

GCPW VNA tests

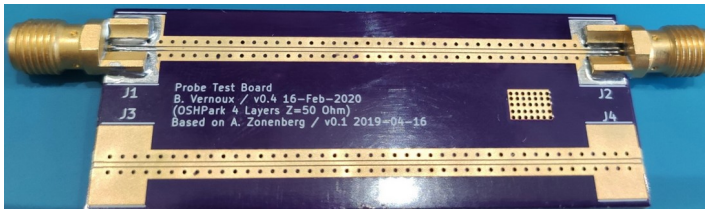
sma-probetarget_oshpark_bve_v0_4 vs

OSHPark_4Layers_trl-board_v0_1 vs

Banggood [DC-4.0GHz RF Fixed Attenuator Radio Frequency Fixed](#)

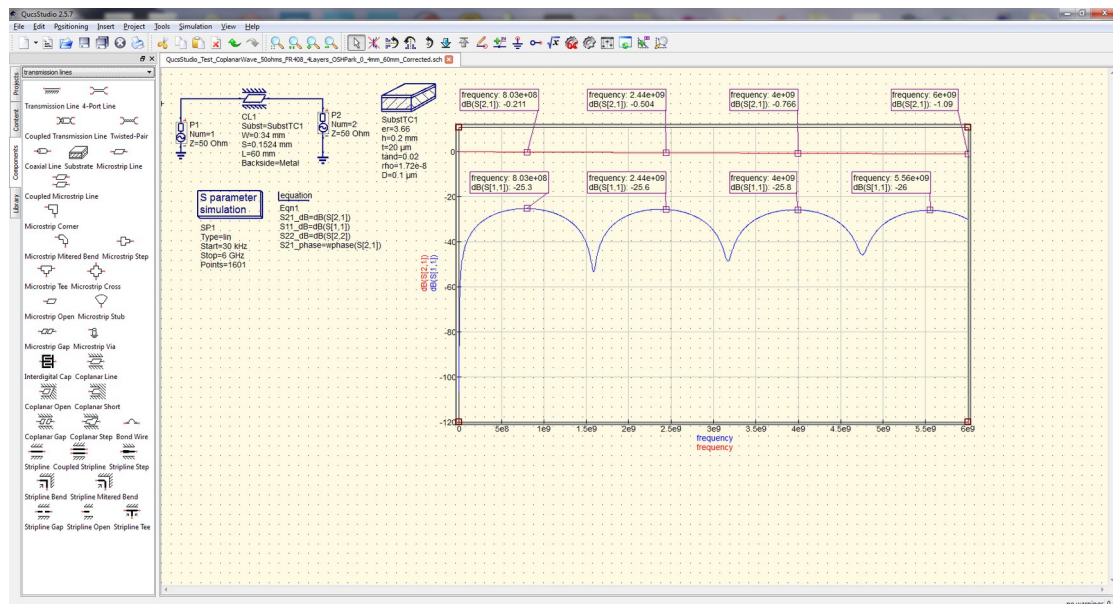
VNA Test sma-probetarget_oshpark_bve_v0_4

Characteristics of the test board sma-probetarget_oshpark_bve_v0_4:



