DSAM Product Family Series

Complete DSAM Meter Functionality

User Guide

JDSU

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Ordering information This guide is a product of JDS Uniphase Corporation's Technical Information Development Department, issued as part of the **DSAM Help User Guide**. The ordering number for a published guide is 21128027-001.

EMC Directive Compliance This product was tested and conforms to the EMC Directive, 89/336/EEC as amended by 92/31/EEC and 93/68/EEC for electromagnetic compatibility.

WEEE Directive Compliance JDS Uniphase Corporation has established processes in compliance with the Waste Electrical and Electronic Equipment (WEEE) Directive, 2002/96/EC.

This product should not be disposed of as unsorted municipal waste and should be collected separately and disposed of according to your national regulations. In the European Union, all equipment purchased from JDS Uniphase Corporation after 2005-08-13 can be returned for disposal at the end of its useful life. JDS Uniphase Corporation will ensure that all waste equipment returned is reused, recycled, or disposed of in an environmentally friendly manner, and in compliance with all applicable national and international waste legislation.

It is the responsibility of the equipment owner to return the equipment to JDS Uniphase Corporation for appropriate disposal. If the equipment was imported by a reseller whose name or logo is marked on the equipment, then the owner should return the equipment directly to the reseller.

Instructions for returning waste equipment to JDS Uniphase Corporation can be found in the Environmental section of JDS Uniphase Corporation's web site at www.jdsu.com. If you have questions concerning disposal of your equipment, contact JDS Uniphase Corporation's WEEE Program Management team at WEEE.EMEA@jdsu.com.

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About This Guide

Purpose and Scope

The purpose of this guide is to help you successfully use the DSAM Product Family Series features and capabilities. This guide includes task-based instructions that describe how to install, configure, use, and troubleshoot the DSAM Product Family Series. Additionally, this guide provides a complete description of JDS Uniphase Corporation's warranty, services, and repair information, including terms and conditions of the licensing agreement.

Assumptions

This guide is intended for novice, intermediate, and experienced users who want to use the DSAM Product Family Series effectively and efficiently. We are assuming that you have basic computer and mouse/track ball experience and are familiar with basic telecommunication concepts and terminology.

Related Information

Use this guide in conjunction with the following information:

– JDS Uniphase Corporation DSAM Product Family Quick Start Guide – 6510-30-0384

Technical Assistance

If you need assistance or have questions related to the use of this product, call or e-mail JDS Uniphase Corporation's Technical Assistance Center (TAC) for customer support.

Table 1 Technical Assistance Centers

Region	Phone Number	
Americas	+1 866 228 3762 (America) +1 301 353 1550 (World Wide)	tac@jdsu.com

Table 1 Technical Assistance Centers (Continued)

Region	Phone Number	
Cable TV/Multimedia Products	+1 800 428 424 Ext. 8350 (America) +1 317 788 9351 Ext. 8350 (World Wide)	catv.support@jdsu.com
Europe, Africa, and Mid-East	+49 (0) 7121 86 1345 (Europe)	hotline.europe@jdsu.com
	+800 882 85822 (European Freephone)	support.uk@jdsu.com
	+49 (0) 6172 59 11 00 (JDS Uniphase Corporation Germany)	hotline.germany@jdsu.com
	+33 (0) 1 39 30 24 24 (JDS Uniphase Corporation France)	hotline.germany@jdsu.com
Asia Pacific	+852 2892 0990 (Hong Kong)	
	+86 10 6655 5988 (Beijing-China)	
All others	+1 866 228 3762	tac@jdsu.com

During off-hours, you can request assistance by doing one of the following: leave a voice mail message at the Technical Assistance number in your region; e-mail North American Technical Assistance Center, tac@jdsu.com, or European Technical Assistance Center, support.uk@jdsu.com; or submit your question using our online Technical Assistance Request form at www.jdsu.com.

Conventions

This guide uses naming conventions and symbols, as described in the following tables.

Table 2 Typographical Conventions

Description	Example
User interface actions appear in this **typeface**.	Press **Enter**.
Buttons or switches that you press on a unit appear in this **Typeface**.	Press the **On** switch.
Code and output messages appear in this `typeface`.	`All results okay`
Text you must type exactly as shown is displayed in this **`typeface`**.	Type: **`a:\set.exe`** in the dialog box
Variables appear in this ***typeface***.	Type the new ***hostname***.
Book references appear in this ***typeface***.	Refer to ***Newton's Telecom Dictionary***
A vertical bar | means "or": only one option can appear in a single command.	`platform [a|b|e]`
Square brackets [ ] indicate an optional argument.	`login [platform name]`
Slanted brackets < > group required arguments.	`<password>`

Table 3 Keyboard and Menu Conventions

Description	Example
A plus sign + indicates simultaneous keystrokes.	Press **Ctrl+s**
A comma indicates consecutive key strokes.	Press **Alt+f,s**

Table 3 Keyboard and Menu Conventions (Continued)

Description	Example
A slanted bracket indicates choosing a submenu from menu.	On the menu bar, click **Start > Program Files**.

Table 4 Symbol Conventions

This symbol represents a general hazard.

This symbol represents a risk of electrical shock.

NOTE

This symbol represents a Note indicating related information or tip.

Table 5 Safety Definitions

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

DSAM Product Family Series Overview

1

This chapter provides a general description of the DSAM Product Family Series. Topics discussed in this chapter include the following:

About DSAM Product Family Series

Figure 1 DSAM Product Family Series Field Meter Front Panel Layout

Meter Information

To view meter information

1 To view meter information, press **Shift, 6**.

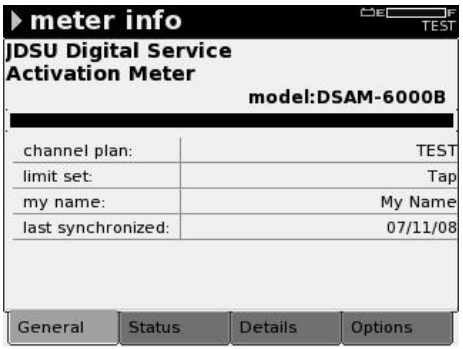

Figure 2 Meter Info

The following information about the meter is available:

Table 6 Obtaining DSAM Information

General	– Channel Plan – Limit Set – User Name – Date Last Synchronized
Status	– Time – Date – Date Calibrated – Temperature – Memory Available
Details	– Serial Number – Software Version – Hardware Version – Battery Type – QAM Conformance – Meter MAC Address – Cable Modem MAC Address – Media Terminal Adapter MAC Address
Options	– Information about installed options.

