



TYPICAL PERFORMANCE RESULTS FOR 3 GHz ATTENUATOR 41-180

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This application note provides some typical results for a 41-180 attenuator measured using an HP8752 3 GHz Vector Network Analyzer.

All the results were obtained with the attenuator placed in a Pickering PXI chassis and connected to the HP8752 by standard quality coaxial leads approximately 350 mm long using SMA connectors. The VNA was calibrated with the leads in place to compensate for lead insertion loss and VSWR. It is likely that better results could have been obtained with higher quality leads, but these leads more accurately reflect the connections likely to be used in a PXI system.

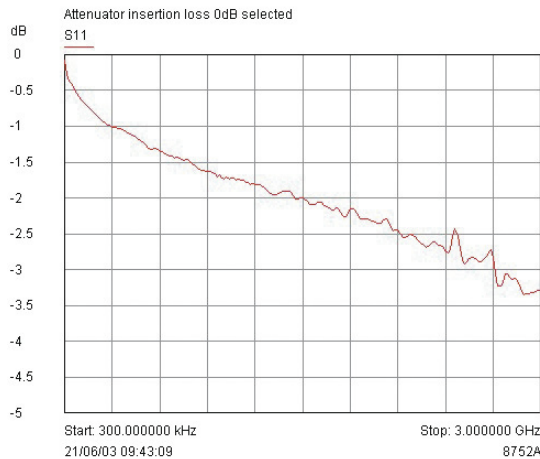
Each measurement is taken with the input as Port A and the output as Port B. Two sets of results are provided for different attenuators.

The performance levels observed are not the guaranteed performance levels for the product.

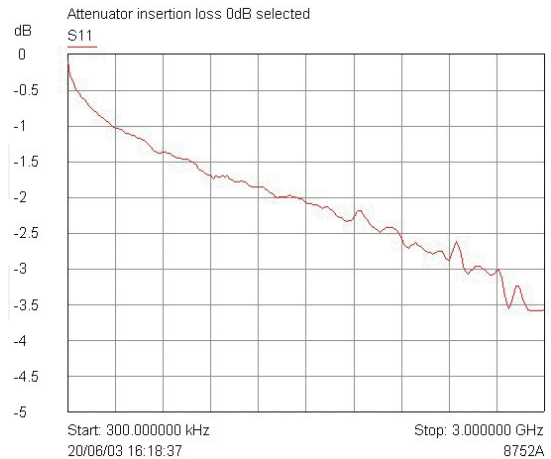
ATTENUATOR INSERTION LOSS.

For this measurement the HP8752 was calibrated using 50 ohm loads, shorts, opens and then a through connection using a back to back SMA. The back to back SMA was then replaced by the attenuator and the attenuation set to 0 dB. The displayed figures are the insertion loss of the attenuator.

Attenuator 1



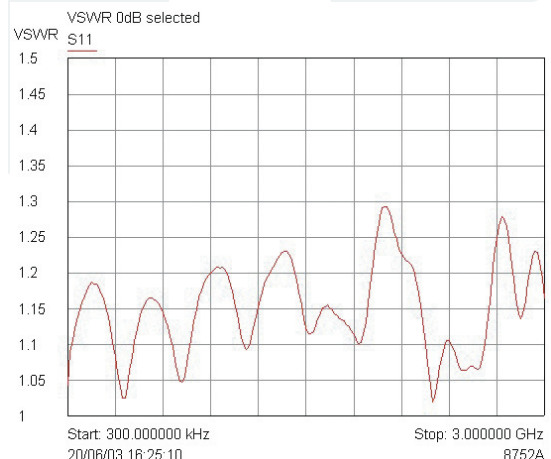
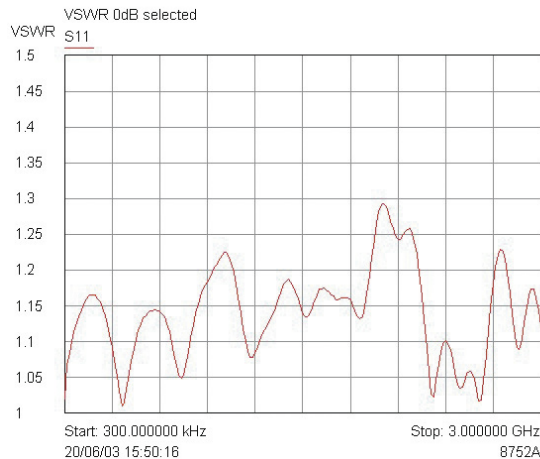
Attenuator 2



