



AH2 Application Circuit used in a 50 Ohm system

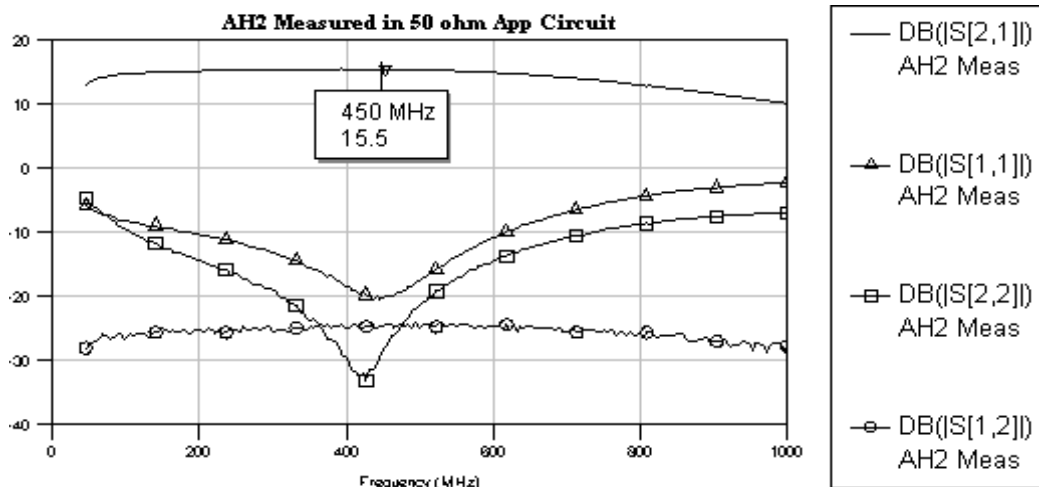
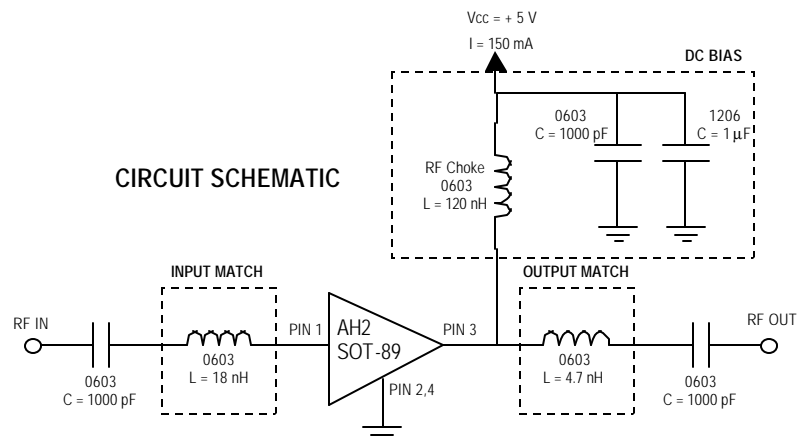
Summary:

The AH2 is generally designed and optimized to work in a 75 ohm system for Cable TV applications. The specifications published in the datasheet are tested in a 75 ohm system for parameters of interested for Cable TV operation. Oftentimes, we are asked whether the device would also work in a 50 ohm system and whether the part would perform with fairly the same specifications. With some minor input and output matching, the device can be optimized to any band within the overall frequency range of 50 – 860 MHz in a 50 ohm system and perform similarly for gain, OIP3, and Noise Figure as published in the datasheet.

Details:

A fairly simple circuit was designed and tested at an IF frequency of **450 MHz** using the AH2 in a 50 ohm system. Right-angle SMA connectors were used to launch the RF signal. Only input and output inductive elements were used to match the device into a 50 ohm system. The circuit schematic, S-parameter plots, and measured performance data for the application circuit are shown below.

Frequency	450 MHz
S21 - Gain	15.5 dB
S11 - Input Return Loss	-20.4 dB
S22 - Output Return Loss	-28.5 dB
S12 - Isolation	-24.6 dB
Output P1dB	22.8 dBm
Output IP3 ¹	39.7 dBm



¹ OIP3 is measured with 2 tones at an output power of 10 dBm/tone at 450 MHz and 460 MHz. The suppression on the largest IM3 product is used to calculate OIP3 using a 2:1 slope rule.