Mode Keys

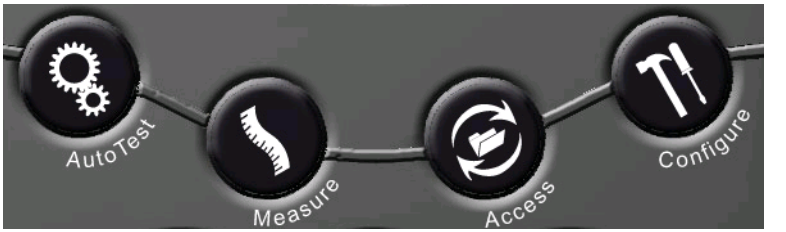

Figure 3 DSAM Mode Keys

Use the mode keys (Figure 3) to access the top level menu of features associated with each mode.

– AutoTest
– Measure
– Access
– Configure

Shift Keys

Press the blue Shift key in the following sequences to quickly access configuration settings and frequently used measurement modes. (Shift, 3 means that you press the Shift key and then press the 3 key.)

Table 7 Shift Key Shortcuts

Function	Key Sequence	Icon	Description
Speaker Volume	Shift, 3		Displays Configure Adjust Sounds screen.
Test Point Compensation	Shift, 4		Displays Configure Test Point Compensation screen.
Help System	Shift, 5	?	Displays topic related help text.
Meter Information	Shift, 6		Displays Meter Info screen.

Table 7 Shift Key Shortcuts (Continued)

Function	Key Sequence	Icon	Description
Screen Contrast	Shift,7		Displays Configure Adjust Contrast screen.
Pause Measurement Function	Shift,8		Pause (used in some measurement modes).
Apply Best Reference Setting	Shift,9		Automatically adjust the analog meter to the best reference setting, when applicable. Use the arrow keys to adjust the setting by one (1) dB per key.
No function at this time	Shift, .		Not Currently Used.
Change Polarity (+/-) of a Numeric Entry	Shift, 0	+/–	Allows you to enter a + (positive) or - (negative) numeric value.
No function at this time	Shift, CLEAR	#	Not Currently Used.
Backlight On/Off	Shift, Shift		Power the display backlight on or off.

Softkey Shortcuts with Function Keys

A quick way to access the Level, Mini Scan, Spectrum, and DOCSIS is to press the **Shift** key to display the options above each softkey and press the softkey directly under the option of your choice. Refer to Figure 4 and Table 8.

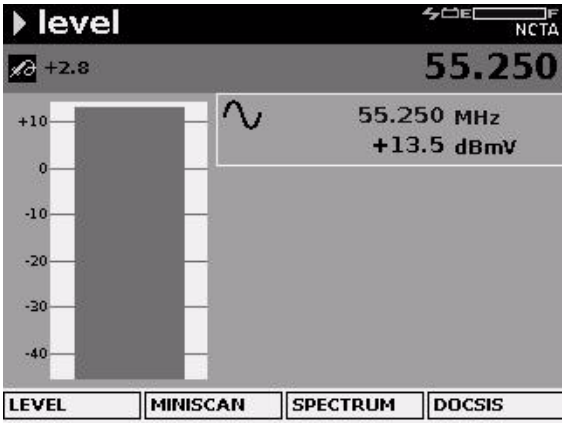

Figure 4 Shift Key - Softkey Options

Table 8 Function Shift Key Shortcuts

Function	Key Sequence	Description
Level	Shift, Softkey #1	Displays Level screen.
Miniscan	Shift, Softkey #2	Displays Miniscan screen.
Upstream Spectrum	Shift, Softkey #3	Displays Upstream Spectrum screen
DOCSIS	Shift, Softkey #4	Displays DOCSIS screen

Additional Functions

The following functions may require additional purchase depending on your DSAM model (this list is not exhaustive):

– Home Certification
– Return QAM Generator
– VoIPCheck
– Ethernet
– CM Diagnostics Page
– VoIP
– Downstream Spectrum
– Sweep
– Field View
– WFA Browser
– Local Browser
– Digital Quality Index (DQI)

DSAM Navigation

2

This chapter describes navigating the DSAM interface and the functionality of the keys. The topics discussed in this chapter are:

The Keypad

Softkeys To open the menu item (on the screen), press any of the four softkeys located under the screen.

> **NOTE**
>
> Press the **blue "Shift"** key to change these menu items to measurement mode softkeys, then press the corresponding softkey to go directly to that measurement mode. For more information, see "Shift Key" on page 8.

Exit Key To leave the screen or function you are currently viewing, press the crescent-shaped **EXIT** key (located to the left of the arrow keys).

Enter Key To affirm or input data and to execute tasks in each mode, press the crescent-shaped **ENTER** key (located to the right of the arrow keys).

Arrow Keys Using the arrow keys, select softkey pop-up menu options, select mode options, move the cursor, and adjust the view (on some screens).

Mode Keys To directly access functions within one of the following modes, press one of the round mode keys.

- AutoTest
- Measure
- Access
- Configure

Alphanumeric Keypad Use the alphanumeric keys to enter numeric values, letters, and spaces. Where applicable, repeat presses of the same key cycle through the characters (such as 2, then a, then b, then c, then 2, etc.).

Shift Key Press the **blue shift** key before pressing an alphanumeric key to access the shortcut option associated with the alphanumeric key. Icons associated with each shortcut are located below the alphanumeric key.

