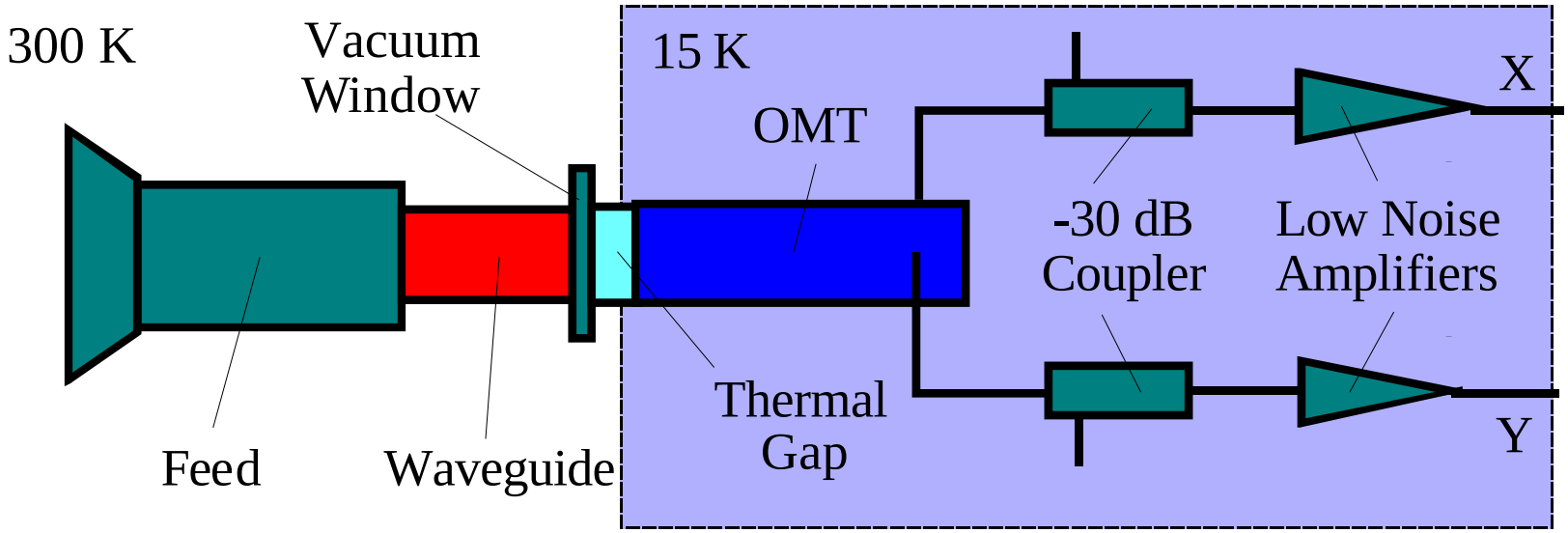


Figure 1 Block diagram of the GBT L-band receiver front-end.

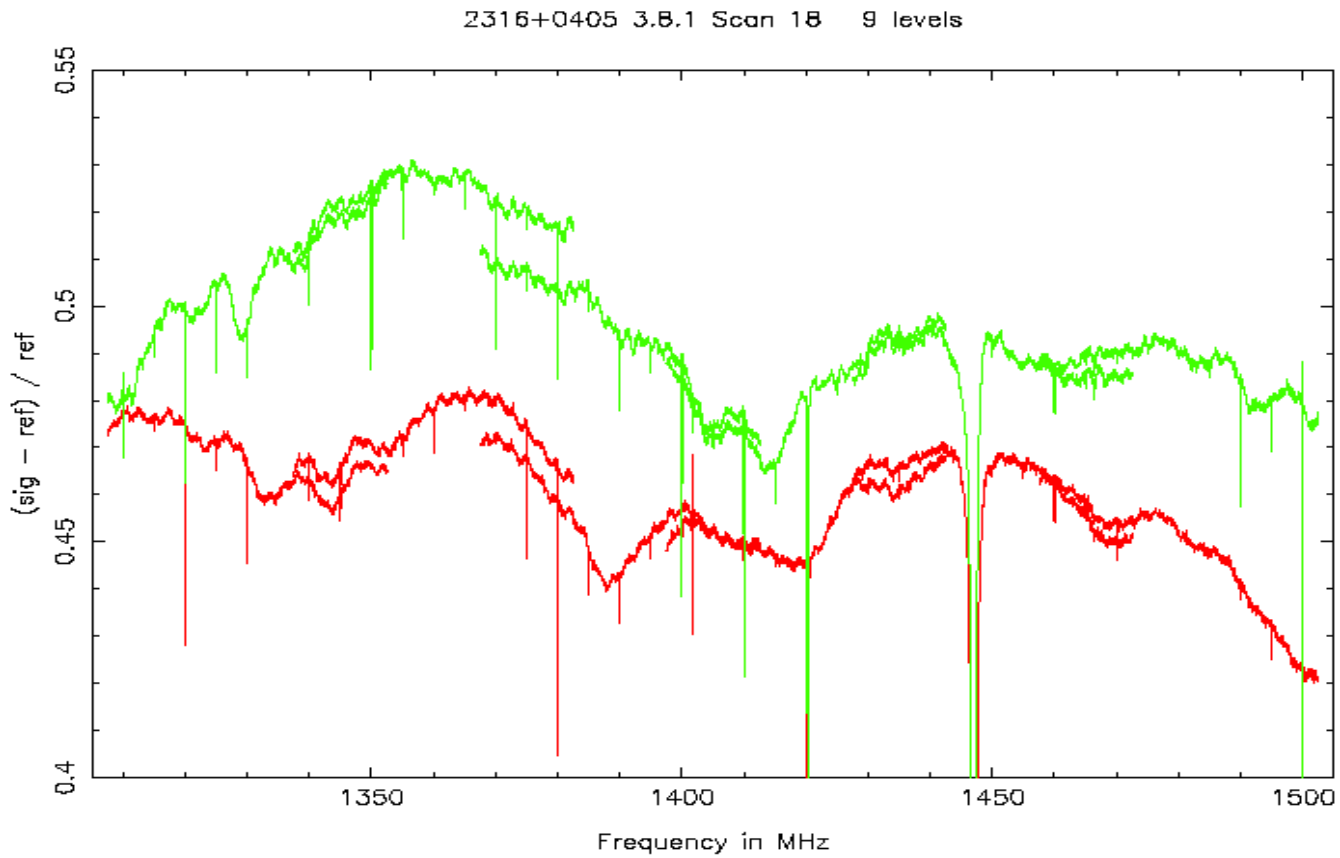


Figure 2 Scans 17-28, composite Tsource / Tsys spectra for the continuum radio source 2316+0405 (S = 4.68 Jy @ 1.4 GHz). Red curves are for receiver channel X and green curves are for channel Y [3].