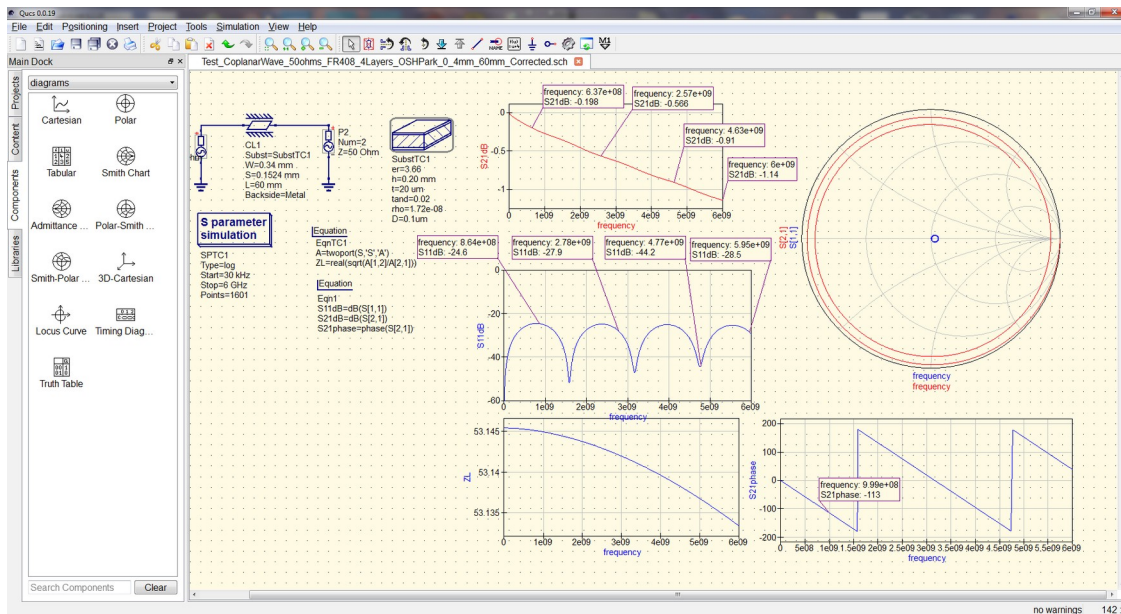
- OSH Park 4 Layers
- Trace 0.34mm (13.4mil)
- Trace Clearance: 0.1524mm (6mil)
- Trace Length 58mm
- SMA Connectors (up to 26.5GHz): Cinch Connectivity Solutions Johnson (Bel) [142-0771-831](http://www.cinch.com)
- The soldering is clearly not the best as it is quite challenging to solder those connectors without practices (especially of loose connection with PCB).
- I have soldered an other board with better soldering and results are very similar ... (especially I'm capturing S2P data only from 30kHz up to 6GHz with my VNA)

Theoretical values with QucsStudio 2.5.7:



QucsStudio 2.5.7 data used available here: https://hydrabus.com/sma-probetarget_oshpark_bve_v0_4_VNA/QucsStudio_2_5_7_simulation.7z

Same Simulation with qucs 0.0.19:

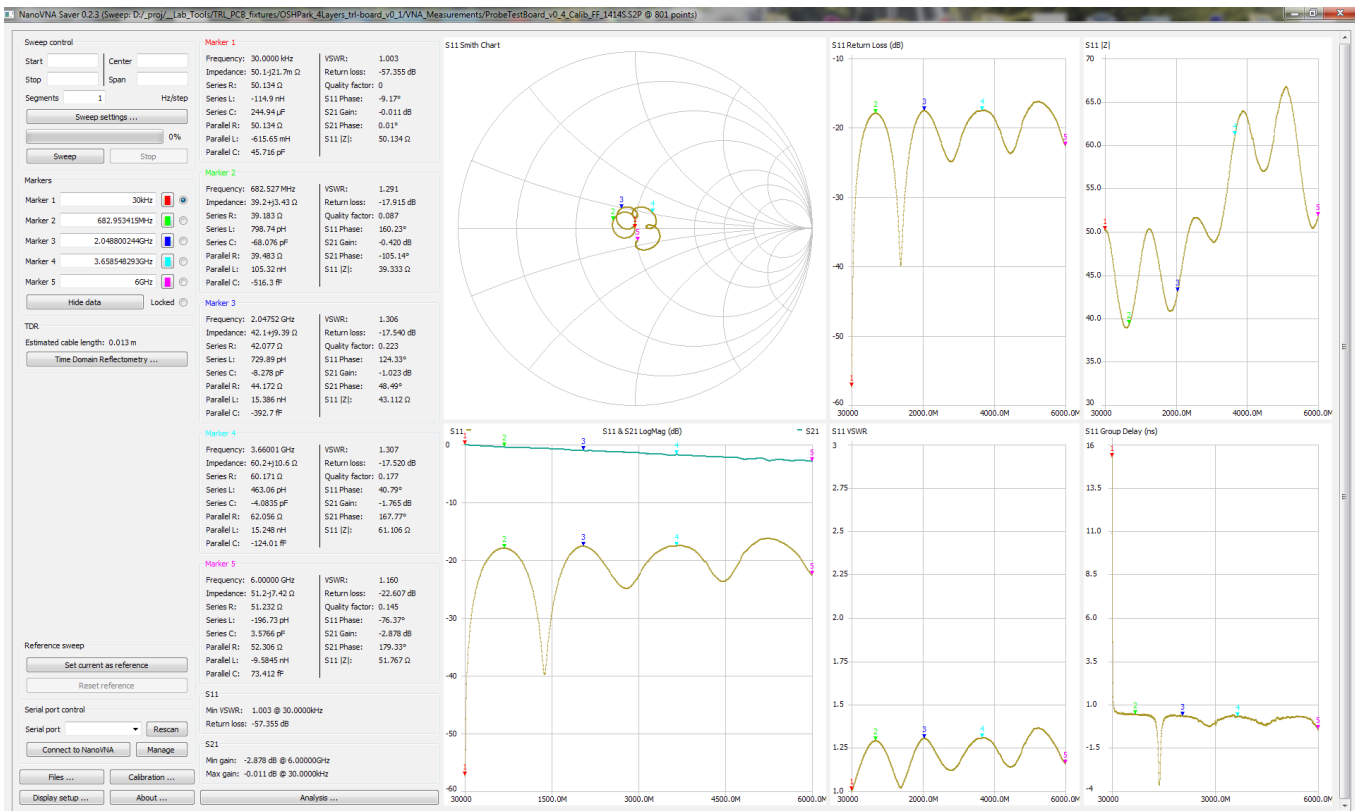


QucsStudio 0.0.19 data used available here: https://hydrabus.com/sma-probetarget_oshpark_bve_v0_4_VNA/qucs_0_0_19_simulation.7z

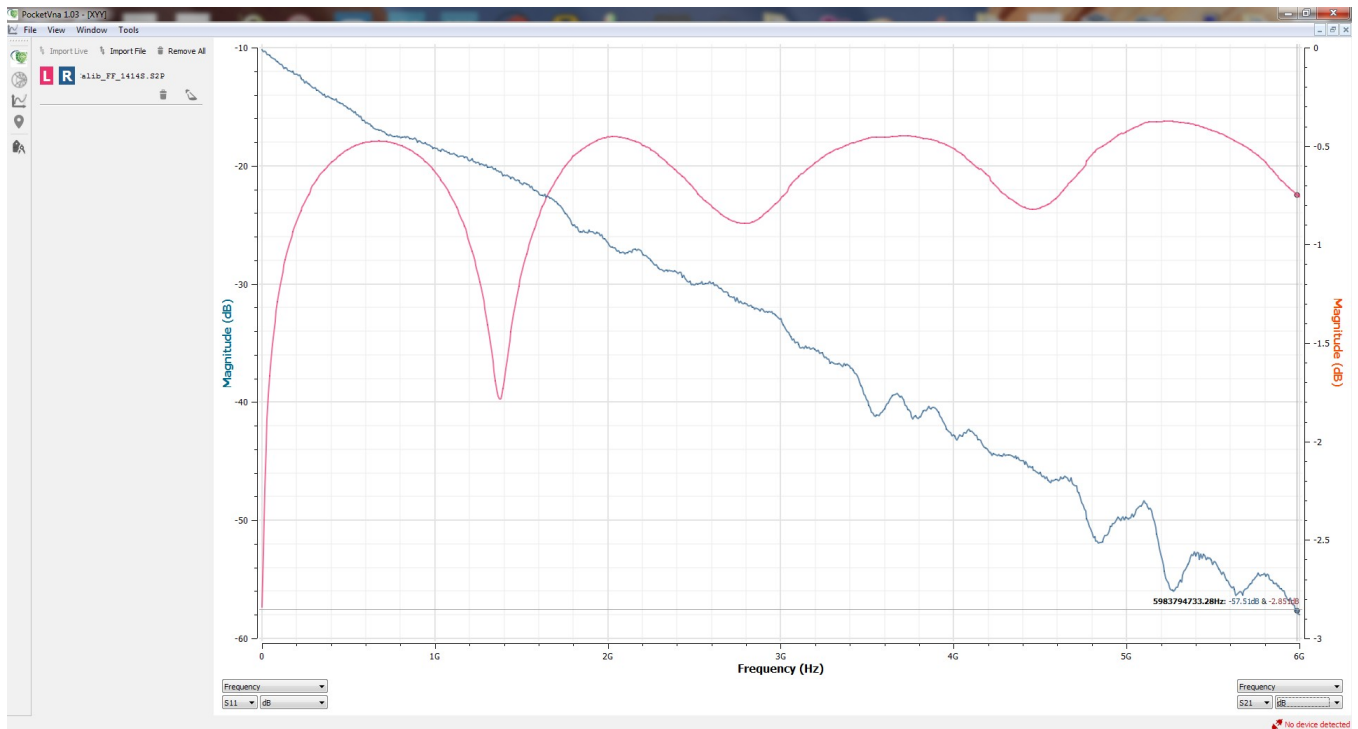
So we see the S21 attenuation is expected to be at about -1 dB @6GHz in both simulations.