The blue shift key also shifts the functions of the softkeys to enable access to the following:

– Level

– Miniscan

– Spectrum

– DOCSIS

Power Key To display the Standby screen, press the **green power** key. The Standby screen lets you place the DSAM in Standby mode up to 45 minutes, or turn the meter off.

The User Interface

The title bar at the top of the screen displays status indicators during certain conditions. These indicator symbols flash to inform you that the meter is:

– Conducting a repetitive measurement

– Paused (the measurement is not updated)

– Displaying a file

– In need of a charge

– Receiving a charge

– In need of service

Figure 5 Example: User Interface

Active Channel Plan Name

The active channel plan name is displayed in the far right corner of the title bar, directly under the battery level indicator.

The battery symbol to the left of the battery level indicator begins to flash when the battery charge condition is extremely low.

AC Power

A lightning bolt flashes when the unit is plugged in to AC power.

Icons

On the left side of the title bar (just to the left of the mode title), look for the following symbols to appear when you are using the meter:

Table 9 Title Bar Icons

Name	Symbol	Description
Heartbeat	Triangle	A triangular “heartbeat” icon indicates the beginning of each measurement cycle on screens where measurements are repetitive.
Pause	Two thick vertical lines	A pause icon (two thick vertical lines) indicates you have enabled the pause function and the measurement is not updated.
File	File folder	A file icon indicates that a file is being viewed.
Measurement Failure	!	An exclamation point indicates measurement failure. Check all of your settings and connections and try again. If the exclamation point is still displayed, contact you nearest JDS Uniphase Corporation Technical Assistance Center (TAC) for further instructions.

Accessing Help

Introduction

The DSAM is equipped with on-board Help designed to answer many of the questions you may have about the proper configuration of the meter and the purpose and use of its measurement functions. You can access Help text as questions occur or easily review all of the text associated with a particular function as a short tutorial before attempting a task.

To access Help, press (**Shift, ?**) or (**Shift, 5**) on the alphanumeric keypad (Figure 1 on page 2).

Accessing Help from a Mode Menu

When you access the Help system from one of the mode menus (such as AutoTest or Measure), the DSAM displays a mode-level Help menu that enables you to select the general topic you would like to research within that mode (Figure 6 on page 11).

1. Using the arrow keys, select a **topic**.
2. Press **ENTER**.

   The Help submode menu for that topic is displayed (Figure 7).
3. To specify the Help text you would like to review, use the **arrow keys** again to select a **topic**.
4. Press **ENTER**.

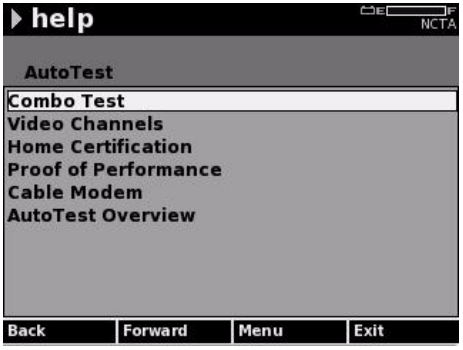

Figure 6 Help Menu for AutoTest Mode

Accessing Help from a Submode

When you access the Help system from any screen within one of the submodes (such as Combo AutoTest, DOCSIS, or Level), DSAM displays a submode-level menu of specific Help topics (Figure 7).

1. Using the arrow keys, select a **menu item**.
2. Press **ENTER**.

Figure 7 Help Menu for AutoTest

Navigating Help

Use the Help screen softkeys (Figure 7 on page 12) to move forward to the selected menu option or backward to the last viewed Help screen.

1 To return to the beginning of the last active mode, press the **Exit** softkey.

2 To display the Help main menu (Figure 8), use the **Menu** softkey.

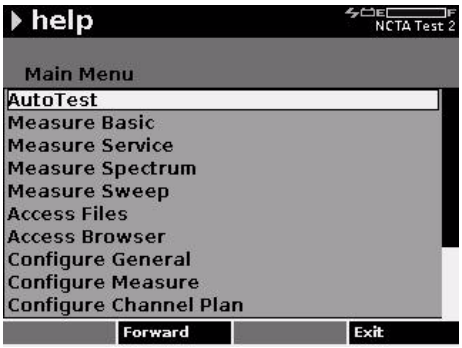

Figure 8 Help Main Menu

Battery Installation

3

This chapter describes how to install and maintain a DSAM Product Family Series battery. The topics discussed in this chapter are:

Installing and Maintaining the EZ Charge Battery

Installing the Battery

To install the battery

1. Hold the meter securely with the display screen facing away from you and the keypad in the palm of your hand.
2. Holding the battery in your other hand with its label facing away from you, rest the lower (contact) edge of the battery against the raised edge at the bottom of the meter.
3. Gently lower the battery into the cavity of the meter until the top edge of the battery latches into place.

Removing the Battery

To remove the battery

1. Ensure the power is off.

CAUTION INSTRUMENT DAMAGE

Failure to turn the power off before removing the batteries from the DSAM Product Family Series Complete DSAM Meter Functionality could damage internal components and/or corrupt the software. Always power down the unit before removing the batteries.

2. Hold the meter securely with the display screen facing away from you and the keypad in the palm of your hand.
3. Press the **release button** (Figure 9) located directly above the battery in the center of the back of the meter.

Figure 9 DSAM Product Family Series Field Meter (Rear View)

4 When released, gently pull the battery out of the cavity in the back of the meter.

Connecting the Power Components

In addition to the battery, the following power components are supplied with the DSAM Product Family Series:

– Charger module

– Power cord

IMPORTANT

Read all safety instructions in the front of this guide before attempting to power the meter or charge the battery ("Important Safety Instructions" on page 304).

High Capacity Battery to External Power Connection

If a high capacity battery was provided with your DSAM you also receive three additional power components with your DSAM Product Family Series -- a 12 volt DC universal power supply module, a power cord, and a 12-volt DC in-vehicle power cable.

IMPORTANT

Read all safety instructions in the front of this guide before attempting to power the meter or charge the battery ("Important Safety Instructions" on page 304).

