

# INSTRUCTION MANUAL



**GREENLEE®**  
**COMMUNICATIONS**

A Textron Company



## Sidekick® SYNC Test Set



**Read and understand** all of the instructions and safety information in this manual before operating or servicing this tool.

Register this product at [www.greenlee.com](http://www.greenlee.com)

© 2011 Greenlee Textron Inc.



---

## Table of Contents

Description .....	5
Safety .....	5
Purpose of This Manual.....	5
Important Safety Information.....	6
<b>SECTION 1—GENERAL</b> .....	11
1.1 Introduction .....	11
1.2 Features .....	12
1.2.1 Copper Test Features .....	12
1.2.2 xDSL Test Features .....	12
1.3 Front Panel .....	13
1.4 Rear Panel .....	14
1.5 Powering ON/OFF .....	14
1.6 Basic Operation .....	15
1.6.1 Dial Pad.....	15
1.6.2 Graphical User Interface (GUI) Navigation.....	16
<b>SECTION 2—COPPER TESTING</b> .....	17
2.1 Starting a Test.....	17
2.2 Test AC Volts .....	17
2.3 Test DC Volts.....	18
2.4 Stress Test.....	19
2.5 Leakage Test .....	23
2.6 Resistance Test.....	24
2.7 Loop Current.....	25
2.8 Additional Tests.....	26
2.8.1 Load Coils .....	26
2.8.2 Circuit Noise, Power Influence and Balance .....	27
2.8.3 Length.....	28
2.8.4 Circuit Loss .....	30
2.8.5 Ground Resistance Test .....	31
2.8.6 Longitudinal Balance Test .....	32
2.8.7 Dial Menu.....	33
2.8.8 Phone Book.....	33

## Table of Contents

2.9 Settings .....	34
2.9.1 Date and Time .....	34
2.9.2 LCD .....	34
2.9.3 Battery .....	35
2.9.4 Firmware .....	35
2.10 Auto Test .....	36
<b>SECTION 3—xDSL TESTING</b> .....	<b>39</b>
3.1 Setup .....	39
3.2 Connecting to Telephone Line .....	40
3.3 Synchronizing .....	40
3.4 Basic Parameters .....	41
3.5 Line Failure Monitor .....	41
3.6 Bits/Tone .....	42
3.7 SNR/Tone .....	42
3.8 Upper Layer Testing .....	42
3.8.1 Ping Test .....	43
3.8.2 Trace Test .....	43
3.8.3 HTTP Test .....	44
3.8.4 FTP Test .....	45
3.9 Bridge Mode .....	45
3.10 Saving xDSL Test Results .....	46
<b>SECTION 4—HPNA TESTING (optional)</b> .....	<b>47</b>
<b>SECTION 5—MAINTENANCE</b> .....	<b>49</b>
5.1 Battery Charging .....	49
5.2 Battery Replacement .....	50
5.3 LCD Lens Replacement .....	50
5.4 Replacement Parts and Accessories .....	50
5.5 Cleaning Instructions .....	51
5.6 Upgrade/Trade-In Program .....	51
5.7 Warranty .....	52
5.8 Service .....	52
<b>SECTION 6—SPECIFICATIONS</b> .....	<b>53</b>

## DESCRIPTION

The Greenlee Communications Sidekick® SYNC Test Set is a handheld testing device that combines analog testing functions with xDSL diagnostic tools. This unit provides an all-in-one installation tool for DSL services.

## SAFETY

Safety is essential in the use and maintenance of Greenlee tools and equipment. This instruction manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided.

## PURPOSE OF THIS MANUAL

This instruction manual is intended to familiarize all personnel with the safe operation and maintenance procedures for the Greenlee Communications Sidekick® SYNC Test Set.

Keep this manual available to all personnel.

Replacement manuals are available upon request at no charge at [www.greenlee.com](http://www.greenlee.com).



**Do not discard this product or throw away!**  
For recycling information, go to  
[www.greenlee.com](http://www.greenlee.com).

All specifications are nominal and may change as design improvements occur. Greenlee Textron Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Sidekick is a registered trademark of Greenlee Textron Inc.

***KEEP THIS MANUAL***

---

## IMPORTANT SAFETY INFORMATION



### SAFETY ALERT SYMBOL

This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.

#### **⚠ DANGER**

Immediate hazards which, if not avoided, **WILL** result in severe injury or death.

#### **⚠ WARNING**

Hazards which, if not avoided, **COULD** result in severe injury or death.

#### **⚠ CAUTION**

Hazards or unsafe practices which, if not avoided, **MAY** result in injury or property damage.



#### **⚠ WARNING**

**Read and understand** this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.

**IMPORTANT SAFETY INFORMATION**

	<b>⚠ WARNING</b>
	Electric shock hazard: Contact with live circuits could result in severe injury or death.

<b>⚠ WARNING</b>
Explosion hazard: Do not operate in an explosive atmosphere. Failure to observe this warning could result in severe injury or death.

<b>⚠ WARNING</b>
Electric shock hazard: <ul style="list-style-type: none"><li>• Do not expose this unit to rain or moisture.</li><li>• Do not use if the unit is wet or damaged.</li><li>• For measurement of Category 1 circuits only. For measurements on circuits NOT directly connected to AC mains power. CAT I, 250 VAC, 250 VDC, 100 mA maximum.</li><li>• Never make measurements on CAT II, CAT III, or CAT IV circuits with this instrument.</li><li>• Use this unit for the manufacturer's intended purpose only as described in this manual. Any other use can impair the protection provided by the unit.</li><li>• Do not operate with the battery compartment open.</li></ul> Failure to observe these warnings could result in severe injury or death.

## IMPORTANT SAFETY INFORMATION

### CAUTION

Electric shock hazard:

- Do not attempt to repair this unit. It contains no user-serviceable parts.
- Do not expose to extremes in temperature or high humidity. Refer to “Specifications.”
- If the unit becomes visibly coated with condensation, allow its temperature to equalize with the surroundings and dry it thoroughly before use.
- Use of the unit while damp may affect high impedance measurements or may impair the unit’s means of protection.
- Do not allow dust or dirt to build up.
- The supplied AC or mains charger is suitable for indoor use only.

Failure to observe these precautions may result in injury and can damage the unit.

## Measurement Categories

These definitions were derived from the international safety standard for insulation coordination as it applies to measurement, control, and laboratory equipment. These measurement categories are explained in more detail by the International Electrotechnical Commission; refer to either of their publications: IEC 61010-1 or IEC 60664.

### Measurement Category I

Signal level. Electronic and telecommunication equipment, or parts thereof. Some examples include transient-protected electronic circuits inside photocopiers and modems.

### Measurement Category II

Local level. Appliances, portable equipment, and the circuits they are plugged into. Some examples include light fixtures, televisions, and long branch circuits.

### Measurement Category III

Distribution level. Permanently installed machines and the circuits they are hard-wired to. Some examples include conveyor systems and the main circuit breaker panels of a building's electrical system.

### Measurement Category IV

Primary supply level. Overhead lines and other cable systems. Some examples include cables, meters, transformers, and other exterior equipment owned by the power utility.

#### Warning

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used in accordance with the instructions in the user manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designated to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case, the user, at his or her expense, will be required to take whatever measures may be required to correct the interference.



## **SECTION 1—GENERAL**

### **1.1 Introduction**

The Sidekick SYNC test set combines the industry leading features of a digital Sidekick tool with our easy-to-use xDSL sync testing for today's Telco premise technician. It includes the industry trusted and patented Stress test and synchronizes with today's ADSL and VDSL circuits, providing a physical and service layer test solution for all your needs. The Sidekick SYNC test set is the best choice for an easy-to-use, reliable, and cost-effective tool for all Outside Plant and Customer Premise testing requirements.

The Sidekick SYNC test set's patented Stress test measures the audible noise produced on a pair when it is "stressed" as a result of a 90 dBmC longitudinal excitation. This test determines the capacitive and series resistance balance characteristics of a twisted pair at any point along the pair. It is capable of identifying DC resistive or capacitive imbalances undetected by other subscriber loop tests. The Stress test is also highly effective in identifying imbalances produced by series resistance opens (high joints).

The Leakage test detects intermittent resistance faults that do not appear under normal VOM tests. When a faulted pair is taken out of service, galvanic action forms an insulating oxide layer over the fault. When returned to service, such pairs develop "noisy static" in a relatively short period of time. The Leakage test uses 150 volts DC to "punch through" the galvanic corrosion, thus revealing the fault.