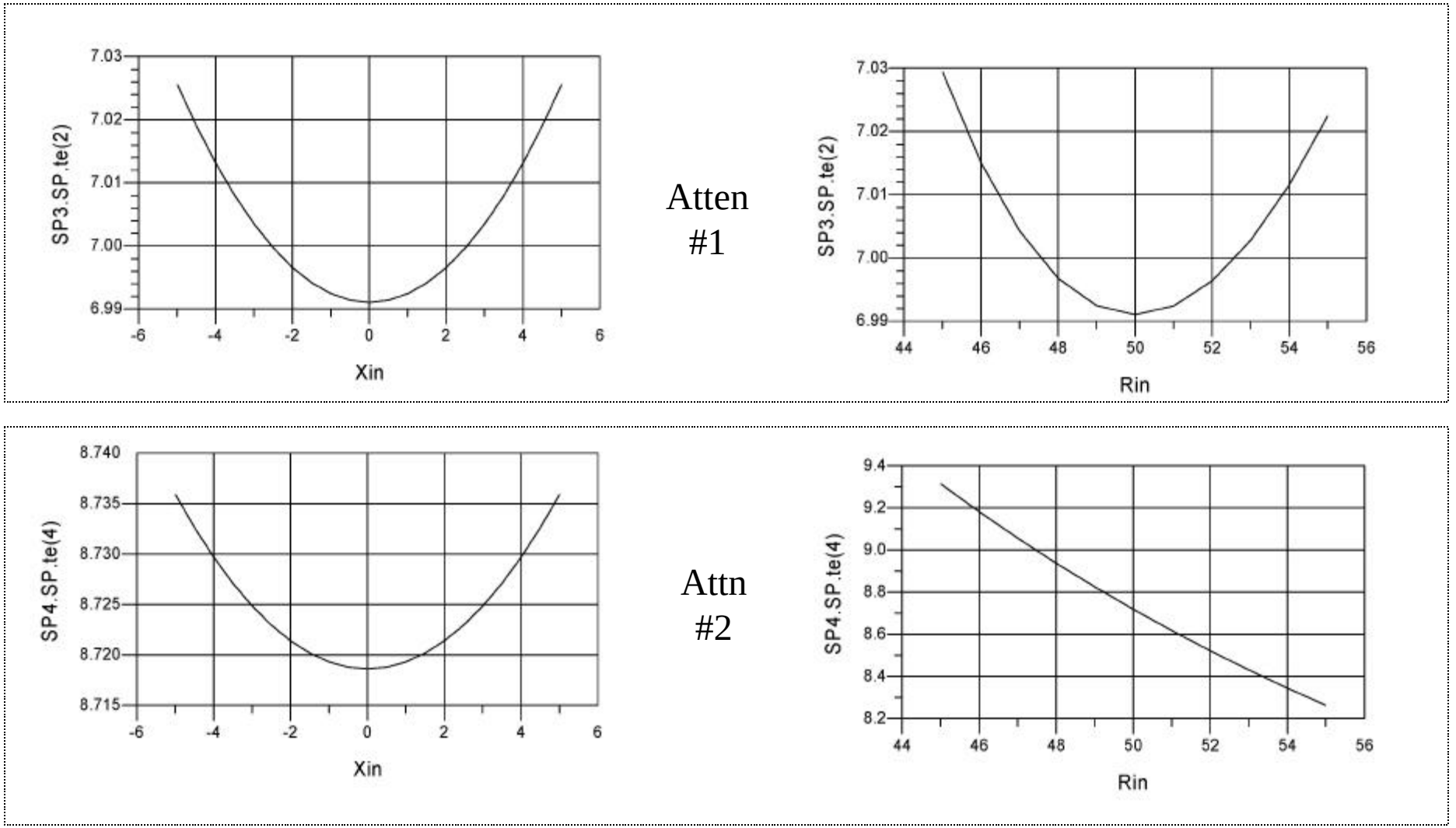


Figure 3 ADS simulation showing noise temperature of the two attenuators for varying input impedance. Upper panel is for Attenuator #1 and the lower panel is for Attenuator #2.

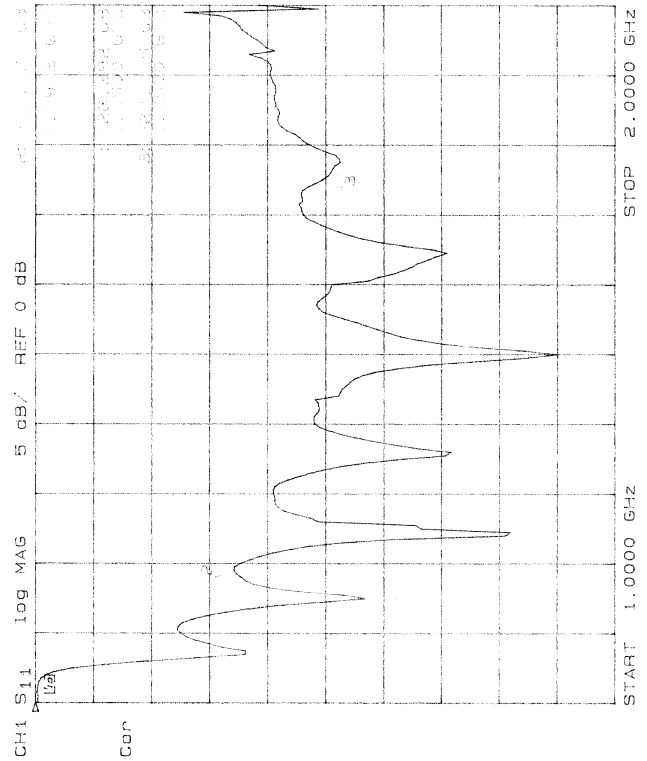


Figure 4 Reflectometry measurements of GBT L-band feed, dewar transition, and OMT made by S. Shrikanth [8].

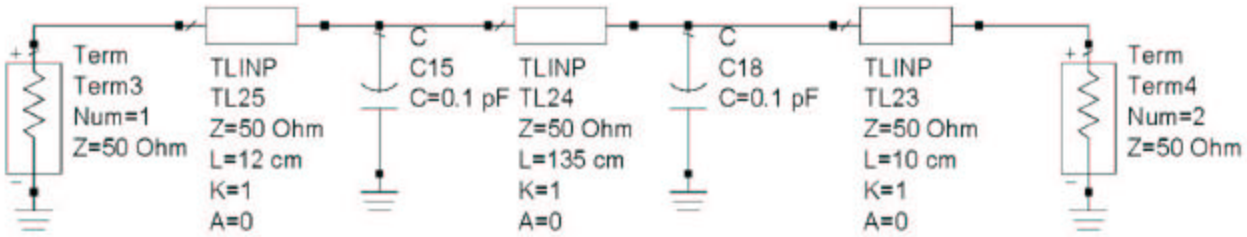


Figure 5 Block diagram of transmission line cascade with capacitance loading between sections.