To connect the external power components (Figure 10 on page 16) to the DSAM Product Family Series battery

1. Align the 12 volt DC universal power supply module connector (or DC connector) with the DC connection port in the battery.
2. Insert the connector into the connection port.
3. Align the power cord female connector with the 12 volt DC universal power supply connection port.
4. Insert the connector into the connection port.

WARNING ELECTRICAL SHOCK

Electrical shock may result in serious injury or death. Be sure the AC cord is connected to the correct voltage mains. Do not use outdoors or in wet locations. Use only the universal power supply supplied with the test set.

5. Insert power cord male plug to an AC power source when you are ready to power the meter or charge the battery. (If you are using the DC connector, connect it to an appropriate 12-volt DC power source.)

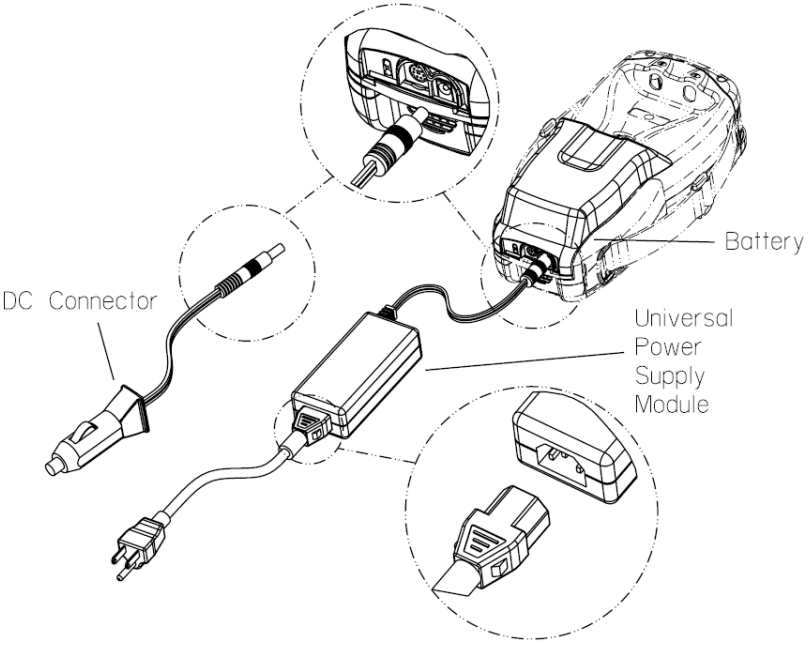

Figure 10 High Capacity External Power Components

Connecting the RF Cable

To conduct measurements with your DSAM Product Family Series, connect the RF cable of the system you are servicing to the RF connection port on the back panel of the meter.

Installing and Maintaining the Standard Capacity Battery

Installing the Battery

To install the battery

1. Hold the meter securely with the display screen facing away from you and the keypad in the palm of your hand.
2. Holding the battery in your other hand with its label facing away from you, rest the lower (contact) edge of the battery against the raised edge at the bottom of the meter.
3. Gently lower the battery into the cavity of the meter until the top edge of the battery latches into place.

Removing the Battery

To remove the battery

1. Hold the DSAM securely with the display screen facing away from you and the keypad in the palm of your hand.
2. Press the **release button** located directly above the battery in the center of the back of the meter.
3. Gently pull the battery out of the cavity.

NOTE

For information about optimizing battery life, refer to "Battery Conservation" on page 32.

Connecting the Power Components (Standard Capacity Battery)

In addition to the battery, the following power components are supplied with the DSAM Product Family Series:

- Charger module
- Universal power supply module
- Power cord
- 12-volt DC in-vehicle power cable

IMPORTANT

Read all safety instructions in the front of this guide before attempting to power the meter or charge the battery ("Important Safety Instructions" on page 304).

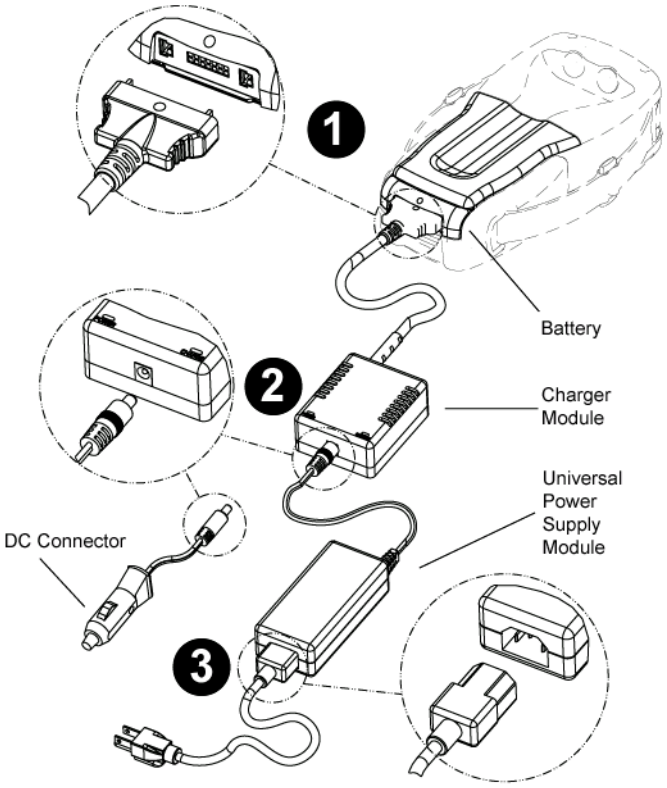

Figure 11 Standard Capacity External Power Components

Connect the power components in the manner displayed in Figure 10 on page 16.

Follow these steps to connect the power components to the DSAM Product Family Series battery (the battery can be in or out of the meter):

1. Align the tabs of the charger module connector to the slots in the battery and gently insert the connector tabs into the battery slots.
2. Align the universal power supply module connector (or DC connector) with the DC connection port in the charger module and gently insert the connector into the connection port.
3. Align the power cord connector with the universal power supply connection port and gently insert the connector into the connection port. Connect the power cord plug to an AC power source when you are ready to power the meter or charge the battery. (If you are using the DC connector, connect it to an appropriate 12-volt DC power source.)