## 1.2 Features

### 1.2.1 Copper Test Features

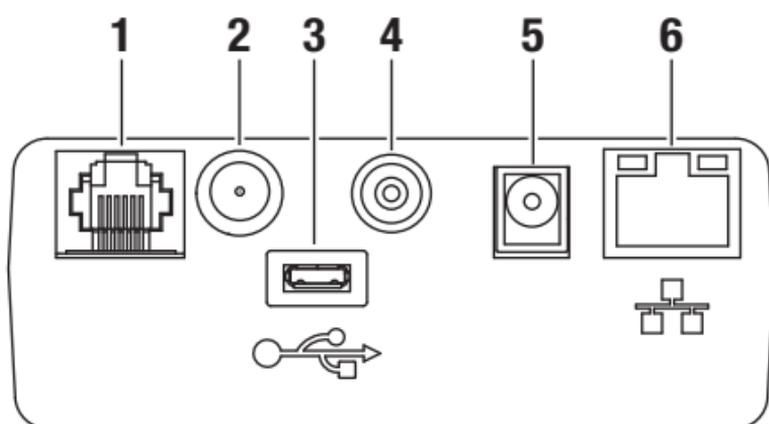
- Stress test
- Leakage test
- Volt-Ohmmeter
- Distance to Open measurement
- Auto test function
- Identifies overall circuit loss from C.O. to point of test
- Measures power influence on working lines
- Verifies loop current on working lines
- Holds connection on C.O. dial-in line when switching between Circuit Noise and Power Influence tests
- Locates up to five load coils
- Field replaceable test leads
- Single hookup for Tip-Ring, Tip-GND, and Ring-GND testing
- Simplex tracing tone
- Measures ground resistance on working lines
- DTMF dialer with Phone Book

### 1.2.2 xDSL Test Features

- Measures basic parameters including show time, upstream/downstream rates, attenuation, capacity, and signal-to-noise margin
- Detects error and alarms
- Bits per tone graph to make it easy to identify interferers to xDSL signal
- Modem emulation
- IP Ping towards the xDSL or LAN



## 1.4 Rear Panel



1. RJ-11 connector for xDSL connection
2. COAX connector
3. USB port connector
4. Ground jack
5. Power connector
6. RJ-45 connector for 10/100 Ethernet

## 1.5 Powering ON/OFF

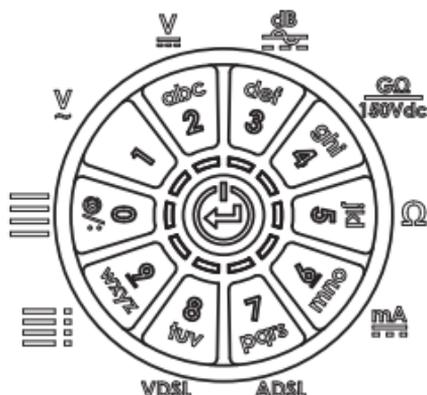
Press the center button of the dial pad  to turn the test set ON from the OFF state.

To turn the test set OFF, press and hold the **ENTER** button for 2 to 3 seconds.

## 1.6 Basic Operation

### 1.6.1 Dial Pad

The Sidekick SYNC test set uses a membrane dial pad for operational control of its testing functions. Each dial position is described in the table below.



When a dial pad button is pressed, the adjacent LED illuminates and the display runs the corresponding function. When the Sidekick SYNC test set is in alphanumeric edit mode, all of the function LEDs illuminate and the buttons are used to enter the appropriate dial character. To cycle through the alphanumeric keys, press the button repeatedly before all of the LEDs turn off. Back space is performed with the Left ◀ arrow key, and spaces are entered with the Right ▶ arrow key or with the **1** key. Press the **ENTER** key to enter and exit the alphanumeric entry field.

Name	Function	Dial Position	Dial Character
Menu	Additional tests	0	:/@-_
VAC	Measure AC volts	1	
VDC	Measure DC volts	2	abc
Stress	Run a Stress test	3	def
Leakage	Measure leakage	4	ghi
Resistance	Measure resistance	5	jkl
Loop Current	Measure current	6	mno
ADSL	Run ADSL1/2/2+ tests	7	pqrs
VDSL	Run VDSL2 tests	8	tuv
Auto test	Run pre-defined and user-defined tests	9	wxyz

## 1.6.2 Graphical User Interface (GUI)

### Navigation

#### Contrast and Brightness Adjustments

Contrast and brightness adjustments are found under “Additional Tests → Settings → Display.” Use the Up and Down ▲▼ arrow keys to increase or decrease contrast or brightness settings.

#### Analog Measurements

The following screen shows the layout of all analog measurements.



1. Connection type
2. Current function
3. Measurement
4. Measurement units
5. Battery status

#### Non-analog Measurements

Basic non-analog screens can be navigated using the arrows.

All menus are organized from left to right; left is the highest level. To enter lower levels, use the Right ► arrow key. To move to higher levels, use the Left ◀ arrow key. Also use the Left ◀ arrow key to go back to the previous menu.

Use the **ENTER** key to access submenus and access Save and Recall screens.

## SECTION 2—COPPER TESTING

### 2.1 Starting a Test

To start a copper test, simply press the desired measurement key:

- 1 AC Volts
- 2 DC Volts
- 3 Stress
- 4 Leakage
- 5 Resistance
- 6 Loop Current
- 9 Auto test
- 0 Additional Tests

### 2.2 Test AC Volts

AC Volts is the first test on the menu and first test entered upon. The AC Volts screen will appear and immediately start measuring the voltage across Tip and Ring.

*Note: Normally there should not be any measurable amount of AC voltage on a twisted pair. If AC voltage is detected on a telephone pair, this problem must be isolated and corrected immediately because AC voltage may affect other tests.*

#### **WARNING**

Electric shock hazard:

If more than 25 volts of AC is detected on the pair, or between the Tip and Ground or Ring-to-Ground, check your company's safety procedures for working with hazardous voltage levels.

To perform an AC Volts test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to Ground.
2. From any screen press **1** on the dial pad. This menu is also a default on power up.

3. Toggle the Up ▲ arrow key to switch between Tip-to-Ground and Tip-to-Ring.

Toggle the Down ▼ arrow key to switch between Ring-to-Ground or Tip-to-Ring.

Toggle the Left ◀ arrow key to reverse the pair.

Toggle the Right ▶ arrow key to switch between the COAX connector and RJ-11 jack.

The upper left hand corner of the display will indicate the connection method.



4. To exit the AC Volts measurement, press a desired menu on the dial pad.

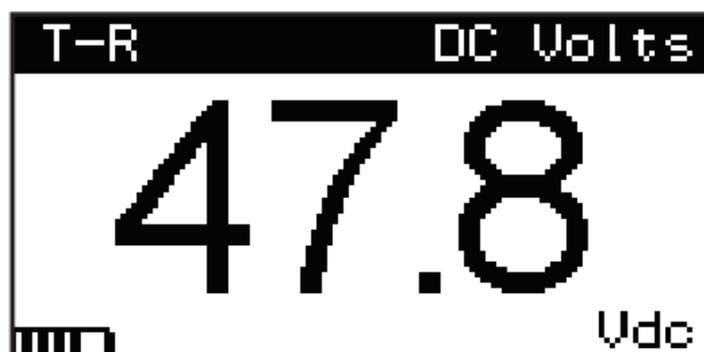
## 2.3 Test DC Volts

The DC Volts measurement works in the same manner as the AC Volts measurement. Lines connected to the C.O. should indicate battery voltage. If correct battery voltage is on the pair, a negative symbol will appear left of the voltage reading.

To perform a DC Volts test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to Ground.
2. From any screen press **2** on the dial pad.

*Note: If the Tip-to-Ring reading is a positive voltage, either the test leads or the C.O. battery is reversed on this pair.*



3. Toggle the Up ▲ arrow key to switch between Tip-to-Ground and Tip-to-Ring.  
Toggle the Down ▼ arrow key to switch between Ring-to-Ground or Tip-to-Ring.  
Toggle the Left ◀ arrow key to reverse the pair.  
Toggle the Right ▶ arrow key to switch between the COAX connector and RJ-11 jack.  
The upper left hand corner of the display will indicate the connection method.
4. To exit the DC Volts measurement, press any other Test Menu.

## 2.4 Stress Test

When Stress test is activated, the Sidekick SYNC test set stresses the pair under test with a 90 dBrnC longitudinal signal. This signal drives a current through any fault present on the pair. The fault converts the longitudinal current into metallic voltage at the fault, which in turn produces high stressed noise readings on the unit. These stressed noise (dBrnC) readings should not be confused with noise metallic (dB) readings taken with subscriber loop test sets. The Stress test is more sensitive to pair imbalance problems than noise metallic and ordinary longitudinal balance tests.