INPUT VSWR

For this measurement Port B of the attenuator was terminated in 50 ohms and the VSWR measured for Port A with the attenuation set to 0 dB and then 16 dB

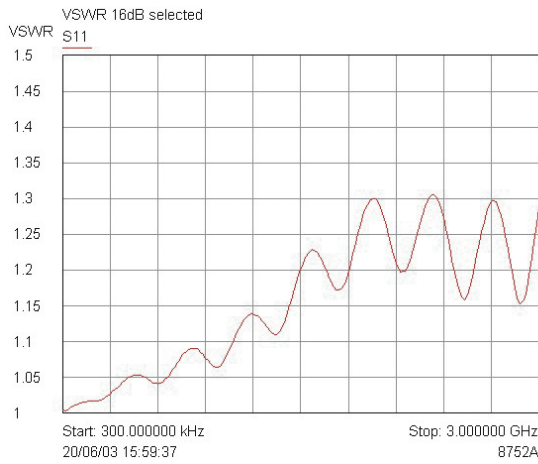
0 dB



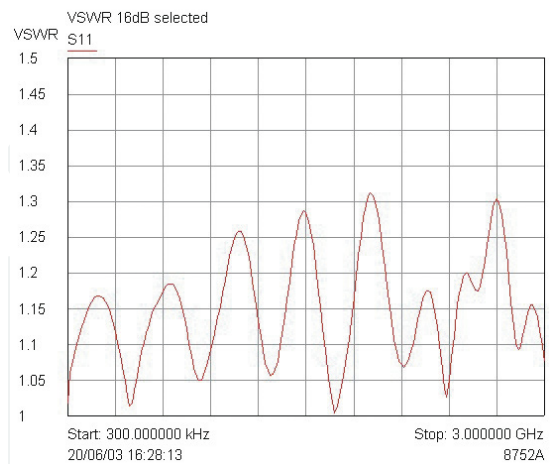


Attenuator 1

16 dB



Attenuator 2



ATTENUATION ACCURACY

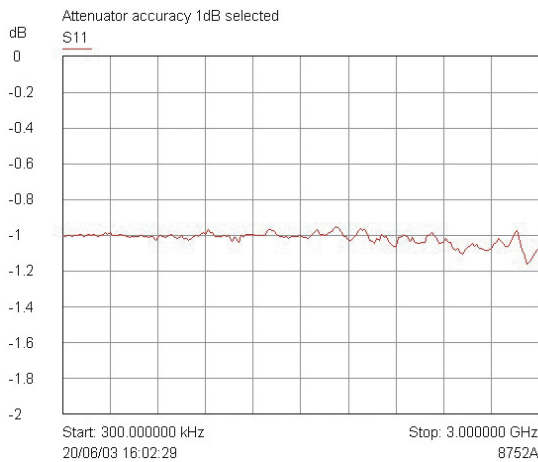
For this measurement the HP8752 was normalised to correct for the insertion loss of the attenuator. The attenuator was then measured relative to that path loss.

For attenuation values 1, 2, 4, 8, and 16 dB, just one attenuator pad is in circuit. The 32 and 48 dB settings are using two or three 16 dB pads. The 63 dB setting is with all pads in.

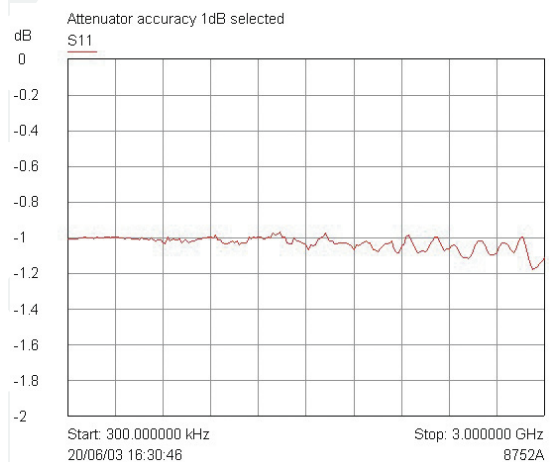
Results are supplied for two attenuators fitted in the same module.

