ELECTRONIC DESIGN SPECIALISTS, INC

OPERATION MANUAL FOR THE

EDS-69A TELETESTER II

BACKGROUND

Ma Bell has to put a lot of signals on just two wires for your telephone; signals that carry audio, signals to cause ringing, signals to show when a line has a party waiting, signals to show when a party has picked up or hung up, and so on. Most telephone answering machines, fax machines and other telephone based equipment utilize these signals, making them very difficult to repair or troubleshoot unless you can simulate the telephone company's signals exactly.

Here are some of those signals and how they are represented:

ON LINE: This is a standard "resting" signal of about +50 volts DC measured from the green wire to the red wire. If your house has two lines, the black and yellow wires are used for line two. When your telephone is "on hook", it represents a very high DC resistance, but a low AC impedance, as the ringer circuit has a DC blocking capacitor in series with it.

OFF HOOK: When your phone is lifted from its cradle, the +50 volt signal drops to about +7 volts and the 20 mA current draw signals the phone company to provide dial tone, or if you were being called, to stop the ringing signal. Your telephone will measure about 600 ohms impedance while off-hook. Some answering machines have voltage shifters to cause the normal +7 volts to appear as high as +20 volts; this is designed to allow the answering machine to be disconnected from the line if someone picks up a telephone on the same line, since the phone will drop the voltage below the higher voltage necessary to trigger the answering machine. Normally, the Central Office (CO) will try to regulate the current flow at 20 mA and will vary the voltage up or down to achieve the 20 mA loop.

RING: When someone calls you, a pulsating DC signal of 90 to 150 volts between 20 and 60 Hertz riding on a low impedance line appears. Like all the other signals, it is positive measured from the green to red wires.

PARTY WAITING: When someone calls you, between ring signals the +50 volts is raised higher, to about +70 volts.

HANGUP: When your caller hangs up, your off-hook line voltage and current drops to zero for a fraction of a second before being restored. This is also known as "Calling Party Control", or CPC. This signal may not appear for several seconds after the calling party hangs up.

Many answering machines and some electronic and cordless telephones won't acknowledge a ring signal unless they receive the special pulsating DC, low impedance signal with the +50 to +70 volt signal riding between rings. Most newer answering machines will stop recording when they intercept the CPC signal, instead of recording silence or dial tone. Some fussy (Panasonic) answering machines will hang up right after answering if they do not sense at least 20 mA current sent from the Central Office. The TELETESTER II can simulate all of these signals and check all functions of any single or dual line telephones or answering machines.

OPERATION

Plug a telephone in the MONI jack. This can be an inexpensive telephone that will be used for monitoring the device under test, which is plugged into the TEST jack. If you use a DTMF (Touch-Tone) telephone for the monitor phone, you will have the advantage of being able to test answering machines with remote control functions controlled by the DTMF tone signals.

To check a telephone, plug it in the TEST jack. Leave the monitor phone off-hook; Pick up and hang up the phone under test. You should see the off-HOOK indicator light and extinguish. If the dial tone circuit is switched on, you should hear it, and the MODulation indicator should be at medium brilliance. Dial the phone in the TEST jack, and if it is Touch-Tone, the modulation indicator should light brightly, and the DTMF display should show the number being dialed. Hang up, and switch from VOICE to RING for two seconds, then back to VOICE for four seconds. The TEST phone should ring (unless it uses a mechanical ringer). Pick up the phone again, and you should hear dial tone again. Turn off dial tone by switching TONE switch to the OFF position and talk normally; you should see the MODulation LED flicker. You can monitor all of this from the monitor phone if you want to.

You should be aware of some personalities of the TELETESTER II: If the phone is a rotary, or a pulse-type cordless phone, the DTMF indicator will not display the number dialed. You should also be aware that *, 0 and # show up as , , and when DTFM signals are intercepted. Finally, because the ringer frequency is 60 Hz, some mechanical bell ringers may not ring properly, although all electronic ringer telephones, as well as all answering machines, fax machines and modems will work properly.

To check an answering machine, plug the machine in the TEST jack, and leave TONE switch off. Set the machine to answer, lift the monitor phone off hook, then flip the RING switch on for two seconds, then off for four seconds. You will hear the ring signal in the monitor telephone earpiece. Continue ringing until the machine answers, then leave the switch in the VOICE position. You will see the HOOK indicator illuminate and hear the OGM (Out Going Message) in the telephone. Leave your message, and if you wish to test the CPC function (assuming that the machine has this feature), hang up the monitor telephone. The answering machine should immediately stop recording. Many older machines do not have CPC, and will continue recording. Most machines have VOX (voice operated record) and will stop recording after a few seconds of silence. You can check the beeperless remote machines by dialing the appropriate number on the monitor phone. You may check the dial tone recognition circuitry of the

answering machine by leaving the TONE switch on when ringing the machine. The answering machine should hang up within a few seconds.

All tests should include wiggling plugs and wires and watching the HOOK and MOD indicators to check for intermittent connections.

WARRANTY AND DISCLAIMER

Electronic Design Specialists, Inc. (EDS) warrants this product to be free from defects for a period of three (3) years from the date of purchase. A copy of the bill of sale is required for any claim.

If this product proves to be defective within this time period, the customer will call for return authorization, then mail the unit prepaid to EDS for repair or replacement, at the descretion of EDS.

This warranty does not cover damage caused by shipping, abuse, lightning, internal tampering or modification.

EDS shall not be responsible for any consequential damages caused by the user, and assumes no responsibility for liability due to the misuse of this product causing shock or trauma; the operator assumes all responsibility while using this product and is expected to conduct his or her operating proceedure in a safe and professional manner.

This warranty gives you specific rights, and you may also have other rights which vary from state to state.