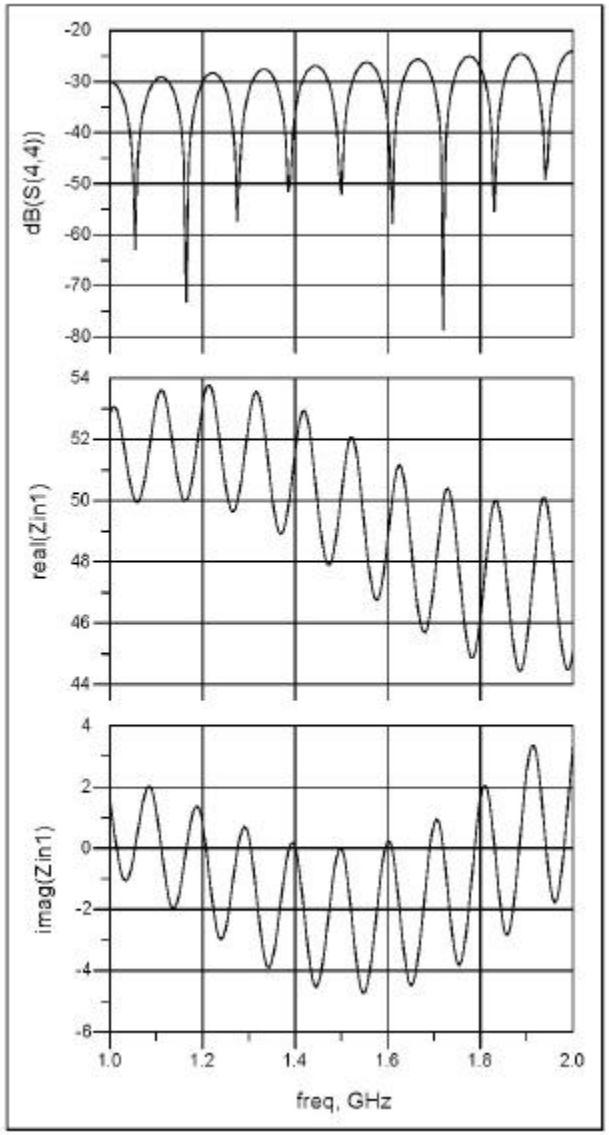


Figure 6 ADS simulation results showing |S22| (shown here as S44) and the complex input impedance for the loaded transmission line cascade shown in Fig. 5.

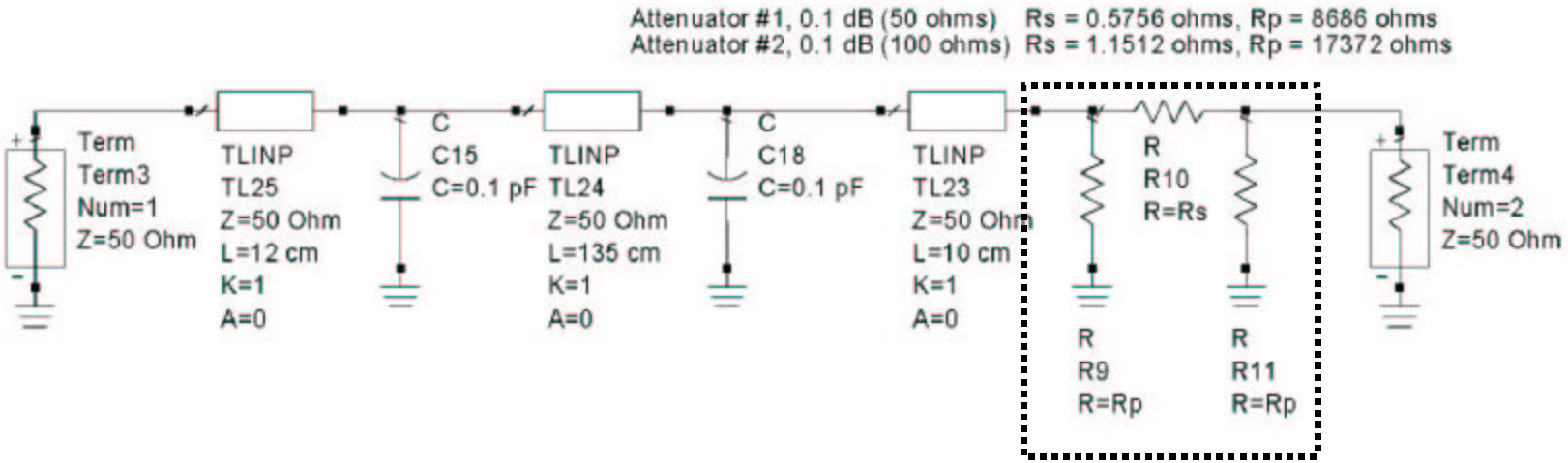


Figure 7 Block diagram of attenuator with the loaded transmission line at its input.

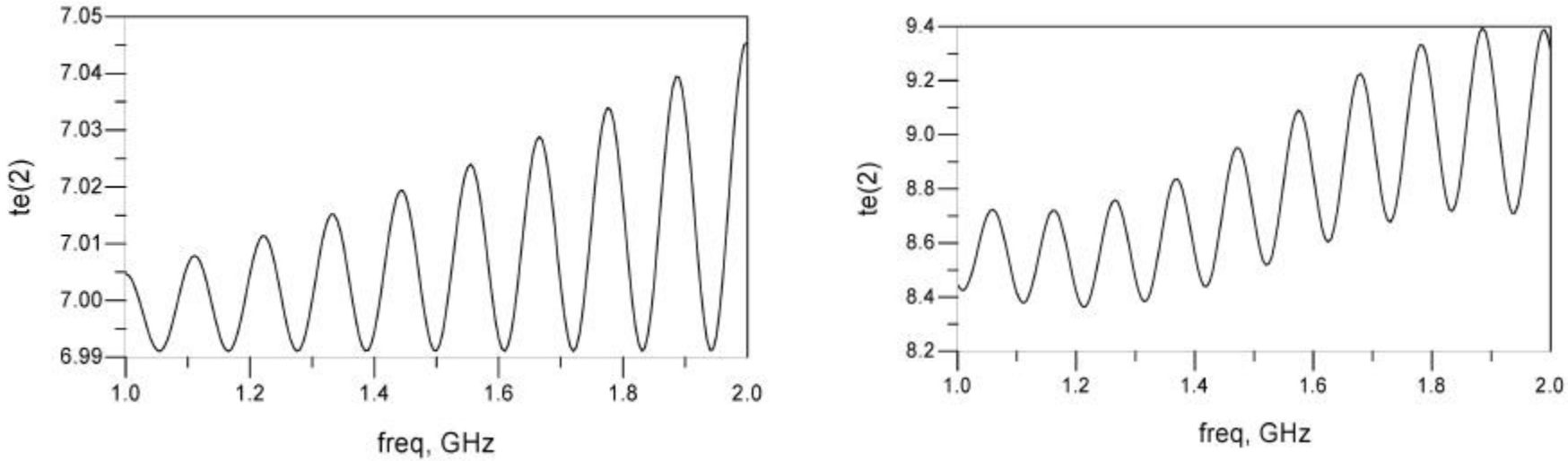


Figure 8 ADS simulation of the circuit shown in Fig. 7. The noise temperature of the circuit versus frequency for Attenuator #1 is displayed on the left and that of Attenuator #2 is shown on the right.

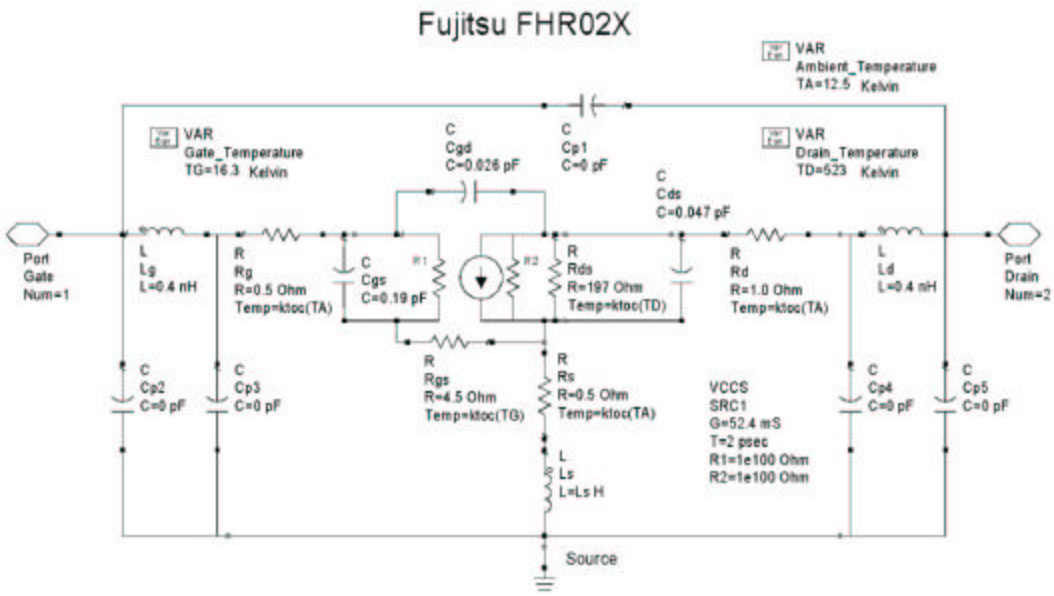


Figure 9 Schematic diagram of the HFET model used in the ADS simulations [9].