The 90 dBrnC signal, a simplex tone, is inaudible to the subscriber as long as Tip, Ring, and Ground are connected and the pair is balanced. If either Tip or Ring is disconnected during testing, or the line is unbalanced, the tone will become audible to the subscriber.

Because the Sidekick SYNC test set does not draw loop current when performing the Stress test, there is no need to dial a quiet termination for on-hook measurements. This is also advantageous because loop current drawn by standard noise measurement sets can mask some faults. The two most ideal testing conditions are working-idle lines (on-hook with battery) and completely idle lines (disconnected from the C.O., Litespan®-2000, or pair-gain equipment).

The Stress test identifies and isolates:

- High joints or high resistance opens (series resistance faults)
- Capacitive imbalances (conductor lengths are unequal)
- Unbalanced load coils or build-out networks

- Crosses
- Grounds
- Split pairs

*Note: The Stress test does not identify shorts because a shorted pair is balanced and will produce good stressed noise readings. Use the Leakage test to identify shorts.*

If the test set is properly connected to a pair but lacks a solid ground connection, the reading will be inaccurate. To verify a good ground:

1. Connect the test lead; black to Tip, red to Ring, and green to Ground.
2. Press **3** on the dial pad to select the Stress test.
3. Remove either the Tip or Ring test lead.

The ground is good if 70 dBnrc or higher is indicated on the LCD. Lower readings may indicate a defective Ground or “short loop.”

When activated, the Stress test screen will appear and immediately start measuring the Tip-to-Ring stress. You can either perform this test by bridging across the pair at any point along its length, or by opening the loop and testing in each direction. It is advisable to perform a final test from the subscriber’s protector (SNI, NI, NID, etc.).

To perform the Stress test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to Ground.
2. Depress **3** on the dial pad to select the Stress test.



3. Stressed noise level reading will now be indicated on the LCD. When performing the Stress test on complete end-to-end circuits, use the following noise metallic readings (as a guide) to determine pair quality.

Scale: 0 to 99.0 dBrnC

Acceptable: 0 to 20 dBrnC

Marginal: 21 to 30 dBrnC (test further)

Unacceptable: above 30 dBrnC

4. To exit the Stress measurement, press a desired menu on the dial pad.

*Note: The Tip-to-Ground and Ring-to-Ground measurements are not applicable to the Stress test and therefore are not displayed in the LCD.*

### **Stress Test Effectiveness**

The Stress test identifies capacitive imbalances (i.e., unequal conductor lengths) and DC problems (i.e., crosses and grounds) anywhere along the length of a dry or idle-working pair. However, series faults (i.e., high resistance opens and bad splices) that cause static noise on a single wire will read below 30 dBrnC if there is less than 1,000 feet of wire beyond the fault.

*Example:* A test is performed from the cross-connect box toward the customer premise with the fault located somewhere between the technician and the customer. The test set may not display high stressed noise readings (over 30 dBrnC) if there is less than 1,000 feet of wire lying beyond the fault. Therefore, in short loop testing, if the noise reading is higher than other pairs sampled in the binder group, there may be a series fault in the pair. Testing from the customer end toward the C.O. will confirm this.

### **Questionable Cables**

As a cable deteriorates, the stressed noise readings on all pairs will begin to rise. To reduce repeat service calls, use the pair with the lowest reading.

### **Equipment Balance**

The Stress test is also effective in isolating poorly balanced C.O. equipment. In this case, test toward the field and then toward the switch at the mainframe. Use the same stressed noise criteria for C.O. equipment as for a pair.

Mechanical C.O.s (i.e., #1 x BAR, #5 x BAR, S x S) tend to exhibit higher stressed noise readings in an idle state. To compensate, perform the Stress test with the battery removed or into quiet termination. In addition, a #5 ESS-type C.O. occasionally pulses the test set in the Stress test mode. The pulse is rhythmic and usually measures just 2-4 dBrnC.

### Notes:

- *5A Regs (Range Extenders) on a customer line will appear unbalanced in an idle state. As a result, stressed noise readings will be high. If you know or suspect that there is a 5A Reg on the line, perform the Stress test with the battery removed or to quiet termination.*
- *A Litespan®-2000 system will cause a pair to exhibit higher than normal stressed noise readings (approximately 40 dBnC) due to equipment termination. Either disconnect the pair on the Litespan®-2000 side, or test good pairs in the area to determine normal noise readings.*

### Testing DSSC, DAML, or UDC Pair Gain Lines

DSSC, DAML, and UDC pair gain lines carry approximately 70 to 130 volts DC between the Central Office Terminal (COT) and the Remote Terminal Unit (RTU) located at the subscriber end. These lines also exhibit stressed noise readings of 80 dBnC and higher in the Stress test mode. The excessive voltage on these lines will not harm the test set, but the readings become invalid. To ensure accurate readings when testing pair gain lines, follow the simple rules listed below.

1. Become familiar with your company's procedures regarding disabling a pair gain system that serves more than one customer.
2. If local procedures permit, disconnect the C.O. pair from the RTU. Or, if so equipped, use the disconnect switch on the RTU to isolate the C.O. pair. The line running between the COT and RTU will revert to a POTS line in approximately 60 seconds. Perform the unit's tests as usual.

*Note: The COT may transmit a 130 DC volts pulse every one to five minutes. This pulse will momentarily increase the reading on the LCD, but will not harm the instrument.*

3. Full path (subscriber to C.O.) testing can be accomplished by disconnecting and jumping past the RTU.

*Note: Testing pair gain lines from the subscriber side (instrument to RTU) can be done without disabling or disconnecting the RTU.*

## Troubleshooting Tips

The closer you are to the source of the trouble, the higher the stressed noise readings will be.

*Example:* If a pair exhibits a reading of 40 dBrnC on the F2 distribution at the cross-connect and a reading of 50 dBrnC at the protector/SNI, you can assume that the trouble is closer to the customer premises. If stressed noise readings decrease (below 50) as you move toward the cross-connect or beyond the customer's serving terminal, you can assume that you were closer to the trouble at the protector/SNI.

The test set will read pulses sent across the pair from Maintenance Test Units (MTUs) when in the Leakage test mode. If this happens, simply reverse the polarity by pressing the Up ▲ arrow key. MTUs will also create an imbalance on the line when you test from the customer side. To compensate, remove the MTU from the line while performing the Stress test from the customer side.

Construction Wire ("C" Rural) will produce high stressed noise readings (50+ dBrnC). In this case, simply verify that the wire reads the same at both ends.

## 2.5 Leakage Test

The Leakage test detects intermittent resistance faults that do not appear under normal VOM tests. When pairs with resistance faults are vacant, galvanic action forms an insulating oxide layer over the faults, leaving them undetectable by standard ohmmeters. When placed into service, such pairs develop "noisy static" in a relatively short time. The Leakage test uses 150 volts DC to "punch through" the galvanic corrosion, thus revealing the fault.

To perform a Leakage test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to Ground.
2. Press **4** on the dial pad.
3. Toggle the Up ▲ arrow key to switch between Tip-to-Ground and Tip-to-Ring.

Toggle the Down ▼ arrow key to switch between Ring-to-Ground or Tip-to-Ring.

Toggle the Left ◀ arrow key to reverse the pair.

Toggle the Right ▶ arrow key to switch between the COAX connector and RJ-11 jack.

The upper left hand corner of the display will indicate the connection method.



4. For best results, leave the polarity in either direction for at least 15 seconds. Then change it again and continue to check the readings. A sudden drop in the resistance, or readings that waver, are a sign of galvanic corrosion break down. Also the Tip-to-Ground and Ring-to-Ground measurement must be rechecked for any change after the polarity reversal.
5. To exit the Leakage measurement, press any other Test Menu.

## 2.6 Resistance Test

The Resistance test is separate from the Leakage test because it does not apply the 135 volts DC to the pair under test. Use this test to measure resistances less than 1 MΩ. When activated, it will automatically display the Tip-to-Ring resistance.

To perform a Resistance test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to ground.
2. Press **5** on the dial pad.



3. Toggle the Up ▲ arrow key to switch between Tip-to-Ground and Tip-to-Ring.

Toggle the Down ▼ arrow key to switch between Ring-to-Ground or Tip-to-Ring.

Toggle the Left ◀ arrow key to reverse the pair.

Toggle the Right ▶ arrow key to switch between the COAX connector and RJ-11 jack.

The upper left hand corner of the display will indicate the connection method.

