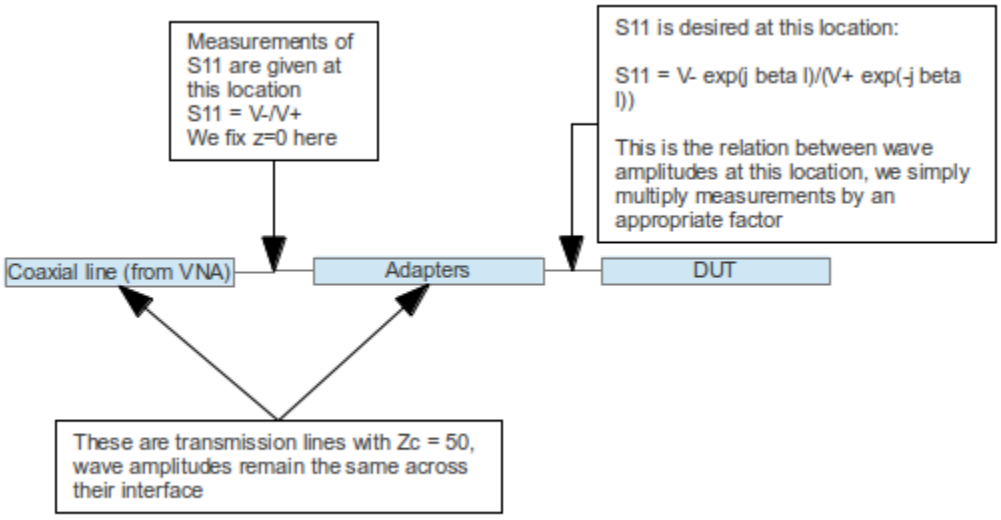
Calibration of measurements for the session of Saturday, October 27 2012
Transmission Lines and Antennas

Due to the constraints of having a calibration kit with male N-connector, we had the need to include additional adapters that allow connection of the system to the SMA female found in the device.

A transmission line model of the situation is depicted below (VNA stands for Vector Network Analyzer and DUT for Device Under Test, which is the microstrip line in this case):



Measurements on the adapters used after the calibration point (including the connector attachet to your microstrip line) indicate these behave as a transmission line with Zc = 50 Ohm and length of 7cm with air filling (thus lambda = lambda0), consider this to correct the measurements provided, as we are interested in having the reflection coefficient right at the input of the microstrip line.

An additional consideration in the computations is that the phase obtained from the analyzer may or may not be correct within 2*pi (adding or substracting a multiple of 2pi to an angle leaves it unchanged). This means that before actually processing data we need to make sure that phase is continuous (you can remove breaks in phase using e.g. the unwrap function in MATLAB) and it is 0 for f = 0 (at low frequency line has an almost zero electrical length, no phase change across it).