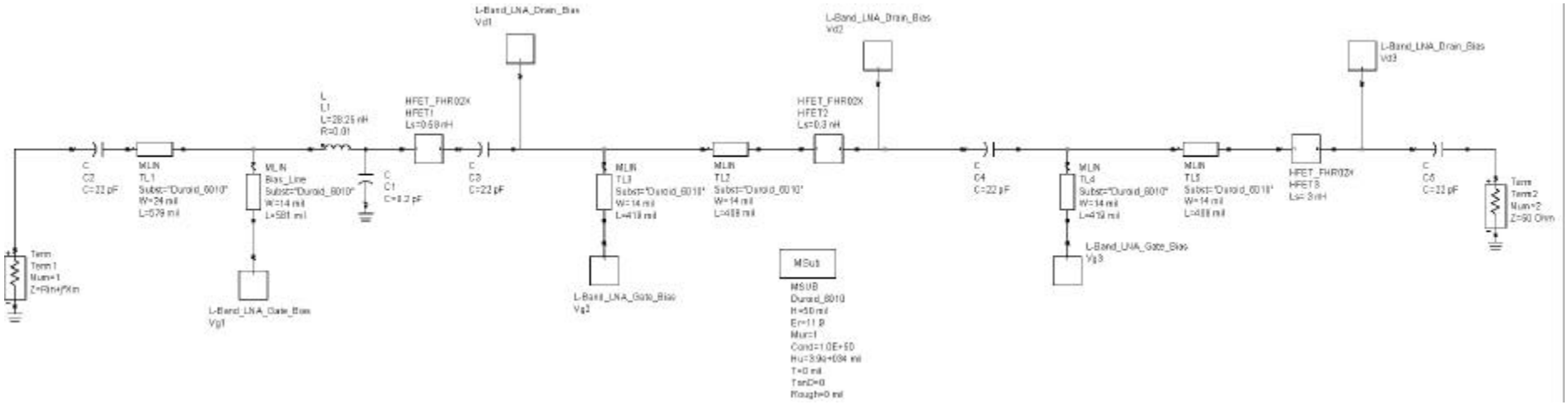


Figure 10 Block diagram of the three-stage, single-ended low noise amplifier used in the ADS simulations.

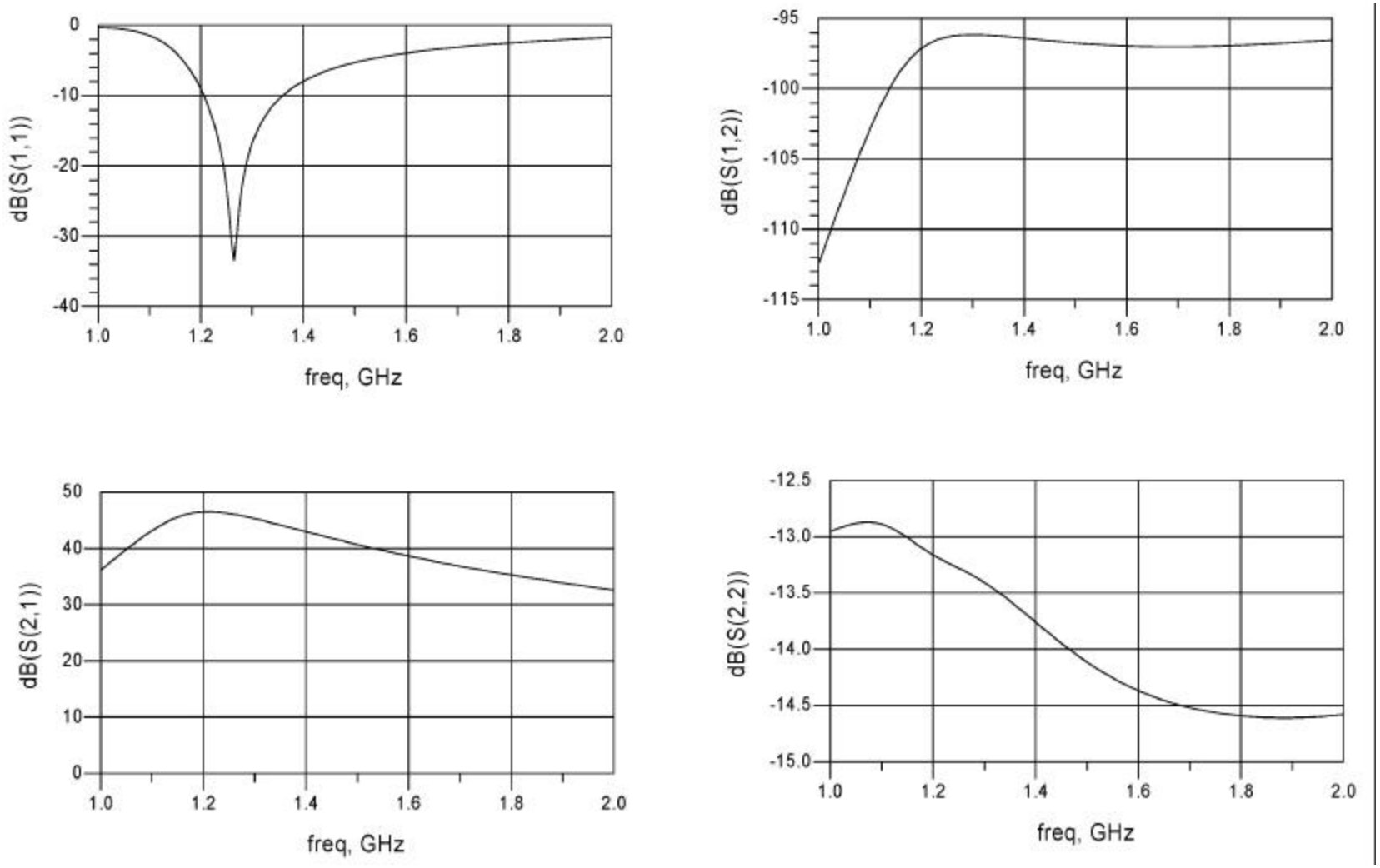


Figure 11 Calculated S-parameters for the three-stage low noise amplifier model.