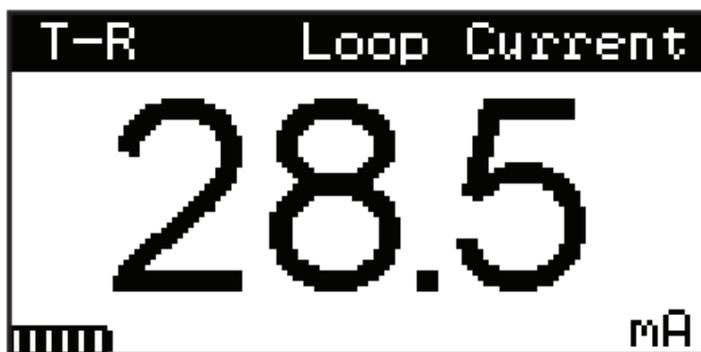
4. To exit the Resistance measurement, press any other Test Menu.

## 2.7 Loop Current

Loop current is inversely proportional to resistance, meaning that as resistance increases, a pair's loop current decreases. Therefore, the Loop Current test is an important indicator of resistance problems on an active pair. When activated, the Loop Current screen will appear and immediately start measuring the Tip-Ring loop current.

To perform the Loop Current test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to Ground.
2. Press **6** on the dial pad.



3. Toggle the Up ▲ arrow key to switch between Tip-to-Ground and Tip-to-Ring.

Toggle the Down ▼ arrow key to switch between Ring-to-Ground or Tip-to-Ring.

Toggle the Left ◀ arrow key to reverse the pair.

Toggle the Right ▶ arrow key to switch between the COAX connector and RJ-11 jack.

The upper left hand corner of the display will indicate the connection method.

*Note: The Ring-to-Ground current should be at least 1.5 times the Tip-to-Ring loop current. Otherwise, there may be a ground fault at the C.O. There should be no Tip-to-Ground current.*

The following chart can be used as a guideline for pair performance:

Scale: 0 to 100 mA

Acceptable: 23 mA and higher\*

Marginal: 20 to 23 mA

Unacceptable: below 20 mA

\*Per Bellcore standards. Specific Company or local standards may be different.

4. To exit the Loop Current measurement, press any other Test Menu.

## 2.8 Additional Tests

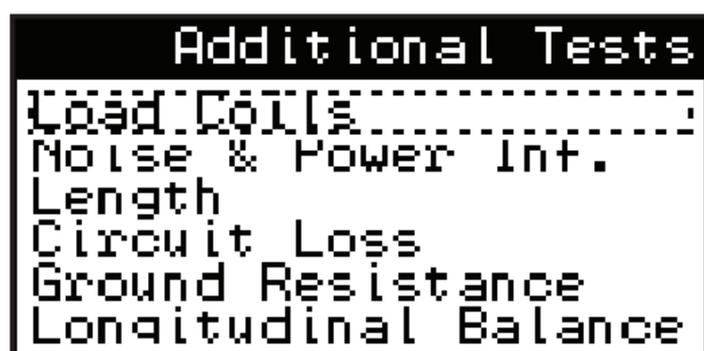
To execute Additional tests, press **0** on the dial pad.

### 2.8.1 Load Coils

The Sidekick SYNC test set can detect up to four load coils on a pair. When activated, the Load Coils screen will appear.

To perform the Load Coils detection test, follow these steps:

1. Connect the test leads; red to Ring, black to Tip, and green to Ground.
2. Press **0** on the dial pad, and move the cursor all the way up to stop on "Load Coil."



3. With "Load Coil" highlighted, press **ENTER**.



Until a reading is in progress “-” is displayed. When it is done, a number from 0 to >5 will be displayed.

4. To exit the Load Coils test, press any other Test Menu.

*Notes:*

- *It is highly recommended that the C.O. battery be disconnected during the Load Coils test. Some C.O. battery and office connections can mask from one to all coils from being detected.*
- *The Tip-to-Ground and Ring-to-Ground measurements are not applicable to the Load Coils test and therefore are not displayed in the LCD.*
- *Three or fewer load coils may be detected if problems exist on a pair. Example: If the trouble is on the end segment of a pair, the fourth load coil may not be detected.*

## **2.8.2 Circuit Noise, Power Influence and Balance**

Circuit noise on cable pairs is generated either internally by pair imbalances (including cross talk), or externally by C.O. equipment, subscriber equipment, or electromagnetic interference (EMI) equipment (radio transmitters, generators, transformers, etc.)

Normally, a poor ground or sheath on the cable pair or the external equipment allows noise to “leak” onto the cable pair. The Noise test measures the amount of Circuit Noise present across Tip and Ring.

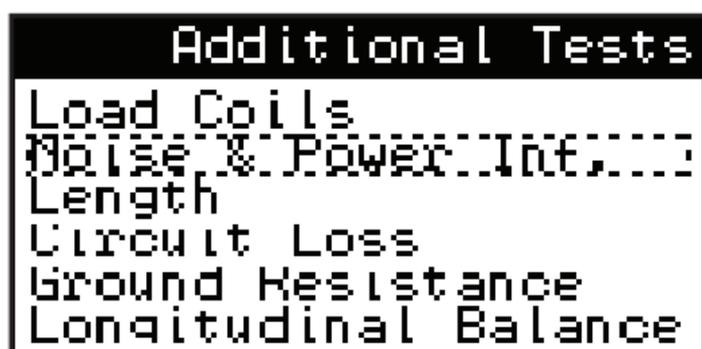
The Pwrlnf (Power Influence) test specifically identifies electromagnetic interference (EMI) from external sources (mainly power lines). When this test is activated, the test set places 600  $\Omega$  of resistance across Tip and Ring, simultaneously measuring the noise to ground.

Balance is a longitudinal balance measurement that is calculated by subtracting Noise (Circuit Noise) from Pwrlnf (Power Influence). It represents the overall quality of the Power Influence and Circuit Noise measurements. When the Pwrlnf (Power Influence) and Noise (Circuit Noise) measurements are complete, the Balance is automatically calculated and displayed.

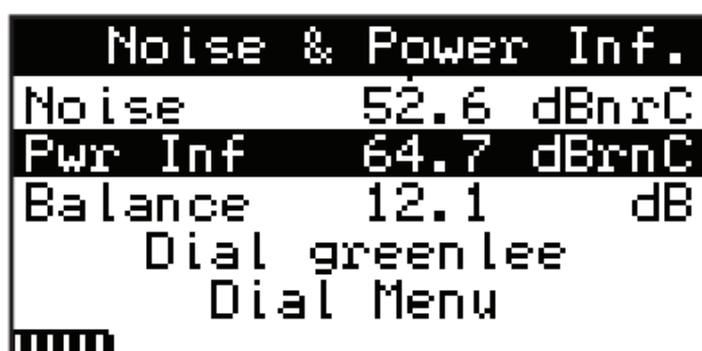
In the Test Menu, Circuit Noise and Power Influence tests are listed together as “Noise & Pwrlnf.” These tests are performed consecutively in the same test screen.

To perform the Noise (Circuit Noise) and PwrInf (Power Influence) tests, follow these steps:

1. Connect the test leads; red to Ring, black to Tip, and green to Ground.
2. Press **0** on the dial pad, and move the cursor to “Noise & PwrInf.”



3. Press **ENTER** to start the test.



4. Noise level will be displayed on the first line. Push Down ▼ arrow key to measure Power Influence.
5. When valid measurements are taken for Noise and Power Influence, the Balance calculation will be displayed.
6. If dialing is necessary, navigate to Phone Book using the Down ▼ arrow key. Refer to Section 2.7.2 for dialing instructions.
7. To exit the Noise test, press any other Test Menu.

### 2.8.3 Length

The Distance to Open test measures the distance to an open, mutual capacitance, and conductor to ground capacitance of the pair. When this test is activated, the Distance to Open test screen will appear and immediately start measuring the Tip-to-Ring mutual capacitance and computing the pair’s distance based on the nF/mile value shown at the top-left of the LCD.

The default value is 83.0 nF/mile for the Tip-to-Ring measurement and 125 nF/mile for Tip or Ring-to-Ground. When the Down ▼ arrow key is pressed, the Tip-to-Ground measurement will be displayed and the nF/mile will automatically change to 125 nF/mile default setting to compute the distance. The “-----” indicates that the reading has not been taken. The mutual capacitance and capacitance to ground can be changed by pressing the **ENTER** button. To exit the capacitance setup screen, press the Left ◀ arrow key.

To perform the Distance to Open test, follow these steps:

1. Connect the test leads; red to Ring, black to Tip, and green to Ground.
2. Press **0** on the dial pad, and move the cursor to “Length.”
3. To start the Length test, press **ENTER**.

Length			
TR	83.0	nF/mi	
XG	51.6	nF/mi	
TR	41.9	nF	2667 ft
TG	26.3	nF	2688 ft
RG	26.3	nF	2688 ft

4. To edit the nominal value of the mutual (TR) or conductor to ground capacitance, press **ENTER** again and change the fields UNITS, TR, and XG.

