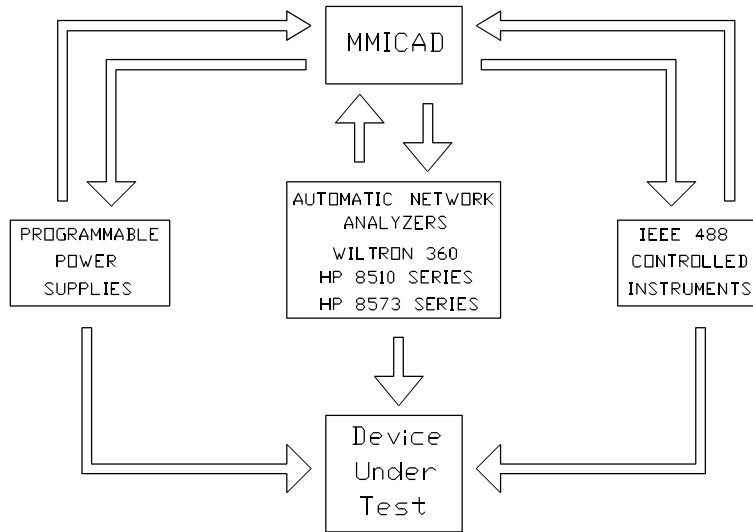


# Computer Aided Testing with MMICAD

## Series #1: Setup and Configuration



MMICAD has the capability of controlling the measurement of a Device Under Test (DUT), and acquisition of data from Automatic Network Analyzers (ANAs), and control devices over the IEEE-488 bus. MMICAD has built-in code to control Wiltron 360, HP8510 series, and HP8700 series ANAs. MMICAD can simultaneously control devices such as programmable power supplies, attenuators, relays, and switches via user defined commands in the IEEE block of a circuit file. The DUT is either:

- (1) a component in a microwave jig,
- (2) within a wafer in an on-wafer probing system, or
- (3) any microwave standard component.

This application note will detail the step by step configuration of MMICAD for Computer Aided Testing (CAT).

### Step #1: Setup of the IEEE-488 Bus Card

MMICAD requires a GPIB interface via the IEEE-488 National Instruments or compatible GPIB card. The ANA and each control Device must be first cabled up to the GPIB card(s)

in your PC. The number of control devices that can be linked to MMICAD is limited only by the number of GPIB cards and the number of devices each GPIB card can address.

The card should be installed per the National Instruments supplied documentation. Two installation files IBCONF.EXE and GPIB.COM in the \MMICAD directory are supplied with the MMICAD program. To install them, run IBCONF.EXE to configure GPIB.COM. The user can specify a GPIB bus device name for the ANAs and control instruments. The next step is to add the following line to your CONFIG.SYS file:

```
DEVICE=\MMICAD\GPIB.COM
```

### Step #2: Configuration of the Defaults in MMICAD

The user must access the "Defaults" section of the Settings menu of MMICAD and update the GPIB bus device names given to the ANAs in Step #1. Within MMICAD, navigate to "E:Defaults" within the Settings menu and press enter. Select "Automatic vector network analyzer model",

and the following pop-up menu "**What is the device name on the GPIB bus for this analyzer?**" will appear. Type the device name for the ANA and press enter. Another pop-up menu will appear asking the user to enter the delay time between sending each control character to the ANA. The default for the fastest transfer is 5ms, but this may be slowed down if fast computer speeds overwhelm the ANA and cause system hang-ups. The user must then navigate back to the first line of Defaults to save the settings.

### **Step #3: Configuring the ANA**

This step is done once, after MMICAD is booted up. It is important to note that prior to acquiring data, the user must first manually calibrate the ANA for a contiguous frequency range.

The first step to configure the ANA for measurement is to navigate to "**A: Configure**" within the **CAT** menu in MMICAD and press enter.

#### **For the Wiltron 360 ANA:**

- An identification screen is displayed indicating the model, software revision number, frequency and power ranges with a request to input the desired number of averaging points.
- MMICAD next acquires the calibrated frequency ranges and asks the user to input the desired measurement range.
- MMICAD then sets the frequency range and displays the actual measurement frequency ranges.

#### **For the HP ANA Series:**

- If the user has the HP8510 ANA series, a prompt for the desired calibration set will be displayed, otherwise the user will be asked if calibration should be activated.
- MMICAD will then interrogate the ANA and display a screen of information that indicates the model number, frequency range, and the number of measurement points.

At this point, MMICAD is now ready to acquire data. The user may activate LOCAL on the ANA for manual control, but should not change the calibration file and the frequency list.