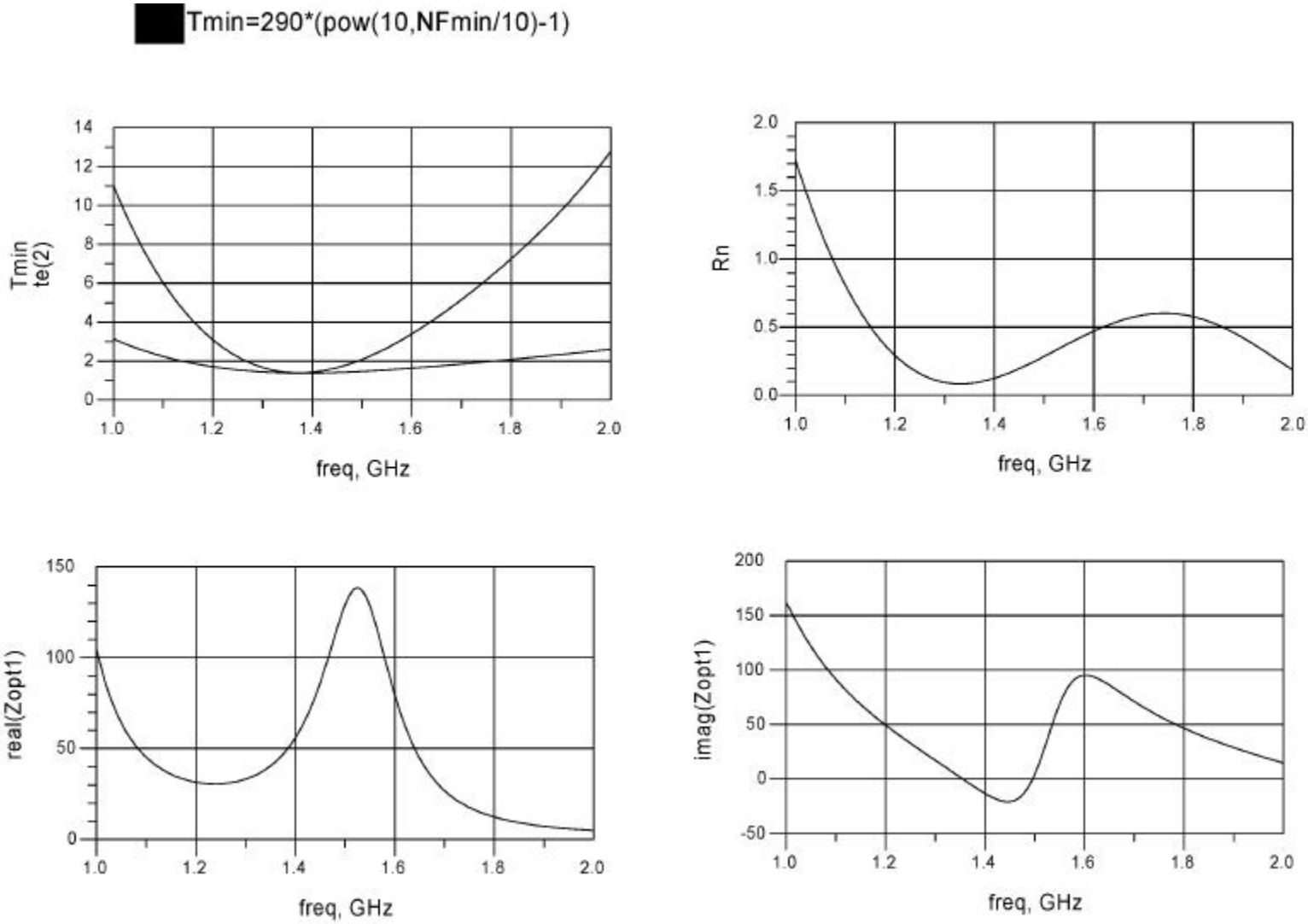


Figure 12 Calculated noise parameters and noise temperature of the three-stage low noise amplifier used in the ADS simulations.

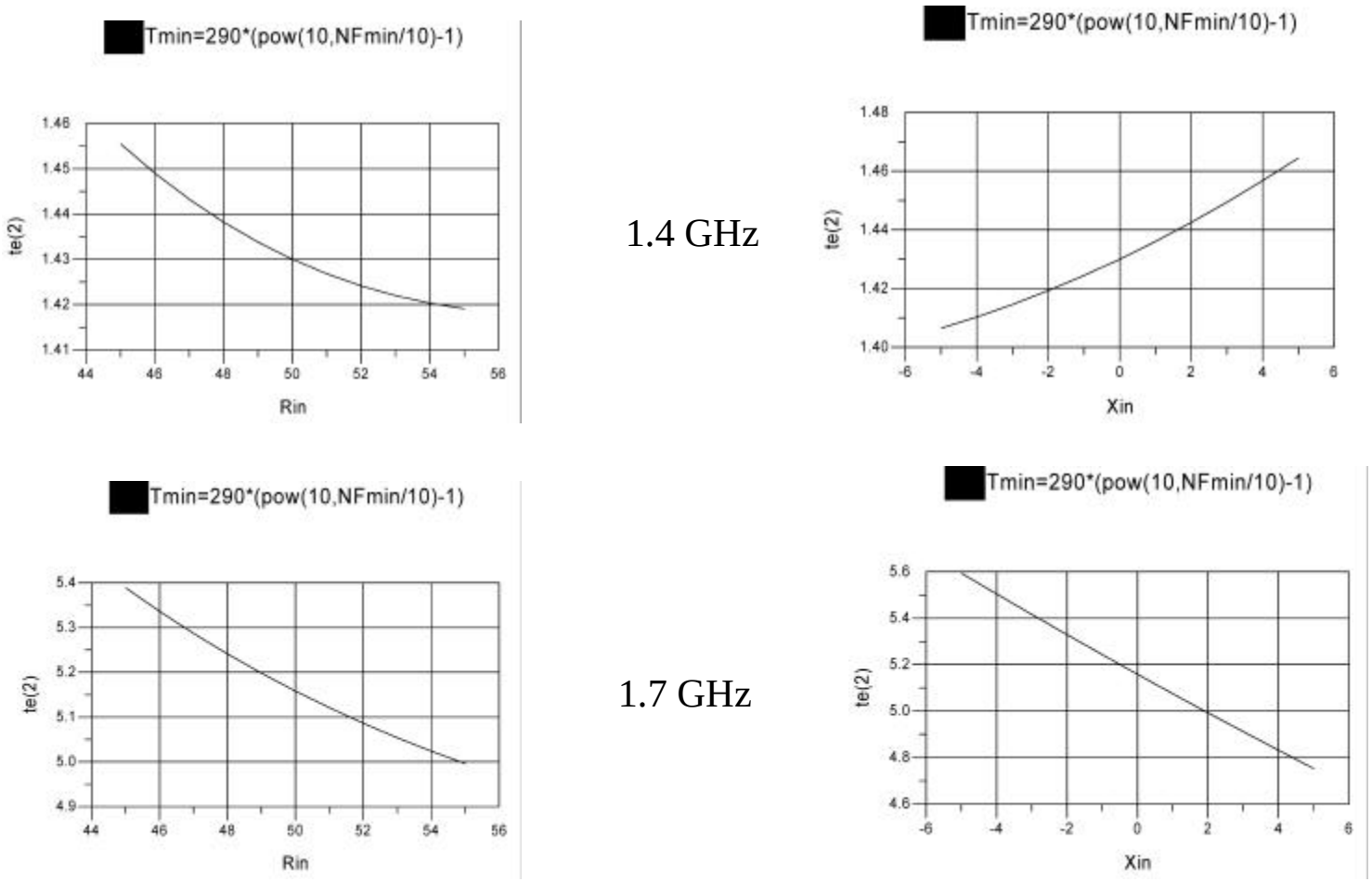
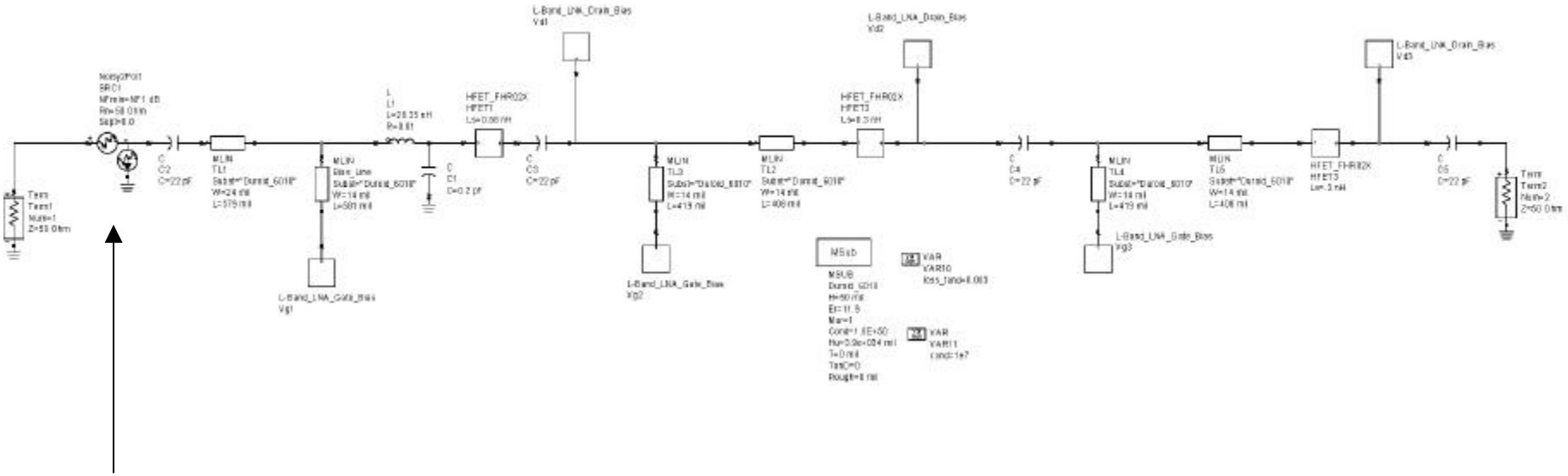