Length Menu	
UNITS:	US/IMPER.
TR(nF/mi):	83.0
XG(nF/mi):	51.6

Use **ENTER** (↻) ▲▼ and dial pad alphanumeric buttons to navigate these changes.

When done, exit the editing with Left ◀ arrow key.

5. To measure length of COAX cables, press the Right ▶ arrow key. Adjust the capacitance per length for COAX per Step 4 above.

6. To exit the Length test, press any other Test Menu.

### *Notes:*

- *Take extra care to set the correct uf/mile values because they change the distance to open measurement by 66 feet for every 0.001 uf/mile of error.*
- *If a particular cable's length is known, the capacitance values can be determined by altering them until the length equals the known length of the cable. If this is done on a known good pair, the distance to an open on a bad pair will generally be more accurate.*
- *Once the values are changed in memory, they will remain changed even if the test set is turned off. The values will be lost and default values returned when the batteries are changed.*

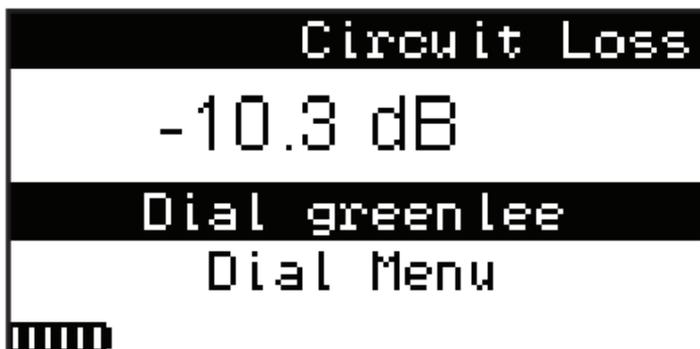
## 2.8.4 Circuit Loss

The Ckt Loss (Circuit Loss) test measures the signal attenuation on a pair, from the C.O. to the point of test. Circuit loss is expressed in negative units of decibels. The 0 dB reference for circuit loss is generated by the C.O.s 1004 Hz test signal or the multi-tone signal generators. If you measure these signals at their output, the Sidekick SYNC test set will read at or about 0 dB, indicating no loss. As you travel farther away from the test signal's injection point, you will encounter more loss due to the increased distance the signal must travel. Since circuit loss is cumulative, the reading taken at the point of test indicates the total loss present on a pair.

To perform a Ckt Loss (Circuit Loss) test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to Ground.
2. Press **0** on the dial pad, and move the cursor to the "Circuit Loss" Menu.
3. To start the Ckt Loss test, press the **ENTER** button.

The Circuit Loss reading appears on the top of the screen followed by the Phone Book and Dial Menu.



4. Use the Phone Book or Dial Menu to dial the appropriate number using the internal DTMF function.

Refer to Section 2.7.7 for more information on these features.

*Note: If the frequency generator test number sends slope, sweep, or selected frequencies, leave the unit set in the Ckt Loss position. Each change in frequency will register a new reading on the Ckt Loss test screen.*

The following chart can be used as a guideline for pair performance:

Scale: +1 to -15 dB

Acceptable: 0 to -8.5 dB\*

Marginal: -8.6 to -10.0 dB

Unacceptable: below -10 dB

\*Per Bellcore standards. Specific Company or local standards may be different.

## 2.8.5 Ground Resistance Test

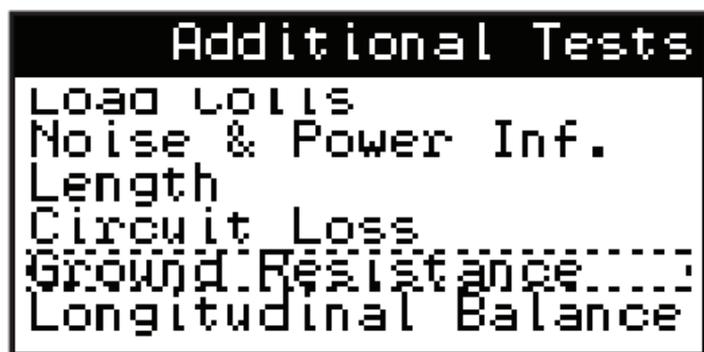
Ground resistance testing is useful when evaluating whether a station, or premise, ground is sufficient. The reading is a direct indication of the ground integrity and measures the earth resistance. High readings are potentially due to short ground rods, poor ground connections, etc. Readings greater than 25  $\Omega$  are considered failing for DSL (consult local practices for exact values).

The Sidekick SYNC test set uses a three-wire ground resistance test method which requires CO battery. Error messages will be displayed on the LCD to indicate improper cord hookup.

To perform a Ground Resistance test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to Ground.

2. Press **0** on the dial pad, and move the cursor to “Ground Resistance.”



3. To start the test, press the **ENTER** button.

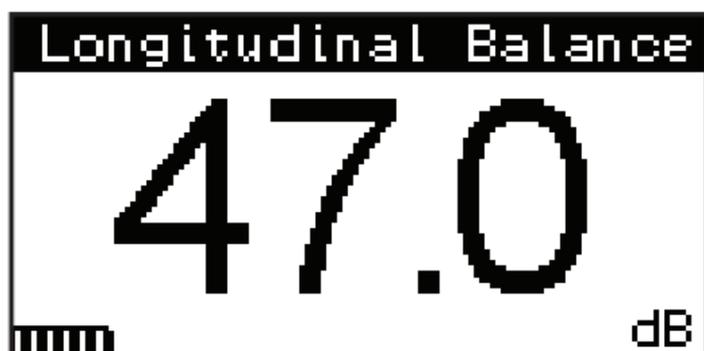


4. To exit the Ground Resistance test, press any other Test Menu.

### 2.8.6 Longitudinal Balance Test

Follow the steps below to measure Longitudinal Balance:

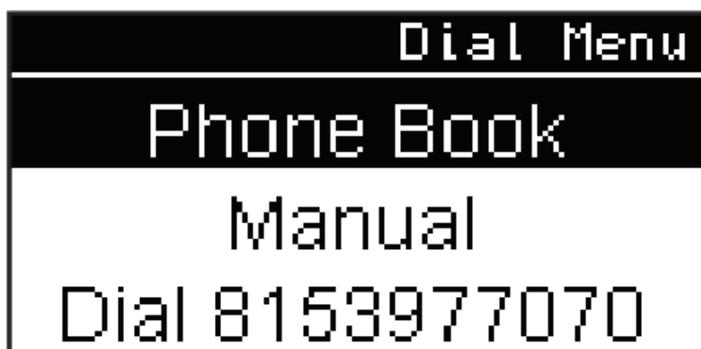
1. Connect the test leads; black to Tip, red to Ring, and green to Ground.
2. Press **0** on the dial pad, and move the cursor to “Longitudinal Balance.”
3. To start the test, press the **ENTER** button.



4. To exit the test, press any other Test Menu.

## 2.8.7 Dial Menu

Use the Dial Menu to select a phone number from the Phone Book or to dial a number manually.



## 2.8.8 Phone Book

The Phone Book allows the user to save up to 20 phone numbers. There is an eight-letter restriction on the phone number names and a 12-digit restriction on phone numbers.



To dial a number from the Phone Book:

1. Press **ENTER** in the “Name” field and use the Up and Down ▲▼ arrows to cycle through the phone numbers.
2. When the correct one is selected, press **ENTER**.
3. Press the Down ▼ arrow key until “Dial” is selected.
4. Press **ENTER** to dial the number.

To create a new Phone Book entry:

1. Use the Up and Down ▲▼ arrows to navigate to the “New” field and press **ENTER**.
2. Press **ENTER** in the “Name” field, and use the dial pad to enter up to eight characters for the name.
3. Press **ENTER** and use the Down ▼ arrow key to navigate to the “Number” field.
4. Press **ENTER** again and enter up to 12 digits for the phone number.

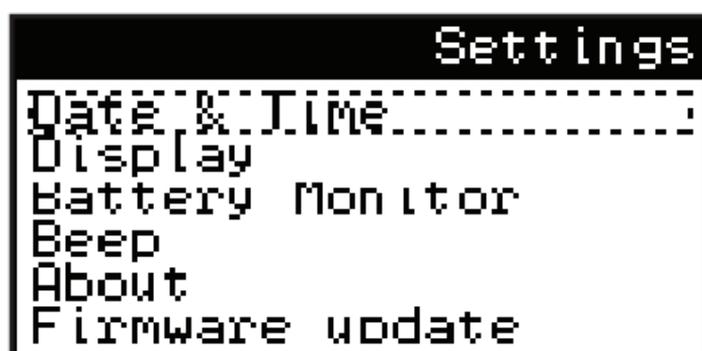
5. Press **ENTER** and use the Down ▼ arrow key to navigate to the “Save” field.
6. Save number to internal memory by pressing **ENTER**.