See links hereafter:

- Test Board used
 - https://hydrabus.com/sma-probetarget_oshpark_bve_v0_4_VNA/ProbeTestBoard_v0_4.jpg
- Github Kicad files
 - https://github.com/bvernoux/kicad_rf/tree/master/sma-probetarget_oshpark_bve_v0_4
- Photo of the Board under Test with my HP VNA:
 - https://hydrabus.com/sma-probetarget_oshpark_bve_v0_4_VNA/HP_VNA_ProbeTestBoard_v0_4_Calib_FF_1414S.jpg
- S2P details:



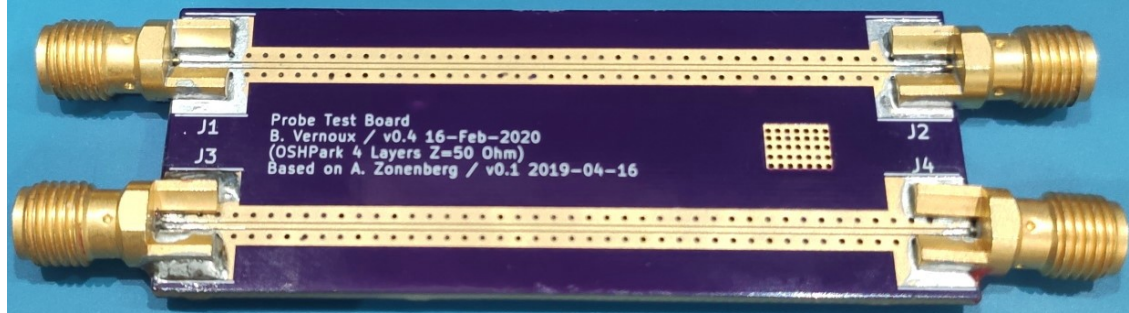
- https://hydrabus.com/sma-probetarget_oshpark_bve_v0_4_VNA/ProbeTestBoard_v0_4_Calib_FF_1414S.png



- S2P file is available here:

https://hydrabus.com/sma-probetarget_oshpark_bve_v0_4_VNA/ProbeTestBoard_v0_4_Calib_FF_1414S.S2P

- For reference other test on an other board soldered with 4 SMA connectors (from same batch of PCB)