WARNING ELECTRICAL SHOCK

Electrical shock may result in serious injury or death. Be sure the AC cord is connected to the correct voltage mains. Do not use outdoors or in wet locations. Use only the universal power supply supplied with the test set.

Making Additional Connections

Use the Ethernet port located on the top of the meter to clone settings with other DSAM Product Family Series meters ("Clone" on page 48) or to synchronize your data with optional TPP utility software ("Synchronization" on page 106).

The headphone jack and USB port are located on the top of the meter. The headphone jack is for VoIP and the USB port is for future features.

Powering the DSAM

4

This chapter describes the test results that you gather when running a test. Test results described in this chapter are as follows:

Powering the Meter

IMPORTANT

Read all safety instructions in the front of this guide before attempting to power the meter or charge the battery ("Important Safety Instructions" on page 304).

Choosing a Power Option

There are three ways to provide power to your DSAM Product Family Series. Select the method that best suits your working conditions:

- DC power from the universal power supply connected to an AC power source
- DC power from the battery alone
- DC power using the 12-volt DC in-vehicle cable connected to 12-volt DC power source

Charging the Battery

With the power components properly connected, the DSAM Product Family Series battery can be charged when outside of the meter or when installed in the meter.

NOTE

You can power the DSAM and recharge the batteries at the same time. If you do not want to interrupt the current test, you may leave the power on and connect the AC power adaptor.

1 For typical battery charging (fast charge or maximum capacity) and normal operational values.

Table 10 Battery Charge and Operation Values

Item	Charge Time
High Capacity Battery 11 AH (Amp Hour)	
Fast Charge Period	≥ 7.0 Hours
Normal Operation	5.0 Hours typical
Complete Charge	Approximately 10 to 12 Hours
Standard Capacity Battery 6.6 AH (Amp Hour)	
Fast Charge Period	≥ 4.0 Hours

Table 10 Battery Charge and Operation Values (Continued)

Item	Charge Time
Normal Operation	3.0 Hours typical
Complete Charge	Approximately 6 to 7 Hours

2 For standard capacity battery charge LED indications, refer to Table 11 on page 23.

OR

3 For high capacity battery charge LED indications, refer to Table 12 on page 25.

The charging time is be the same whether the power is on or off.

When you power the meter directly with an AC or a DC power source, this source automatically charges the battery while providing power on a separate path with no degradation to the meter's direct power. When the battery is fully charged, the charger module provides a maintenance charge from the power source. The charger module automatically identifies the type of battery being charged. No battery configuration is required.

Understanding the Standard Capacity Battery LED's

There are two LED indicator lights on your DSAM Product Family Series standard capacity charger module -- the "Power" LED and the "Charge" LED.

The green "Power" LED illuminates to indicate that the charger module is receiving power.

The "Charge" LED illuminates in red, green, or orange to indicate the present battery and charge condition. It may remain on constantly, or it may begin to flash. To interpret the "Charge" LED indications, review Table 11.

Table 11 Standard Capacity Charge LED Indications

LED color	LED activity	Battery and charge condition
Red	On (constant)	Charger module is in fast charge mode; maximum charge is delivered to battery

Table 11 Standard Capacity Charge LED Indications

LED color	LED activity	Battery and charge condition
Green	On (constant)	Fast charge cycle is complete; battery is ready for use and in maintenance charge mode while attached to the charger module
Red	Flashing	Battery-related error or defect detected; min/max cell voltage or battery temperature is out of range)
Orange	Flashing	DC input voltage is out of range.

For information about the charger module's specifications, see Table 48 on page 302.

Understanding the High Capacity Battery LED's

There are two LED indicator lights located on the bottom of your high capacity DSAM Product Family Series battery (refer to Figure 12 on page 24) -- the red "CHARGE" LED and the green "OK" LED.

Figure 12 DSAM Product Family Series Field Meter (Bottom View)

The green "OK" LED illuminates to indicate that the battery is completely charged.

The red "CHARGE" LED illuminates to indicate the present charge condition. Under normal charging conditions, this LED should remain on constantly. A flashing LED is indicative of a fault condition. To interpret the "CHARGE" LED indications, review Table 12.

Table 12 High Capacity Charge LED Indications

LED color	State	Battery and charge condition
Red (CHARGE)	Steady	Charging
	Flashing	Charge fault check: Temp too high/low or, DC too high/low or, Internal fault
Green (OK)	Steady	Charge Complete

For information about the charger module's specifications, see Table 48 on page 302.

Charging Temperature Range

Your DSAM Product Family Series charger module does not allow the charge mode to begin if the battery temperature is not within a safe range for charging. To begin and maintain the charge mode, the battery temperature should be approximately between 0° C (32° F) and 50° C (122° F). The charge mode automatically resumes when the battery temperature returns within this range.

Configuring the Meter

5

This chapter describes the functionality of the instrument. Topics discussed in this chapter are as follows:

Overview

This chapter describes general meter functionality configuration. Later chapters in this manual describe the AutoTest and Measure modes and the corresponding configuration information for each mode.

To take full advantage of the many features your DSAM Product Family Series offers, be sure to properly configure the meter to respond effectively to your working conditions and meet your data management needs.

Configure – General Tab

The Configure mode – General tab enables you to edit the following configuration areas for the DSAM:

- Adjust contrast
- Adjust sounds
- Optimize battery life
- Enter your personal information
- Set date and time
- Configure printer
- Configure Ethernet
- Configure RF network
- Configure ports
- Set locale preferences
- Administer security
- Perform meter maintenance
- Clone settings with other DSAM Product Family Series meters
- Run meter diagnostics

Contrast

The contrast adjustment function provides two modes of contrast adjustment — Auto and Manual.

NOTE

Contrast is not applicable to DSAM^{XT} models.

– Auto adjustment provides a limited contrast adjustment based on the sensed temperature range.