## 2.9 Settings

The Settings feature allows modification of date and time, LCD contrast and brightness, speaker, and firm-ware updates. It also contains battery information and firmware versions.

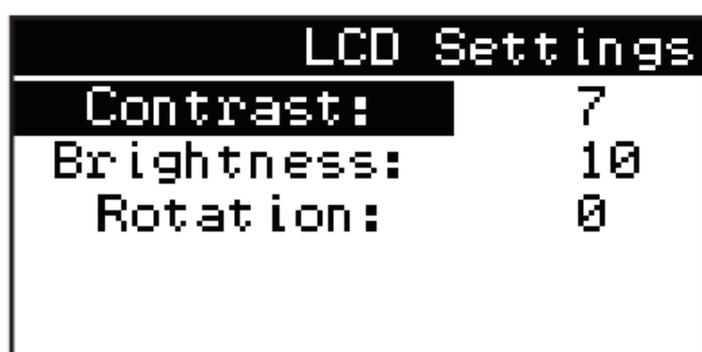
### 2.9.1 Date and Time

To edit Date and Time, press **ENTER** on the “Date & Time” field, and then **ENTER** on “TIME.” Change the time, and press **ENTER** to set it. Then repeat the same steps for “DATE.”



### 2.9.2 LCD

To change LCD settings, move the cursor to “Display” and change Contrast, Brightness, or image Rotation.



### 2.9.3 Battery

To view the battery status, press **ENTER** on the “Battery Monitor” field.

```
Battery Monitor
CAPACITY: 2097 mAh
          95%
VOLTAGE:  12267 mV
CURRENT:  -119 mA
TEMPERATURE: 85.37 F
|||||
```

### 2.9.4 Firmware

To view the Firmware version, press **ENTER** on “About” and view the version number.

```
About: software ver.
Sidekick: 3.5(314)
Modem: 5.1.7.3
```

To update Firmware, follow these steps:

1. Use FAT formatted USB drive.
2. Place firmware file in the root directory of USB drive. File name has to be sidekick.hex.
3. Plug USB drive into test set USB port (use provided USB port adapter).
4. Press **ENTER** on “UPGRADE FIRMWARE.”
5. Wait several minutes until the file is read.
6. Make sure no error messages show, such as “File not found! Error reading file!”.

During the second stage of update all green LEDs blink.

If update is successful, the unit powers off.

7. Press  to turn on test set. At this point the new Firmware has been installed and is operating.

## 2.10 Auto Test

The Auto test automatically runs through a list of selected tests as prepared in the setup and displays the results when completed. These test results can then be stored for later review.

To engage the Auto test, follow these steps:

1. Connect the test leads; black to Tip, red to Ring, and green to Ground.
2. Press **9** on the dial pad.
3. The Auto test can be started from the default test listed after the word "Start" or by scrolling down to "Select Test" and pressing **ENTER**. Then scroll down again to the desired test and press **ENTER** again to choose the desired configuration.

```

Autotest Select Test
1 User Defined
2 VDSL Dry Loop
  
```

4. Once the Auto test starts, the test results will scroll on the screen. If a test fails, an "F" appears next to the measurement. If a test passes, a "P" appears next to the measurement.
5. The Auto test results are shown on multiple screens that can be scrolled up and down. Up to 23 Auto tests can be saved in the event memory.

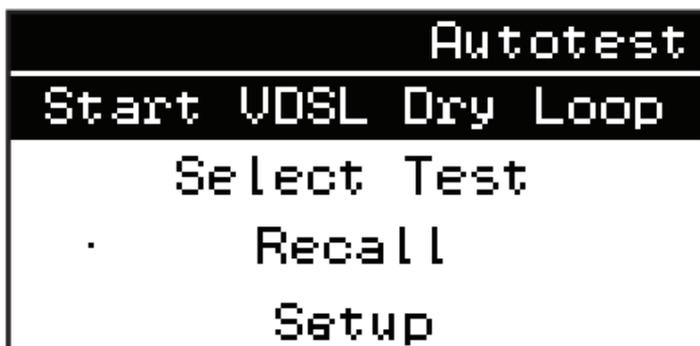
```

Autotest Failed
Stress (dBrnC)
                    51.6 F
Leakage (MΩ)
T-R < 1.0 F
T-G > 1000.0 P
  
```

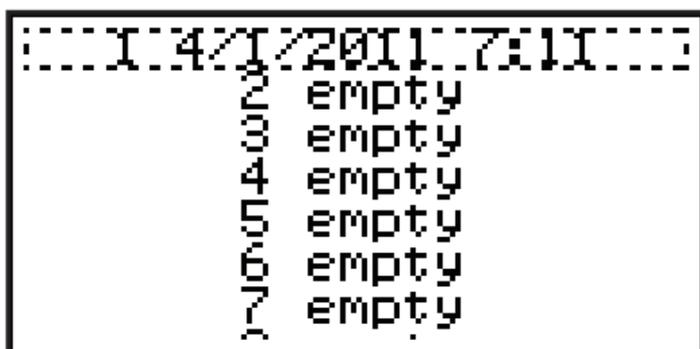
6. Press **ENTER** to open "Select slot to save" menu. Scroll down to save the Auto test results in one of the empty memories by pressing **ENTER** again. You can also overwrite a previously used slot. Test results are saved by the date and time.

## Auto Test Recall

To view a previously saved Auto test, scroll down to “Recall” and press **ENTER**.



Then select the test and press **ENTER**. All Auto test results will be available to view by scrolling with the Up and Down ▲▼ arrow keys.



## Auto Test Setup

The Setup allows viewing the existing setups or editing a new user-defined setup.

- To view the existing setups, press **ENTER** on “Test” field and then scroll up and down to locate the desired setup. Then press **ENTER** to view it.
- To edit, leave Test on “User Defined” and press **ENTER**. Then scroll down to “Edit Test” and press **ENTER** again. Only the “User Defined” Auto test profile may be modified. Then start editing the desired functions and/or their numeric =< limits.





## SECTION 3—xDSL TESTING

The Sidekick SYNC test set contains an xDSL universal modem that can sync to the CPE or CO side of DSL spans. It can also be configured to sync with most chipsets in the industry.

Press **8** on the dial pad to enter VDSL Main Menu or **7** to enter ADSL Main Menu.

```

  TEST
  SETUP
  RESULTS
  
```

Select “TEST” to get the modem results from the current setup. To change the modem configuration, follow the steps below.

### 3.1 Setup

Choose “CPE” for customer premise equipment simulation or “CO” for central office DSLAM simulation mode. Choose xDSL “Profile” to match the remote end equipment. Choose “TERM” termination type PTM or ATM.

```

  VDSL Setup
  MODE:      CO
  Profile:   VDSL2 - Co
             Annex A, 8d
  2Wire 3800GHU-B 5....
  TERM:     PTM
  
```

If “ATM” is chosen, the next setup screen is the following:

```

  ADSL Setup
  UPI:      0
  UCI:     35
  MUX:     UCMUX
  
```

Fill out the VPI and VCI numbers and MUX type.

At any point, the DSL basic test (no upper layer) can be started by pressing ◀ to get back to the main xDSL menu and pressing **ENTER** on “TEST.”

If you want to proceed with upper layer test, press ▶ to advance to the next setup screen.

- For TERM select PPPoA, PPPoE, or Bridge.
- For MODE select SERVER or CLIENT.
- For AUTH select NONE, PAP, CHAP, or BOTH.

Fill out the USER name and PASS (password).

ADSL Setup	
TERM:	PPPoA
MODE:	SERVER
AUTH:	NONE
USER:	user
PASS:	green lee

This completes the setup and the Sidekick SYNC test set is ready to connect to the DSL line.

Press ◀ to return to the main xDSL menu, scroll up to “TEST,” and then press **ENTER**.

### 3.2 Connecting to Telephone Line

Connect the Sidekick SYNC test set’s telephone line jack to the telephone and press **ENTER** on the “TEST” button. Observe the green LED above the xDSL test button and the modem status on the top of the screen.

### 3.3 Synchronizing

The green LED will pulse increasingly faster until it becomes steady and the modem status will show “Showtime.”

### 3.4 Basic Parameters

	Showtime	TC	Sync
	UP		DOWN
LnkRate	1090		27537
MaxRate	1090		27537
Cap	100		100
SnrMarg	6.0		5.5
Power	10.4		9.5
Atten	0.0		0.0

Once the modem is in Showtime, the screen will display several DSL parameters for uplink and downlink such as:

- LnkRate—link rate
- MaxRate—maximum rate
- Cap—capacity
- SnrMarg—signal-to-noise margin
- Power—power level
- Atten—signal attenuation

Press ► to view Line Failure Monitor.