Figure 13 Calculated noise temperature of the three-stage low noise amplifier as a function of input resistance (left) and input reactance (right) at 1.4 and 1.7 GHz.



2-port noise source

Figure 14 Low noise amplifier model with a noise source at the input to simulate an antenna temperature that is constant with frequency.

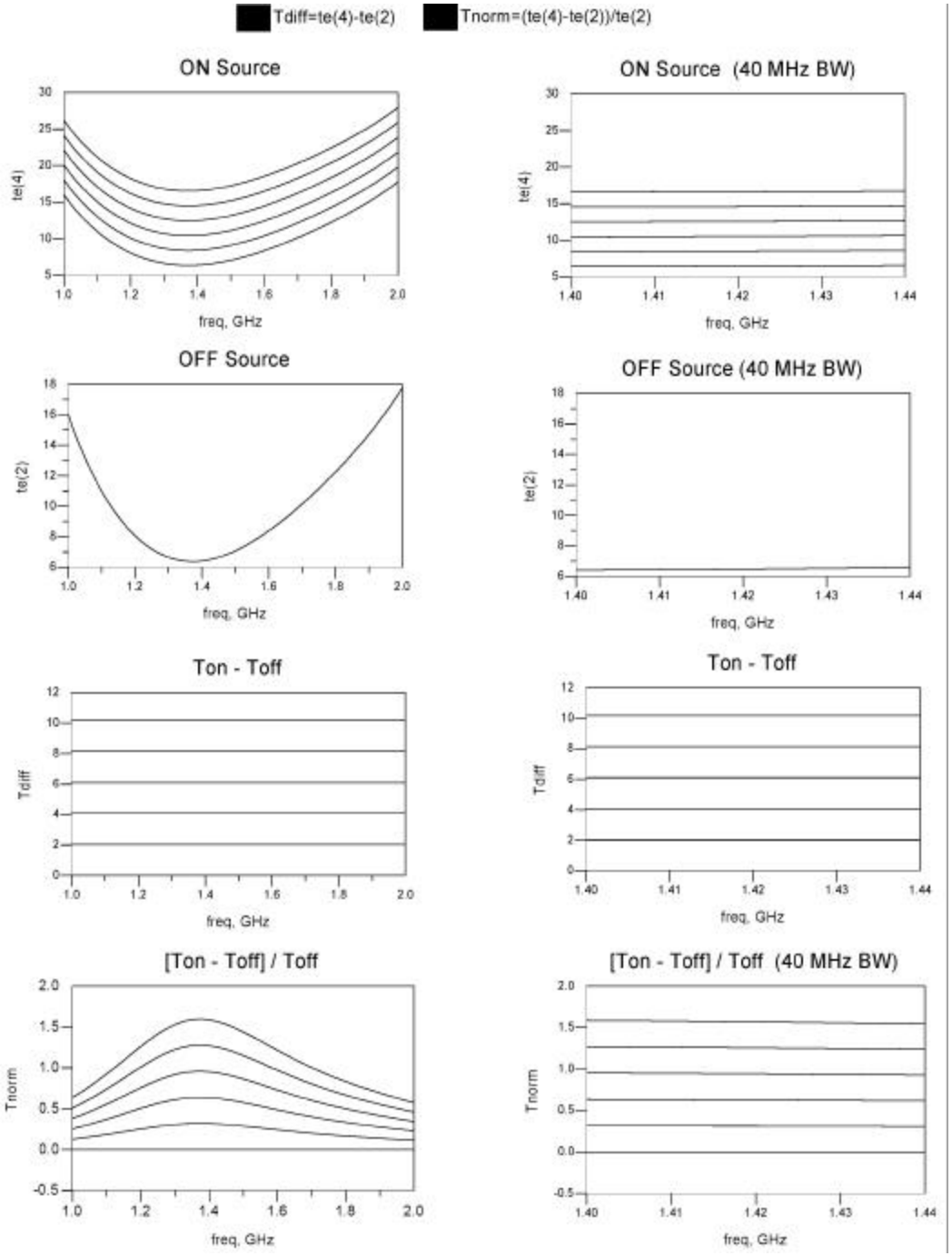


Figure 15 On/Off sequence involving only the low noise amplifier.

