

5. Amplitude Linearity

This test measures the amplitude linearity. This tests how accurately the lock-in measures a signal smaller than full scale.

Setup

We will use the frequency synthesizer to provide an accurate frequency and the AC calibrator to provide a sine wave with an exact amplitude.

Connect the output of the frequency synthesizer to the phase lock input of the calibrator. Connect the output of the AC calibrator to the A input of the lock-in. Be sure to use the appropriate terminations where required. Connect the TTL SYNC output of the synthesizer to the Reference Input of the lock-in.

Set the Synthesizer to:

Function	Sine
Frequency	1 kHz
Amplitude	0.5 Vrms
Offset	off or 0V
Sweep	off
Modulation	none

Set the AC Calibrator to:

Frequency	1 kHz
Amplitude	1.0000 Vrms
Voltage	Off
Phase Lock	On
Sense	Internal

Procedure

- 1) {PRESET} (Turn the lock-in off and on with the [Setup] key pressed)
- 2) Press the keys in the following sequence:

[Source]
Select External reference mode (INTERNAL led off).

[Trig]
Select POS EDGE.

[Channel 1 Display]
Set the Channel 1 display to R.

[Slope/Oct]
Select 24 dB/oct.

- 3) For each of the amplitudes listed below, perform steps 3a through 3c.

AC Calibrator Amplitudes

1.0000 Vrms
100.00 mVrms
10.000 mVrms

- a) Set the AC calibrator to the amplitude in the table.
 - b) Wait for the R reading to stabilize. Record the value of R.
- 4) This completes the amplitude linearity test. Enter the results of this test in the test record at the end of this section.