### 3.5 Line Failure Monitor

LINE FAILURE MONITOR		
	NEAR	FAR
LOS	no(1)	no
LOM	n/i	n/i
LPR	no	no
LOF	no	no
INIT	no	

Line Failure Monitor will show Near or Far end alarms such as:

- LOS—loss of signal
- LOM—loss of margin
- LPR—lost packet recovery
- LOF—loss of frame

The number in parentheses shows how many times this alarm occurred.

Press ► to view the next screen—Bits per tone.

### 3.6 Bits/Tone



The Bits per tone histogram shows number of allocated bits per each of the xDSL frequency bands for the selected profile.

Press ► to view the next screen—Signal-to-Noise per tone.

### 3.7 SNR/Tone



Signal-to-noise histograms show SNR for each of the xDSL frequency bands for the selected profile.

To save the xDSL test results, refer to Section 4.7.

Press ► to start Upper Layer testing.

### 3.8 Upper Layer Testing

If upper layer setup was already entered, the PPP login starts at this point. Watch its status until “SUCCESS!” message appears.

```
PPPoE Status
          SUCCESS!
IP: 192.168.20.5
```

Press ► to proceed to Ping test or stop if there is a failure to login.

### 3.8.1 Ping Test

Ping test starts automatically using the last IP address used or factory default. To enter a new IP address for ping, press **ENTER** and then press “Change settings.”



Type in the IP address of the destination you wish to ping. Press **ENTER**, and then move the cursor to “Restart ping” and press **ENTER** to start the ping. The first example shows no response and the second example shows successful ping.



Press ► to proceed to Trace test.

### 3.8.2 Trace Test

Trace test starts automatically with the last IP address used or factory default. To enter a new IP address for Trace, press **ENTER** and then press “Change settings.”



Type the IP address you wish to trace and press **ENTER**. Then move the cursor to “Restart traceroute” and press **ENTER** to start the Trace.

The following screen shows an example of the Traceroute test.

```
Traceroute test
64.78.1.188
 5 192.168.102.102
19.254 ms
19.292 ms
19.166 ms
```

Use ▲ and ▼ to scroll the Traceroute individual screens, each representing one hop.

### 3.8.3 HTTP Test

HTTP test starts automatically using the last URL address used or factory default. To enter a new URL address for HTTP, press **ENTER** and then press “Change settings.”

```
Enter HTTP URL
64.78.1.188
```

Fill in the new URL address and press **ENTER**.

Then move the cursor to “Restart HTTP” and press **ENTER** to start the HTTP test.

The following screen shows an example of HTTP test.

```
HTTP test
URL: 64.78.1.188...
RESP: 200 OK
PROGRESS: 100%
RATE: 36.9K/s
```

### 3.8.4 FTP Test

FTP test starts automatically using the last FTP URL address used or factory default. To enter a new URL address for FTP, press **ENTER** and then press “Change settings.”

```

Enter FTP URL
ftp.slackware.at/s
lackware-13.37-iso
/slackware-13.37-i
ninstall-d1.iso

```

Fill in the new FTP address and press **ENTER**.

Then move the cursor to “Restart FTP,” and press **ENTER** to start the FTP test.

```

FTP test
URL: ftp.slackware...
RESP: Logged in!
PROGRESS: 1%
RATE: 190K/s

```

### 3.9 Bridge Mode

To enable Bridging mode, follow these steps:

1. Press **7** or **8** and enter the xDSL SETUP menu.
2. Select the correct MODE, PROFILE, and TERM, and then press the Right ► arrow key.
3. Set up the VPI, VCI, and MUX if the term is ATM. Press the Right ► arrow key.
4. Change the TERM option to “BRIDGE.”
5. Select either “DHCP CLIENT” or “STATIC” in the MODE field.
6. If the mode is STATIC, enter the IP and MASK addresses.

```
ADSL Setup
TERM:      Bridge
MODE:      STATIC
IP:        192.168.100.12
MASK:      255.255.255.0
```

7. Once the setup is complete, start the test by pressing **7** or **8** and selecting “TEST.”
8. After the green light stops flashing and the modem has SHOWTIME results, navigate to the upper layer test screen by pressing the Right ► arrow key four times. The bridging mode should start.

```
ATM Bridge

Bridging enabled.
IP: 192.168.100.12
```

9. You can now go back into SHOWTIME and still retain the bridge.

### 3.10 Saving xDSL Test Results

The results screens—Uplink and Downlink information, Line Failure Monitor, Bits per tone and SNR—can be saved in one of the empty or used memories.

To save the results:

1. Press **ENTER** when one of these screens is displayed, and then select “Save results” and **ENTER**.
2. Select the memory and press **ENTER** again.
3. From this point you can Reconnect with the interrupted test or proceed to Upper layer tests.

## SECTION 4—HPNA TESTING (optional)

The Sidekick Sync test set can perform HPNA testing by communicating with HPNA modems through its Ethernet port.

To perform a HPNA test:

1. Connect an Ethernet cable between the test set's Ethernet port and the modem port on the HPNA device.
2. Press **0** on the dial pad, and move the cursor to "HPNA."
3. Press **ENTER** to start the test.
4. Wait for the modem to boot and search for HPNA devices.
5. The first screen, "HPNA device scan," will display information about each HPNA device on the network. Use the Up and Down **▲▼** arrow keys to switch between HPNA devices.

```
HPNA device scan
Device 2 of 3
MAC 00:15:05:f0:44:a4
VENDOR:    CG3110H
VERSION:   1.7.5
HARDWARE:  Coax
```

6. Use the Left and Right **◀▶** arrow keys to navigate between the "HPNA device scan" and "HPNA throughput test" screens.

7. The “HPNA throughput test” screen will display the throughput between each device on the network. The first two lines show the source (SRC) and destination (DST) MAC addresses of the two HPNA devices being tested. Use the Up and Down ▲▼ arrow keys to view the throughput between other devices on the network.

```
HPNA throughput test
SRC 00:1a:73:c1:99:1a
DST 00:15:05:f0:45:02
THROUGHPUT: 128 Mbps
ERROR RATE: 0.0
SNR: 44.68 dB
RX POWER: -4.2 dBm
```

---

## SECTION 5—MAINTENANCE

### 5.1 Battery Charging

To recharge the batteries:

1. Use the 15 volt AC/DC power supply supplied with the Sidekick SYNC unit.
2. Plug the power supply into the wall socket and the other end into the charging jack at the top of the unit.
3. The charging status LED on the front of the unit turns red to indicate unit is charging. The battery symbol on the bottom left of the LCD also indicates charging status. Battery is fully charged when LED turns green. A fully depleted battery will take up to four hours to charge.

To recharge batteries from auto cigarette adapter:

1. Use the supplied cigarette adapter cord.
2. Plug one end into the cigarette adapter and one end into the charging jack at the top of the unit.
3. The charging status LED on the front of the unit turns red to indicate unit is charging. The battery symbol on the bottom left of the LCD also indicates charging status. Battery is fully charged when LED turns green. A fully depleted battery will take up to four hours to charge.

*Note: Battery charge termination may not occur when charging from a cigarette adapter. The green LED will never turn on and battery will only charge to 85% capacity. If 100% charge is required, make sure automobile engine is on during charging.*

*Note: Charging current and battery charge status can be monitored in the “Battery Monitor” screen located under “Settings” menu.*

When the batteries are significantly depleted and could cause the unit to fail during a test, a “Low Batteries” warning screen appears each time a test is attempted. Once these warning screens begin to appear, Greenlee cannot guarantee how long the instrument’s accuracy will remain within the published limits. Greenlee recommends changing the batteries as soon as practical to ensure accurate measurements. Refer to the next sections for instructions concerning battery changing.

## 5.2 Battery Replacement

To replace the batteries:

1. Turn the unit off.
2. Remove the battery compartment door by unscrewing the captive screw and sliding the door toward the bottom of the instrument.
3. Pull the battery tab toward the bottom of the unit to slide the battery pack out.
4. Slide new battery pack inside the compartment.
5. Replace battery door making sure battery tab does not cover captive screw nut.

## 5.3 LCD Lens Replacement

The Sidekick SYNC test set's LCD lens can be removed and replaced by inserting a small flat-head screwdriver into the recessed slot at the bottom of the lens. Refer to Section 1.3 for slot location.

1. Carefully peel back old lens and discard.
2. Remove bluish protective film from back side of new lens by applying masking tape to a corner and pulling back. The film should stick to the masking tape. Make sure all bluish film is removed.
3. Remove LCD lens adhesive backing.
4. Stick new LCD lens onto the unit. Use enough pressure to make sure adhesive is secure.
5. Remove top protective film.