– Manual adjustment provides full contrast adjustment across the entire operational temperature range (0 to +120 degrees Fahrenheit or -20 to +50 degrees Celsius). The factory default for screen contrast is 50%.

NOTE

When working in extreme temperatures, JDSU recommends using Manual mode.

Configuring Screen Contrast

To configure screen contrast

1 Press **Configure**.

2 Press the **General** softkey.

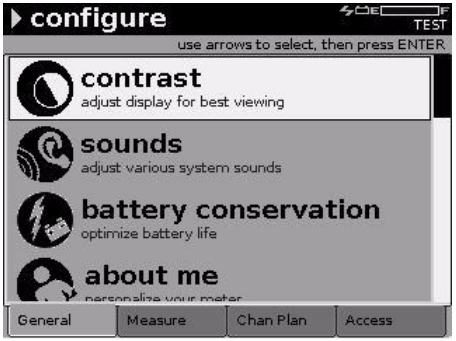

Figure 13 Configure – General Tab: Contrast Adjustment

3 Using the arrow keys, select **Contrast**.

4 Press **ENTER**.

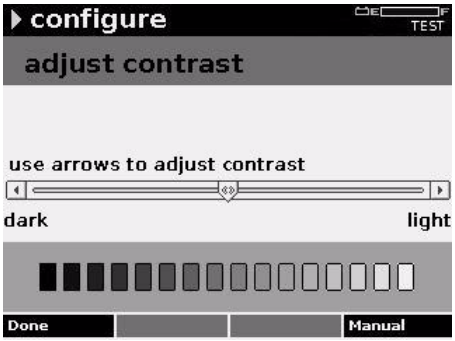

Figure 14 Configure – Adjust Contrast

5 To switch between contrast modes, press the **Manual**/**Auto** softkey.

NOTE

When the Auto softkey is displayed, the DSAM contrast function is in Manual mode and vice versa. The factory default mode is Auto.

6 Adjust the degree of difference between the lightest and darkest areas of the screen by using the left and right arrow keys to move the contrast indicator (slider).

The Auto mode allows a limited amount of adjustment.

NOTE

To perform a repetitive contrast adjustment, press and hold the **left or right arrow key**.

7 Press the **Done** softkey.

Sound

Use the Adjust Sounds screen to change the volume of sounds and the sensitivity of the microphone.

Configuring Sounds

To configure sounds

1 Press **Configure**.

2 Press the **General** softkey.

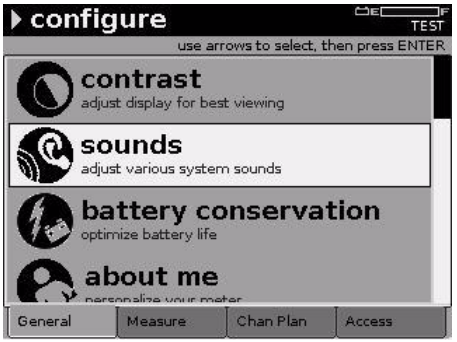

Figure 15 Configure – General Tab: Sounds

3 Using the arrow keys, select **Sounds**.

4 Press **ENTER**.

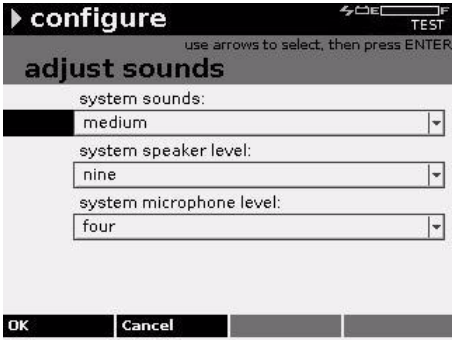

Figure 16 Configure – Adjust Sounds

5 Using the arrow keys, select the **parameter you want to edit**.

6 Press **ENTER**.

7 Using the arrow keys, select an **option**.

8 Press **ENTER**.

9 Press the **OK** softkey.

NOTE

Press (**Shift, 3**) to access the Adjust Sounds screen from a measurement screen.

Table 13 Sound Parameters

Name	Description
System Sounds	The sound level of beeps and other noises made by the meter. Valid options are Off, Quiet, Medium and Loud. The default option is Medium.
System Speaker Level	The sound level of the speaker. Valid options are one through ten. The default option is nine.
System Micro-phone Level	The sensitivity of the microphone. Valid options are one through ten. The default option is four.

Battery Conservation

By configuring the battery conservation parameters for the meter and backlight shutdown, you can optimize your most recent battery charge to suit your work practices.

NOTE

The factory default time for meter shut off is 10 minutes.

The factory default time for backlight shut off is “always.”

Configuring Battery Conservation

To configure battery conservation settings

1 Press **Configure**.

2 Press the **General** softkey.

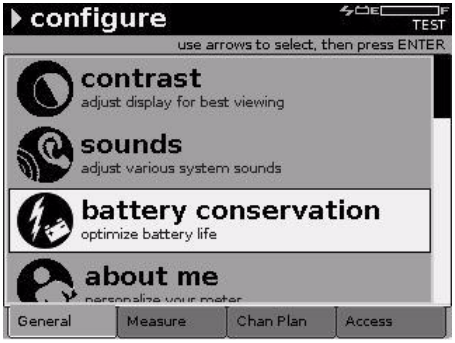

Figure 17 Configure – General Tab: Battery Conservation

3 Using the arrow keys, select **Battery Conservation**.

4 Press **ENTER**.

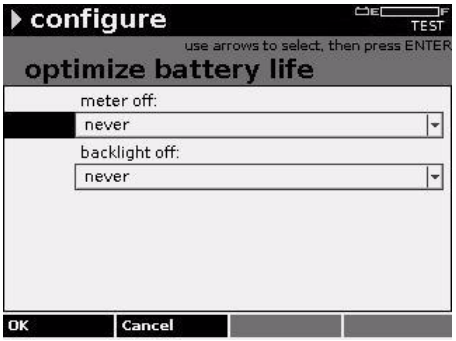

Figure 18 Configure – Optimize Battery Life

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys, select an **option**.