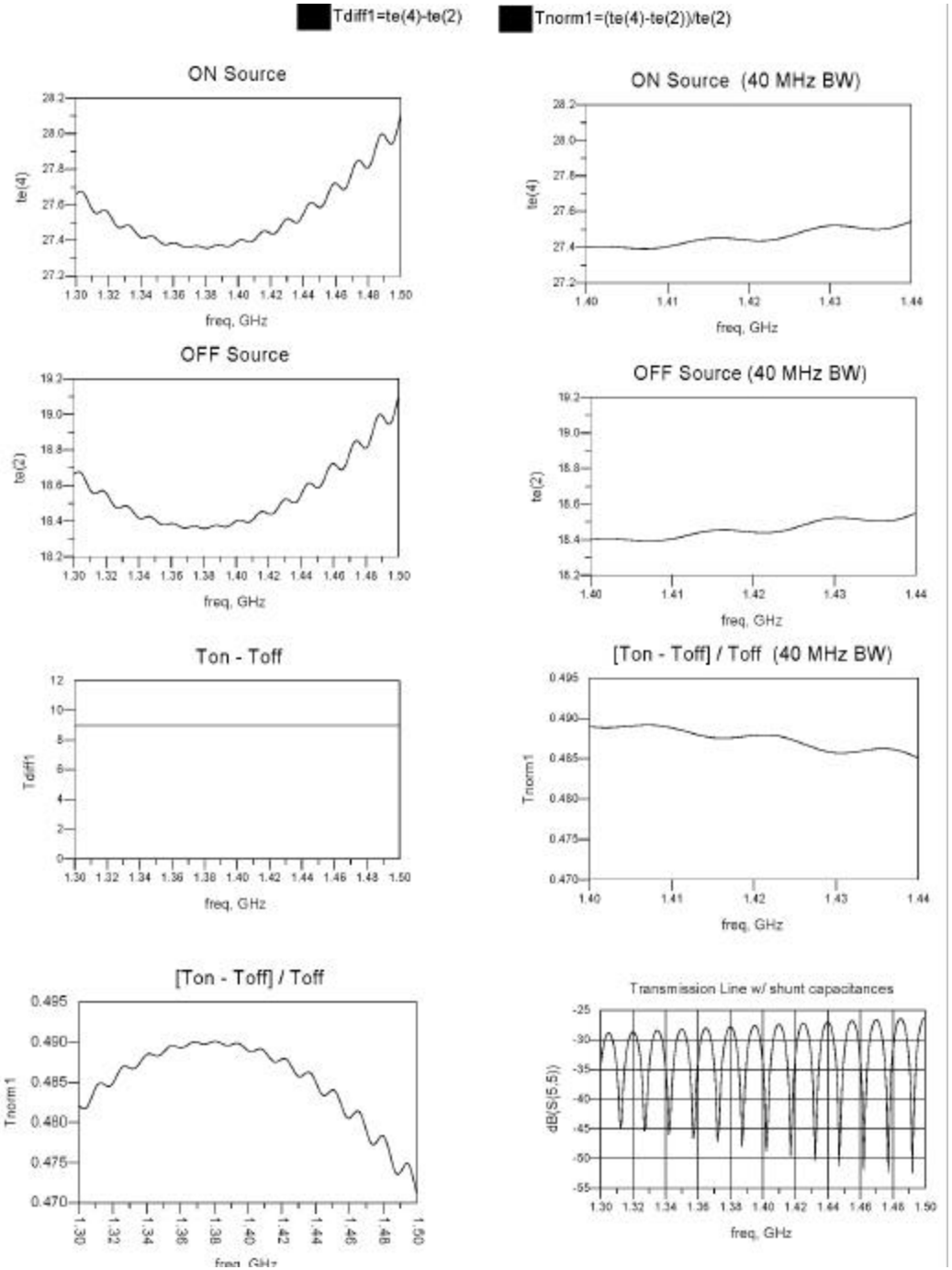


Figure 16 On/off sequence for low noise amplifier and loaded transmission line.

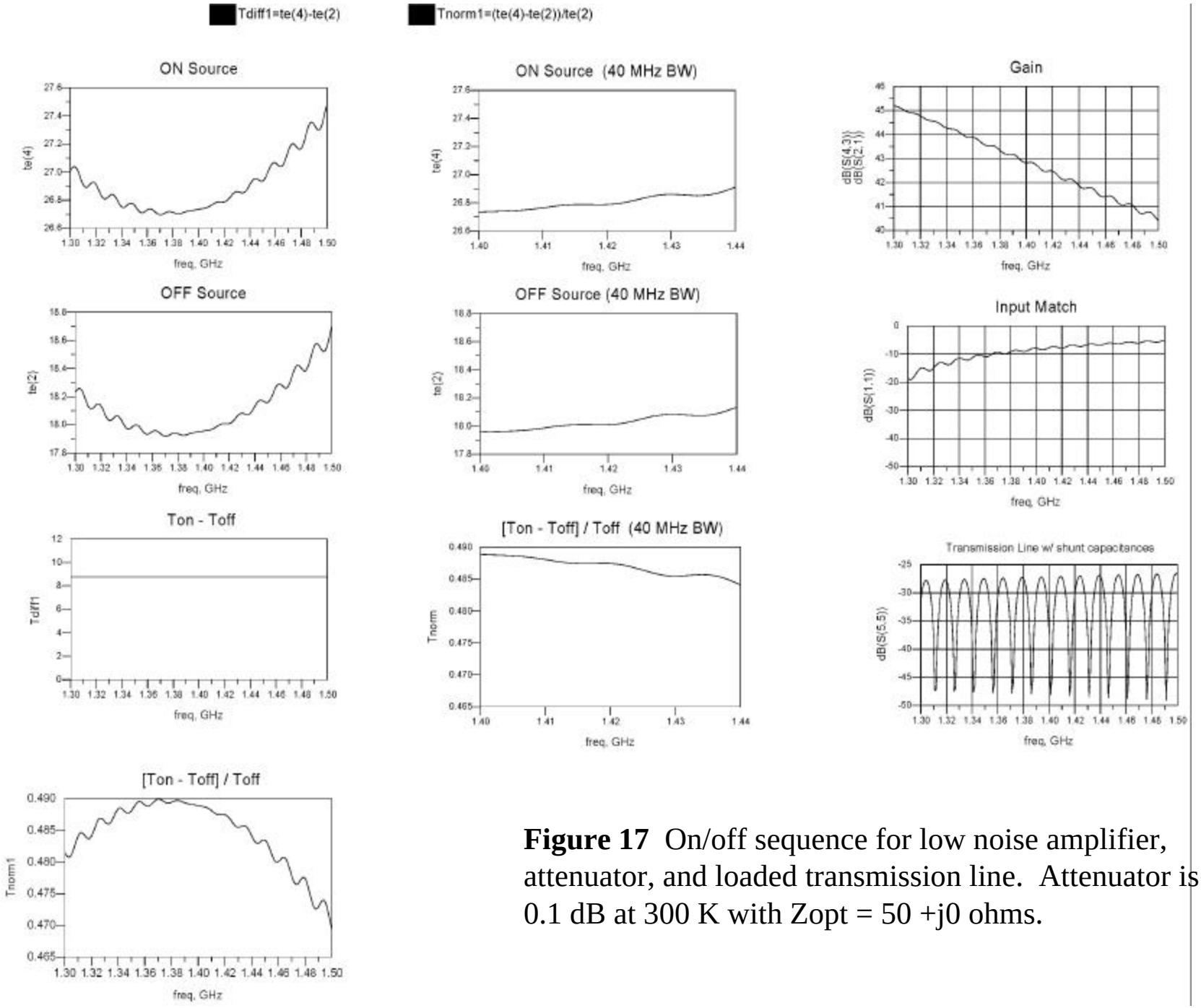


Figure 17 On/off sequence for low noise amplifier, attenuator, and loaded transmission line. Attenuator is 0.1 dB at 300 K with Zopt = 50 +j0 ohms.