## 5.4 Replacement Parts and Accessories

Do not attempt to replace or repair any of the components inside the main body of the Sidekick SYNC test set. If your test set requires service, please contact Greenlee at 1-800-642-2155 for the location of the nearest authorized repair and calibration facility.

The following list of user-replaceable parts and accessories will not void the warranty:

- |           |                               |
|-----------|-------------------------------|
| 1160-0100 | Manual, English               |
| 1160-0101 | Soft case                     |
| 1160-0102 | Cords, RJ11 to popper clip    |
| 1160-0103 | USB adapter, micro B to USB A |
| 1160-0104 | Battery, Li-Ion 3 cell        |
| 1160-0105 | Vehicle charger cable         |

- 1160-0106 Power supply, 15V 1.2A
- 1160-0107 COAX adapter, female to female
- 1160-0108 Battery door

## 5.5 Cleaning Instructions

If the test set requires cleaning, mix a solution of mild detergent and warm water.

1. Dip a soft, lint-free rag into water.
2. Wring excess water from the rag until it is slightly damp.
3. Wipe surfaces clean.
4. Repeat with a damp rinse rag.

### **WARNING**

Do NOT use alcohol or other chemical solvent cleansers. These may remove the protective covering, break down test lead insulation, or damage the plastic case and meter face.

Do NOT immerse the unit in water or rinse it under a tap or hose.

The carrying case can be cleaned in the same manner. A soft-bristled brush may be used to remove dirt embedded in the material.

Be sure to remove the base unit from the soft case prior to cleaning. Immersion of the carrying case in water may cause some shrinkage.

Dry the carrying case thoroughly before replacing the test set.

## 5.6 Upgrade/Trade-In Program

To help customers keep current with emerging test and measurement technology, Greenlee maintains an ongoing program for the upgrade and/or trade-in of used instruments. If you are interested in replacing an instrument, please contact our sales department directly, the Greenlee representative in your area, or 1-800-642-2155.

## 5.7 Warranty

Greenlee warrants all Sidekick SYNC test sets against defects in material or workmanship for a period of one (1) year from date of shipment to the original purchaser. All units returned to the Greenlee factory, delivery charges prepaid, that are deemed defective under this warranty will be replaced or repaired at Greenlee's option. No other warranties are implied, nor will responsibility for operation of this instrument be assumed by Greenlee.

## 5.8 Service

To assist in the rapid repair of a unit, you are requested to call 1-800-642-2155 for a Return Material Authorization (RMA) number. Please include a statement giving a complete description of the problem and the conditions under which it occurred with the unit. Also include complete return information (name, company, address, and phone number).

Units should be sent to:

Greenlee  
Repair Department, RMA # \_\_\_\_\_  
1390 Aspen Way  
Vista, CA 92081

---

## SECTION 6—SPECIFICATIONS

### Network Physical Layer Specifications

#### Volts AC

Feature: 2 and 3 wire measurements

Range: 0.00 to 250 Vrms

Resolution: 3 digits

Accuracy:  $\pm 3\%$

#### Volts DC

Feature: 2 and 3 wire measurements

Range: 0.0 to  $\pm 250$  Vdc

Resolution: 3 digits

Accuracy:  $\pm 3\%$

#### Resistance

Feature: 2 and 3 wire measurements, autoranging

Low Range:

Range: 0.00 to 2 k $\Omega$

Resolution: 3 digits

Accuracy:  $\pm 3\%$  or 10  $\Omega$

Impedance: 100  $\Omega$

Test Voltage: 1 Vdc

High Range:

Range: 2 k $\Omega$  to 1 M $\Omega$

Resolution: 3 digits

Accuracy:  $\pm 3\%$  or 1 k $\Omega$

Impedance: 100 k $\Omega$

Test Voltage: 9 Vdc

#### Leakage

Range: 1 to 1000 M $\Omega$

Resolution: 100  $\Omega$

Accuracy:  $\pm 3\%$  or 100  $\Omega$

Impedance: 3.59 M $\Omega$

Test Voltage: 150 Vdc

#### Stress

Range: 0 to 84 dBrnC

Resolution: 3 digits

Accuracy:  $\pm 5$  dBrnC

$\pm 2$  dBrnC from 10 to 50 dBrnC Overall

Filters: C Message, Bandpass

DC Bias Voltage: 150 Vdc, Black/Red to Green

Excitation Frequency: 977 Hz  $\pm 4$  Hz

### **Open/Length Meter**

Measurements: Mutual, Red to Gnd, Black to Gnd

Overall Range: 0 to 60 kft (0 to 18.3 km)

Low Range: 0 to 99 ft (0 to 30 m)

Resolution: 3 digits

Accuracy: 5% or 2 ft (0.6 m)

Mid Range: 100 to 19,999 ft (30 m to 6.09 km)

Resolution: 3 digits

Accuracy: 4%

High Range: 20 to 60 kft (6.09 to 18.2 km)

Resolution: 3 digits

Accuracy: 10%

### **Loop Current**

Measurements: Black and Red

Range: 0.00 to 100 mA

Resolution: 3 digits

Accuracy:  $\pm 2$  mA

### **Load Coils**

Count: 0 to 4

### **Noise**

Range: 0 to 75 dBrnC

Resolution: 3 digits

Accuracy:  $\pm 2$  dBrnC

Filters: C Message, Bandpass

### **Power Influence**

Range: 40 to 100 dBrnC

Resolution: 3 digits

Accuracy:  $\pm 2$  dBrnC

Filters: C Message, Bandpass

### **Circuit Loss**

Range: 1 to -15 dB

Resolution: 3 digits

Accuracy:  $\pm 0.5$  dB

Filters: C Message, Bandpass

### **Longitudinal Balance**

Range: 20 to 80 dB

Resolution: 3 digits

Accuracy:  $\pm 2$  dB

Excitation Frequency: 977 Hz  $\pm 4$  Hz

**Ground Resistance**

Method: 3 wire (Blk, Red, Grn)

Range: 0.00 to 1000  $\Omega$

Resolution: 3 digits

Accuracy:  $\pm 3\%$

**xDSL Specifications****xDSL Standards**

ITU-T993.2 VDSL2 (Profiles: 8a, 8b, 8c, 8d,  
12a, 12b, 17a, 30a)

ITU-TG.992.5 ADSL 2+ (Annex A, B, L, M)

G.992.5 Admnt 1 ADSL 2+

G.998.4 Retransmission-G.INP ADSL2+

ITU-T G.992.3 ADSL 2 (A, B, L, M, J)

ITU-T G.992.1 ADSL (Annex A, B)

**Emmulation Modes**

CPE or customer modem (XTU-R)

CO or VRAD/DSLAM (XTU-O)

**VDSL Interoperability**

Lantiq (Infineon)

Broadcom

Ikanos

Connexant

**Status/Data Available**

Modem Status

Actual Bit Rate

Maximum Bit Rate

Capacity

Signal to Noise Margin (SNR)

Power

Attenuation

Line Monitor (LOS, LOM, LPR, LOF)

Bit/Tone Graph

SNR Graph

## Upper Layer Features

PPPoE, PPPoA

PTM, ATM

Bridge Mode

Ping Statistics

Traceroute Statistics

HTTP:

FTP:

## General Specifications

Display:

Size: 128 x 64 pixels (3.07")

Type: Monochrome (Sunlight Readable)  
transreflective with LED backlight

Batteries:

Type: Lithium Ion

Capacity: 18 hours of use per charge (typical)

Charge Time: 4 hours

Size: 8.85" x 4.8" x 1.92" (224.9 x 121.9 x 48.77 mm)

Weight: 2.25 lb (1.02 kg) with cords and softcase

Shock/Vibration: Per Mil-std-810F

Operating Temperature: 14 to 122 °F (-10 to 50 °C)

Storage Temperature: -40 to 140 °F (-40 to 60 °C)

Humidity: 95% non-condensing

Test Leads:

Length: 4'

Plug Type: RJ11

Clip Type: Popper Type

Other Connections:

RJ11

RJ45

F type Male Connector

USB Micro B

Certifications:

CE (Pending)

RoHS/WEEE (Pending)





4455 Boeing Drive • Rockford, IL 61109-2988 • USA • 815-397-7070  
An ISO 9001 Company • Greenlee Textron Inc. is a subsidiary of Textron Inc.

**USA**

Tel: 800-435-0786

Fax: 800-451-2632

**Canada**

Tel: 800-435-0786

Fax: 800-524-2853

**International**

Tel: +1-815-397-7070

Fax: +1-815-397-9247

**[www.greenlee.com](http://www.greenlee.com)**