8 Press **ENTER**.

9 Press the **OK** softkey.

NOTE

Press **Shift, Shift** to turn the backlight on or off.

Table 14 Battery Conservation Parameters

Name	Description
Meter Off	The number of minutes of non-activity before the meter powers off. Valid options are: – After 5 minutes – After 10 minutes – After 15 minutes – Never The default option is After 15 minutes.

Table 14 Battery Conservation Parameters (Continued)

Name	Description
Backlight Off	The number of seconds of non-activity before the screen dims. Valid options are: – Always – After 5 seconds – After 15 seconds – After 30 seconds – Never The default option is After 15 seconds.

About Me

You can personalize your meter by entering your name on the Enter Your Info screen. (The Employee ID is set by TPP.)

Configuring "About Me"

To personalize your meter

1 Press **Configure**.

2 Press the **General** softkey.

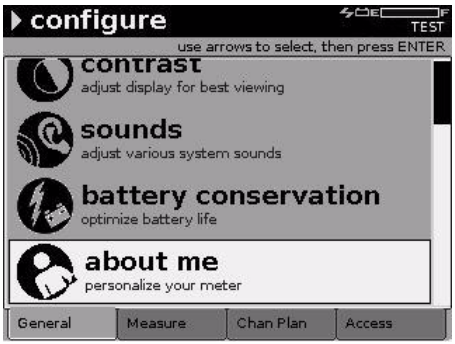

Figure 19 Configure – General Tab: About Me

3 Using the arrow keys, select **About Me**.

4 Press **ENTER**.

Figure 20 Configure – Enter Your Info

5 Using the arrow keys, select **My Name**.

6 Press **ENTER**.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

NOTE

Press the "**1**" key repeatedly to access a variety of special characters (- + # @ * etc.), then press **ENTER**.

9 Press the **OK** softkey.

Table 15 "About Me" Parameters

Name	Description
My Name	Your name as it will appear in TPP.
My Employee ID	Your employee ID as assigned in TPP.

Date and Time

Use the Set Date and Time screen to set the current date and time.

NOTE

The Set Date and Time screen may be locked by TPP. Also, TPP may be configured to update the date and time upon synchronization.

Configuring Date and Time

To set the meter date and time

1 Press **Configure**.

2 Press the **General** softkey.

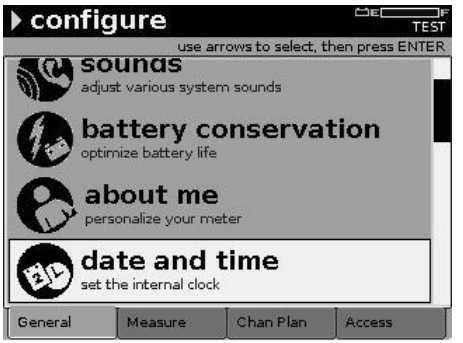

Figure 21 Configure – General Tab: Date and Time

3 Using the arrow keys, select **Date and Time**.

4 Press **ENTER**.

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

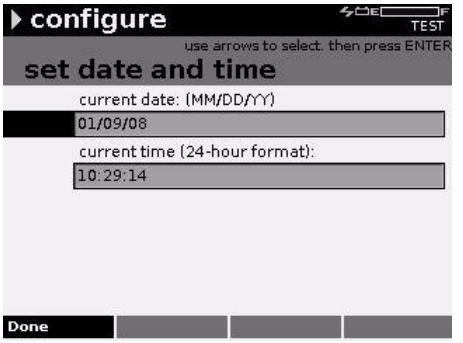

Figure 22 Configure – Set Date and Time

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

NOTE

To change the date format see "Regional Preferences" on page 43.

9 Press the **OK** softkey.

Table 16 Date and Time Parameters

Name	Description
Current Date	The current date.
Current Time	The current time in 24-hour format.

Printer

Use the Configure Printer screen to select a printer or edit the lines printed per page.

Configuring the Printer

To configure the printer

1 Press **Configure**.

2 Press the **General** softkey.

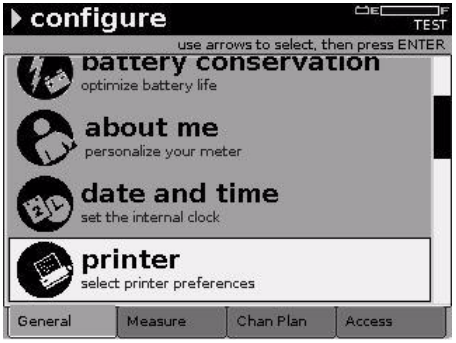

Figure 23 Configure – General Tab: Printer

3 Using the arrow keys, select **Printer**.

4 Press **ENTER**.

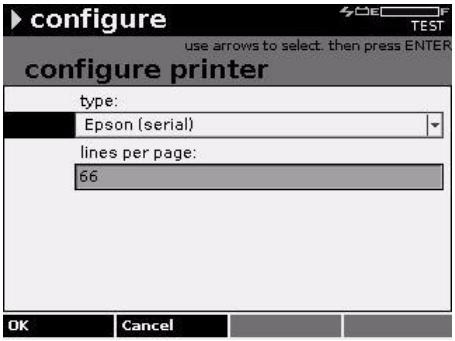

Figure 24 Configure – Configure Printer

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

9 Press the **OK** softkey.

Table 17 Printer Parameters

Name	Description
Type	The type of printer. Options are Epson (serial) and Citizen (serial). The default option is Epson (serial).
Lines Per Page	The number of lines printed per page. The default value is 66. The maximum value for a Citizen printer is 255.

NOTE

Only serial printers are supported.

Ethernet Network

The DSAM uses a DHCP (Dynamic Host Configuration Protocol) server as its default network setting. Use the Configure Ethernet Network screen to specify an alternate IP address, subnet mask, default gateway and DNS server.