Attenuator 1

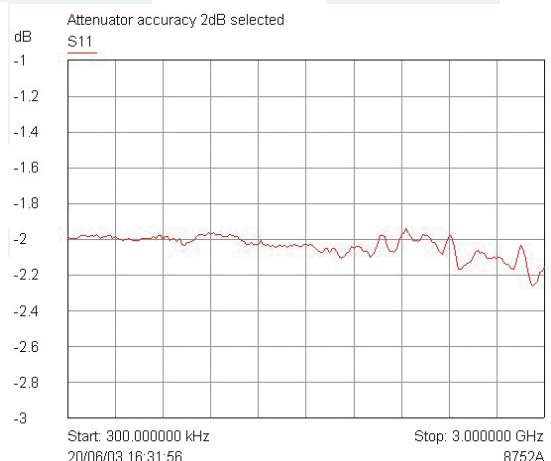
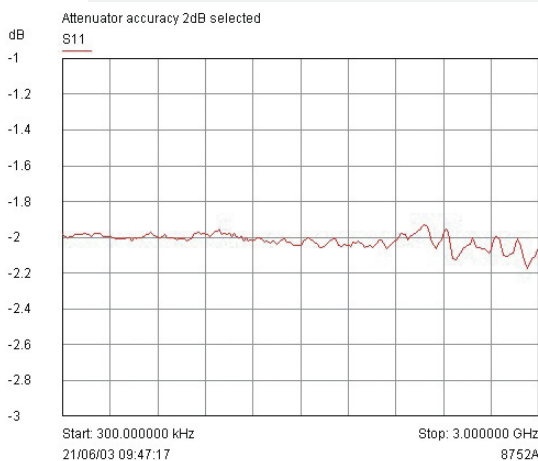
1 dB



Attenuator 2



2 dB

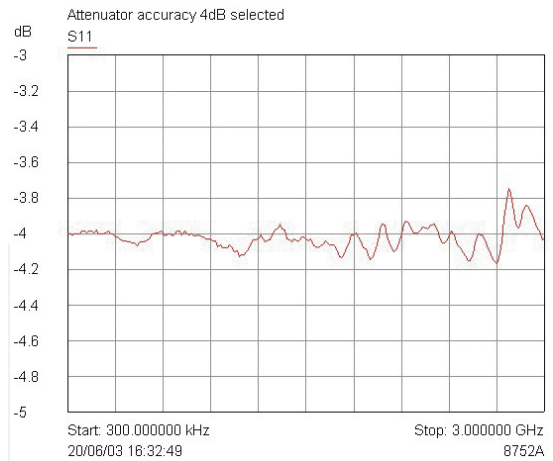
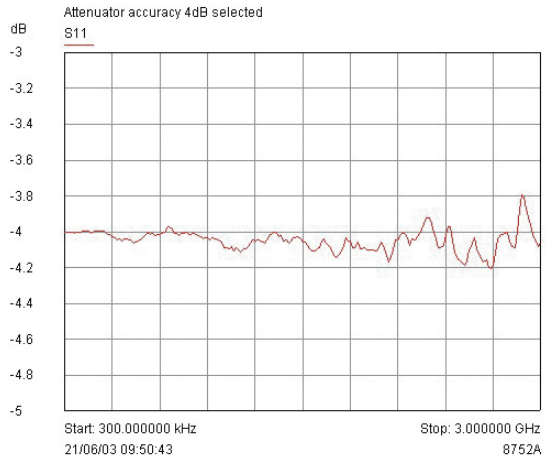