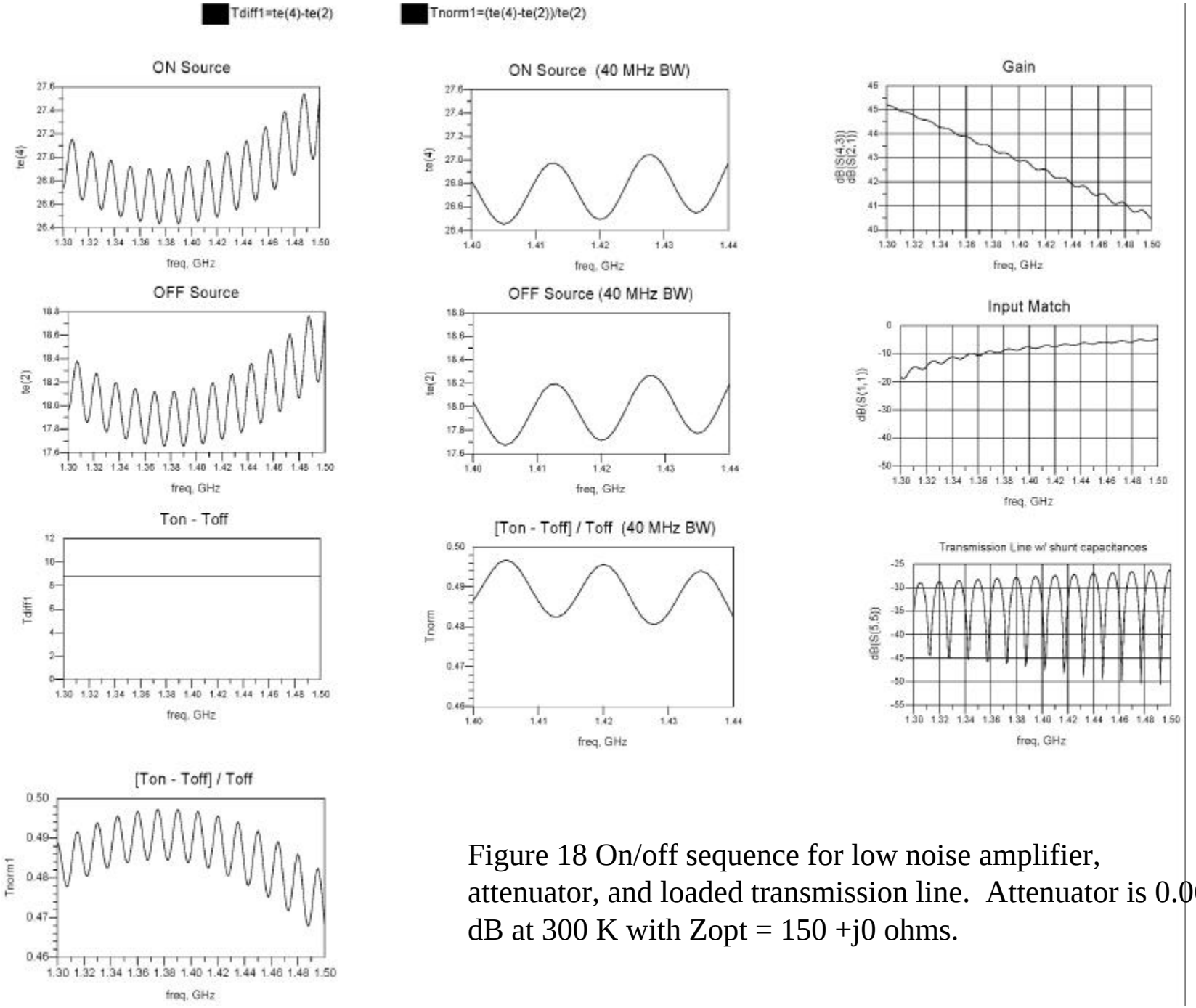


Figure 18 On/off sequence for low noise amplifier, attenuator, and loaded transmission line. Attenuator is 0.06 dB at 300 K with Zopt = 150 +j0 ohms.

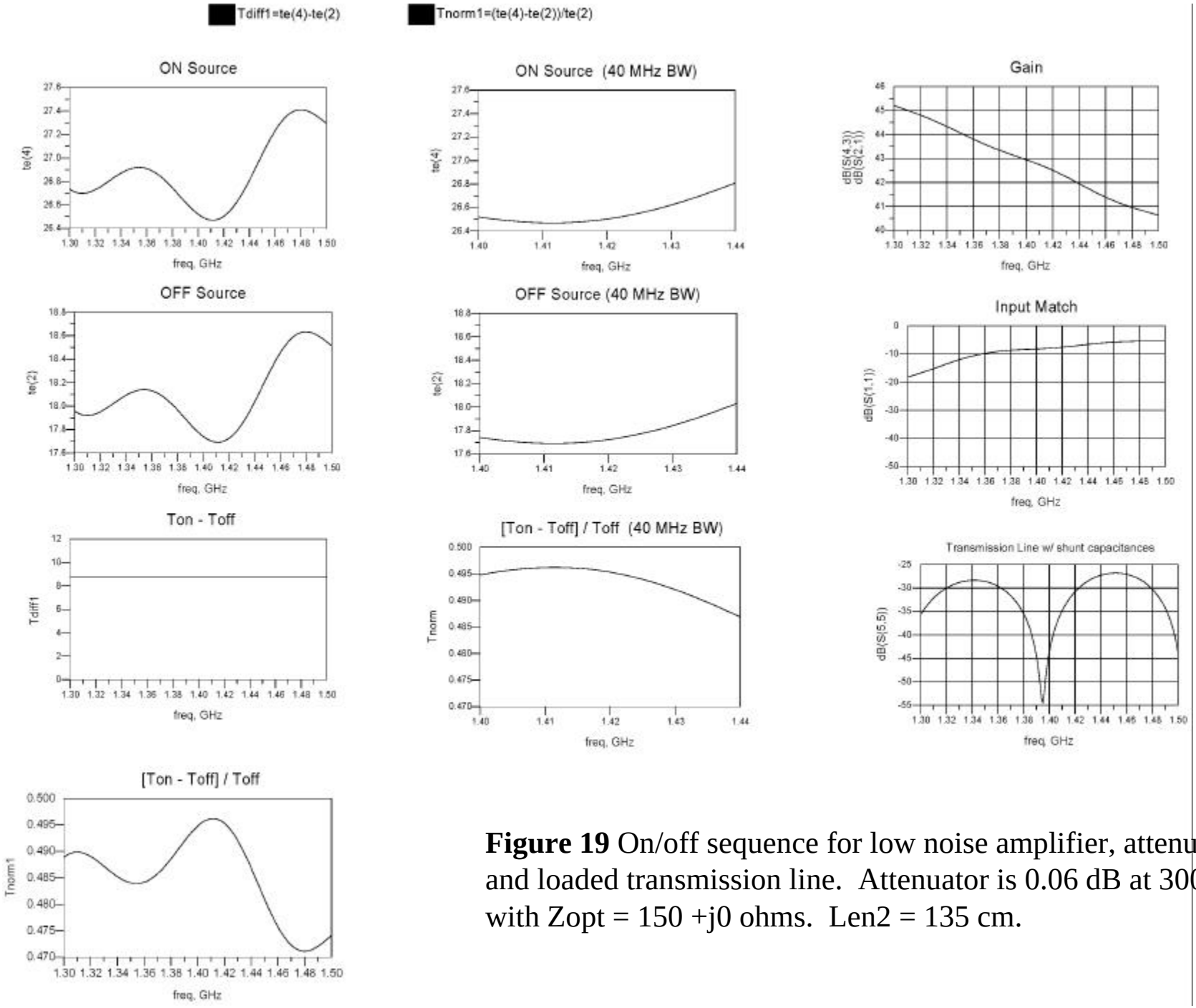


Figure 19 On/off sequence for low noise amplifier, attenuator, and loaded transmission line. Attenuator is 0.06 dB at 300 K with Zopt = 150 +j0 ohms. Len2 = 135 cm.