

Lab #3

Signal generators send an AC signal with some frequency, amplitude and phase.

Spectrum analyzers can be used to measure the power output and frequency of a generator.

1. Connect the signal generator to the spectrum analyzer. Set the frequency of the signal generator to 7 GHz
 - a. Measure the power of the incoming signal.
 - b. Vary the output power of the signal generator between 20dB and -20dB and record the measured power. Does the measured power change like you expect it?

Mixers can be used to combine and upconvert/downconvert signals

2. Use the 3-port mixer. Set one port of the mixer to a constant DC voltage. Connect the other port to the signal generator at 7 GHz.
 - a. What is the output power when the DC voltage = 0V? 1V?
 - b. Change the output power of the signal generator. Record the power
3. Use the 4-port mixer. Set two ports to AC signals with Frequency = 50 MHz, Amplitude = 1V, Phase = 0 deg, and Offset = 0V. On the third port, send an AC signal from the signal generator with .
 - a. What is the power of the signal at the frequency of the signal generator
 - b. What is the power of the signal 50 MHz below and above this frequency?
 - c. If you change phase, offset, or amplitude, how do these powers change?