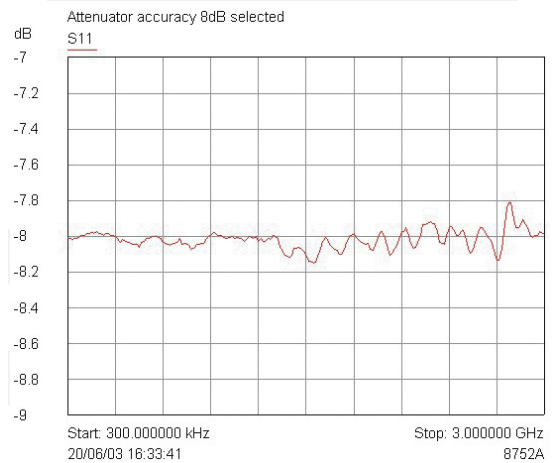
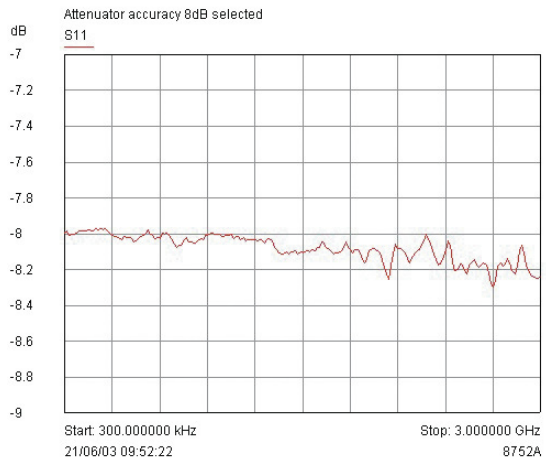
Attenuator 1

Attenuator 2

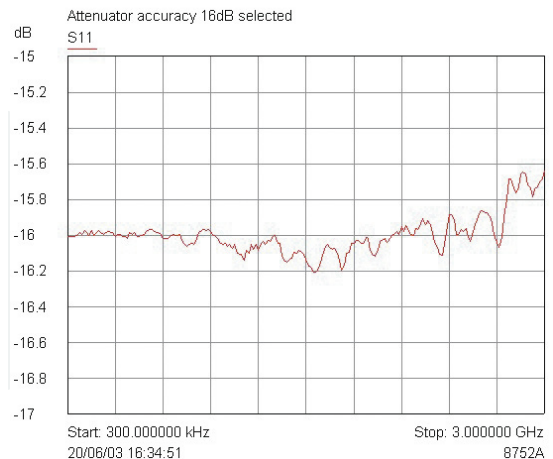
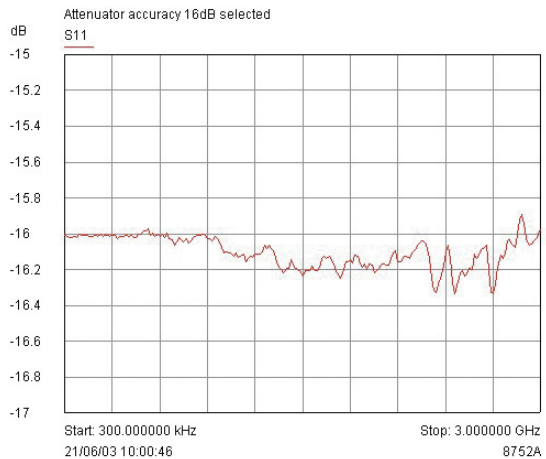
4 dB



