AN131
Using the Network Analyzer as a Signal Source

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Abstract:

This paper discusses methods to use the AEA Technology network analyzers as a signal source.

Introduction:

The S11 port of a network analyzer produces an RF signal, which may be used as an RF generator. The signal comes in one of two formats, saw tooth sweep (sweep) or continuous wave (CW). We look at two coupling methods, direct an indirect.

Discussion:

First you must decide what type of signal you want to generate: swept or CW. If the circuit under test has a coaxial input, you may use adapters and cables to make the connection.

Direct Connection:

Beware that you do not exceed the input voltage rating of the network analyzer. The direct connection is simply done by connecting the S11 port to the circuit under test with a piece of coaxial cable.

Indirect Connection (injection):

If you want to "inject" the signal there are two methods, voltage or current. The voltage injection is nothing more than a short piece of coax connected to the S11 port; the open end has the center conductor extended out similar to a DVM probe. You merely touch the center conductor to the injection point. You may also use an alligator clip lead to connect the shield to the circuit under test ground (this now becomes a direct connection). For current coupling, you must make an injector loop and couple it to an inductor in the circuit under test. If you need to drop the signal level, use an inline attenuator on the probe or cable. This list shows the step required to make an RF source from the network analyzer:

1. Power up the network analyzer.
2. Set the network analyzer center frequency and sweep width to the desired settings.
3. Attach cable or probe with any required attenuators.
4. Connect (direct or indirect) to the circuit under test.
5. Perform required tests.

For the Bravo series of network analyzers, the units will exhibit some phase modulation (PM) for frequencies above 50MHz. If your circuit under test has an FM or PM detector in it, the signal may look or sound noisy.

Current Coupling signal to CUT

Injector Probe