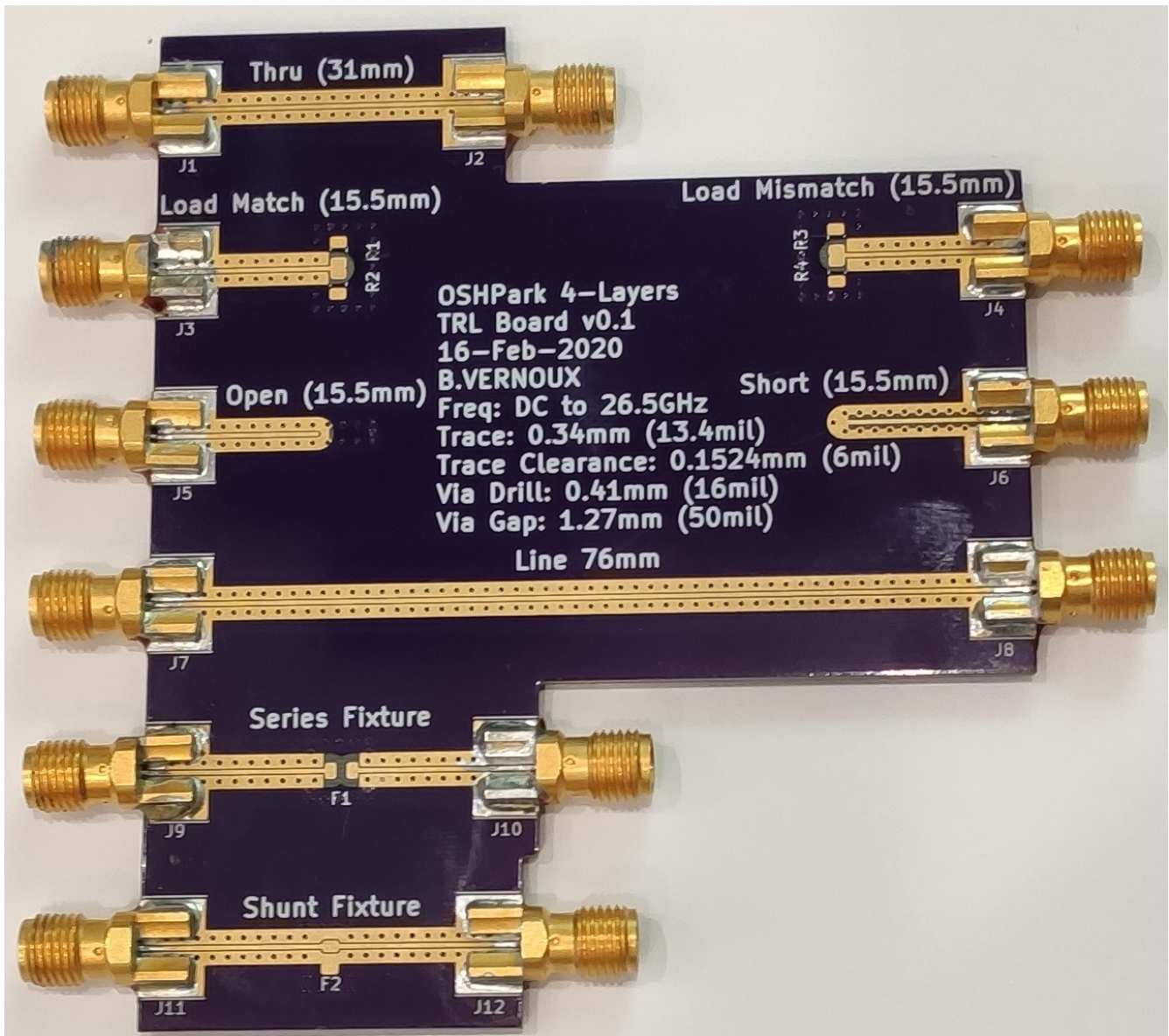


- See S2P files_

https://hydrabus.com/sma-probetarget_oshpark_bve_v0_4_VNA/ProbeTestBoard_v0_4_Calib_FF_1414S_J1_J2_J3_J4.7z

- HP VNA 8753D was calibrated with Kirkby Microwave 85033 50Ohms SMA Calibration & verification kit using 2 male/male SMA cables [Mini-Circuits 141-4SM+](#)