8 dB



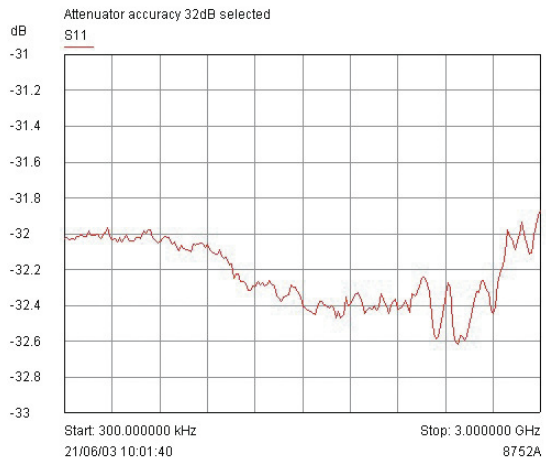
16 dB



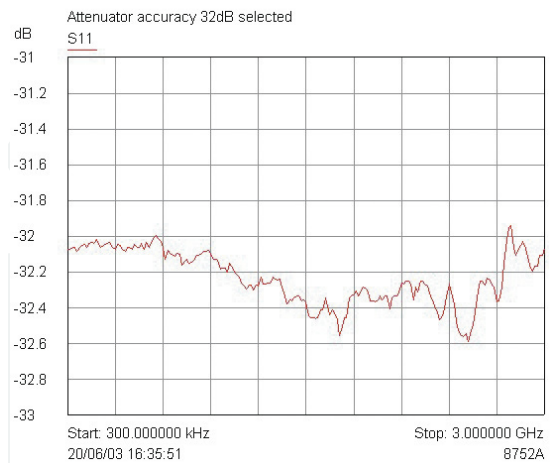


Attenuator 1

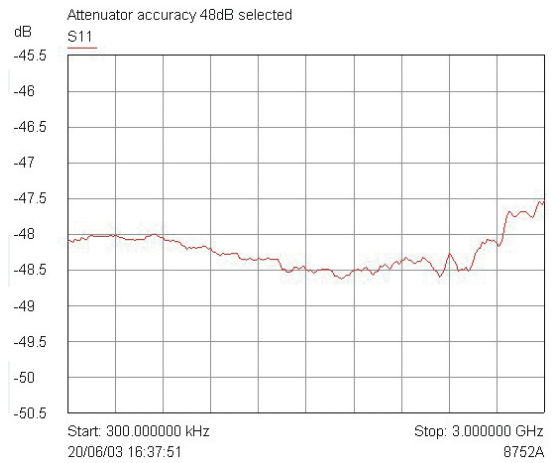
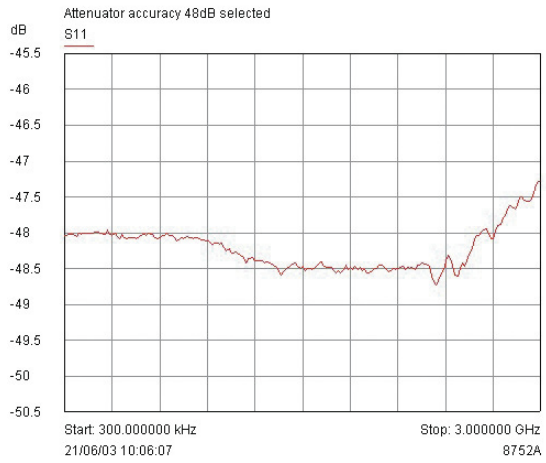
32 dB



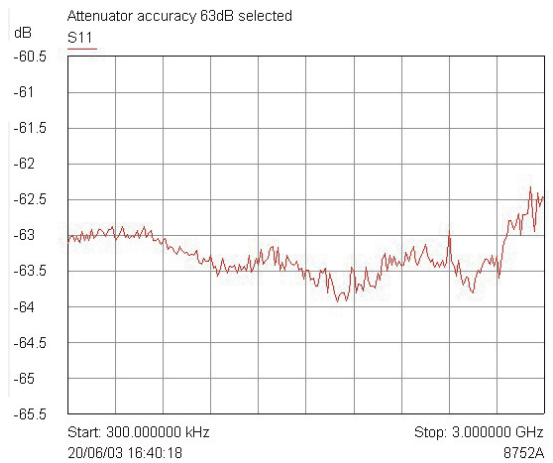
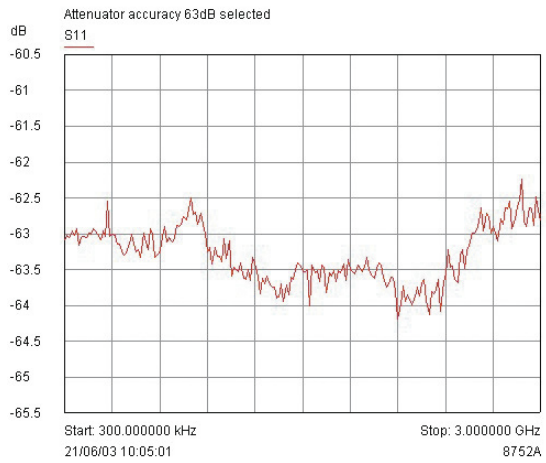
Attenuator 2



48 dB



63 dB





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