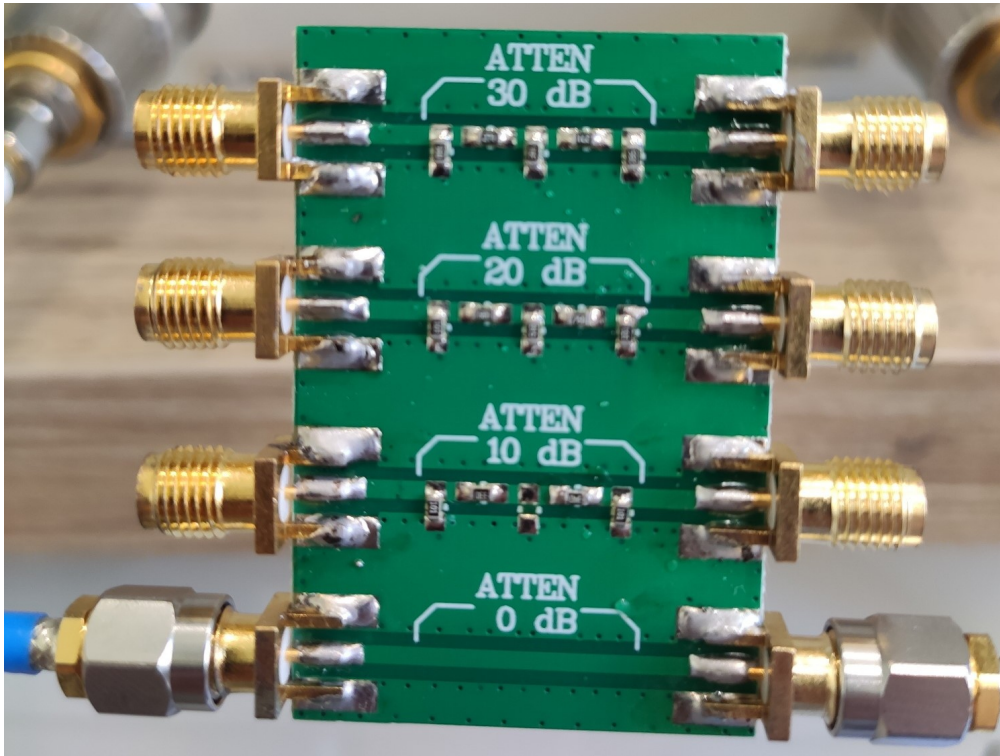
VNA Test OSHPark_4Layers_trl-board_v0_1



- KiCad files https://github.com/bvernoux/kicad_rf/tree/master/OSHPark_4Layers_trl-board_v0_1
- S2P files:
 1. [https://hydrabus.com/OSHPark_4Layers_trl-board_v0_1/141-4SM+ 2x Port1&2 NoThru.S2P](https://hydrabus.com/OSHPark_4Layers_trl-board_v0_1/141-4SM+_2x_Port1&2_NoThru.S2P)
 2. [https://hydrabus.com/OSHPark_4Layers_trl-board_v0_1/141-4SM+ 2x Port1&2 TRL Board v0_1 Line76mm.S2P](https://hydrabus.com/OSHPark_4Layers_trl-board_v0_1/141-4SM+_2x_Port1&2_TRL_Board_v0_1_Line76mm.S2P)
 3. [https://hydrabus.com/OSHPark_4Layers_trl-board_v0_1/141-4SM+ 2x Port1&2 TRL Board v0_1 Port1 Short 15.5mm Port2 NotConnected.S2P](https://hydrabus.com/OSHPark_4Layers_trl-board_v0_1/141-4SM+_2x_Port1&2_TRL_Board_v0_1_Port1_Short_15.5mm_Port2_NotConnected.S2P)

4. https://hydrabus.com/OSHPark_4Layers_trl-board_v0_1/141-4SM+_2x_Port1&2_TRL_Board_v0_1_ShuntFixture_NoComponent.S2P
- HP VNA 8753D was calibrated with Kirkby Microwave 85033 50Ohms SMA Calibration & verification kit using 2 male/male SMA cables [Mini-Circuits 141-4SM+](#)

VNA Test Banggood DC-4.0GHz RF Fixed Attenuator Radio Frequency



Cheap 10USD Banggood "[DC-4.0GHz RF Fixed Attenuator Radio Frequency Fixed](#)"

- "DC-4.0GHz RF Fixed Attenuator Radio Frequency" Fixed VNA measurement:
 - [https://hydrabus.com/DC to 4GHz RF Fixed Attenuator VNA Tests BVERNOUX 05May2020.pdf](https://hydrabus.com/DC%20to%204GHz%20RF%20Fixed%20Attenuator%20VNA%20Tests%20BVERNOUX%2005May2020.pdf)
 - [https://hydrabus.com/DC to 4GHz RF Fixed Attenuator VNA Tests BVERNOUX 05May2020 S2P.7z](https://hydrabus.com/DC%20to%204GHz%20RF%20Fixed%20Attenuator%20VNA%20Tests%20BVERNOUX%2005May2020%20S2P.7z)
 - HP VNA 8753D was calibrated with Kirkby Microwave 85033 50Ohms SMA Calibration & verification kit using 2 male/male SMA cables [Mini-Circuits 141-4SM+](#)