Configuring Ethernet Settings

To configure Ethernet settings

1 Press **Configure**.

2 Press the **General** softkey.

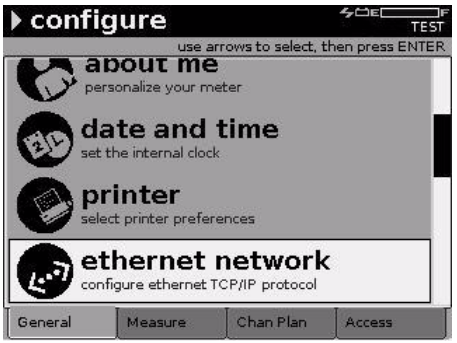

Figure 25 Configure – General Tab: Ethernet Network

3 Using the arrow keys, select **Ethernet Network**.

4 Press **ENTER**.

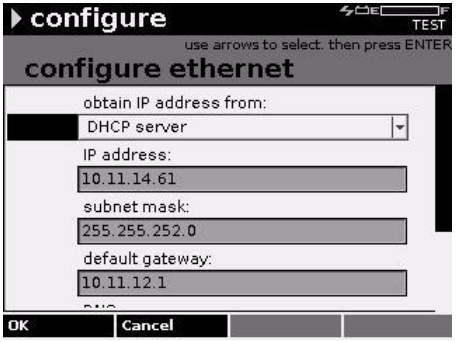

Figure 26 Configure Mode – Configure Ethernet

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

9 Press the **OK** softkey.

Table 18 Ethernet Settings Parameters

Parameter	Description
Obtain IP Address From	Where the meter should obtain the IP address from. Options are DHCP Server and Let Me Specify Below. The default option is DHCP Server. All IP addresses are numeric only. **NOTE:** When the meter is configured for DHCP, no additional configuration is required.
IP Address	The numerical identification (logical address) assigned to the meter that identifies it to the network. The valid range for this value is 0.0.0.0 to 255.255.255.255. All IP addresses are numeric only.
Subnet Mask	The subnet mask for the meter. A subnet mask is used in the IP addressing system which divides the IP address in two parts: the network part and the host part. The subnet mask works by masking out the network part from the full IP address. The valid range for this value is 0.0.0.0 to 255.255.255.255. All IP addresses are numeric only.
Default Gateway	The default gateway for the meter. A default gateway is a node (such as a router) on a computer network that serves as an access point to another network. The valid range for this value is 0.0.0.0 to 255.255.255.255. All IP addresses are numeric only.
DNS Server	The DNS server for the meter. The Domain Name System (DNS) associates various information with domain names; most importantly, it serves as the “phone book” for the Internet by translating human-readable computer host names, e.g. www.example.com, into IP addresses, for example, 192.168.0.100, which networking equipment needs to deliver information.The valid range for this value is 0.0.0.0 to 255.255.255.255. All IP addresses are numeric only.
DHCP Option-12 Computer Name	The DHCP name of the meter on the network.

RF Network

This meter uses a DHCP (Dynamic Host Configuration Protocol) server as its default network setting. Use the Configure RF Network screen to specify an alternate IP address, subnet mask, default gateway and DNS server.

Configuring RF Network Settings

To configure RF network settings

1 Press **Configure**.

2 Press the **General** softkey.

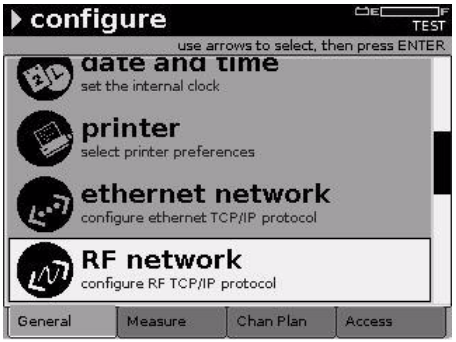

Figure 27 Configure – General Tab: RF Network

3 Using the arrow keys, select **RF Network**.

4 Press **ENTER**.

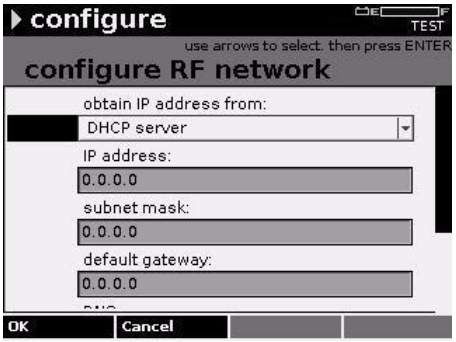

Figure 28 Configure – Configure RF Network

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

9 Press the **OK** softkey.

RF Network Parameters RF network parameters are the same as Ethernet parameters. Refer to "Ethernet Settings Parameters" on page 40.

Port Connections

This screen enables you to configure the baud rate of the RS-232 port.

Configuring Connection Settings

To configure connection settings

1 Press **Configure**.

2 Press the **General** softkey.

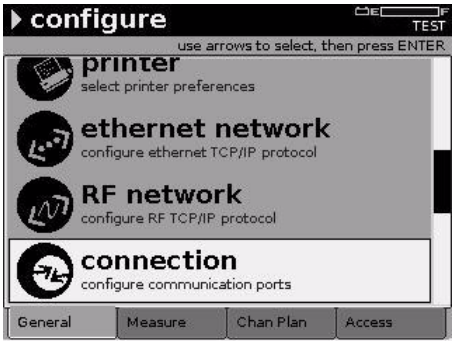

Figure 29 Configure – General Tab: Connection

3 Using the arrow keys, select **Connection**.

4 Press **ENTER**.

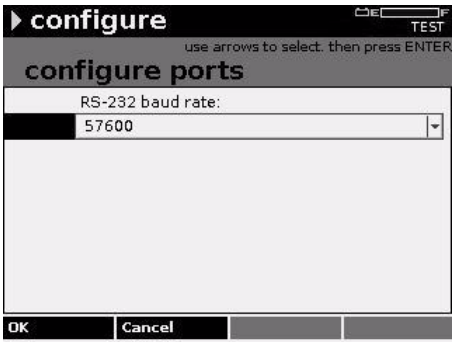

Figure 30 Configure – Configure Ports

5 Press **ENTER**.

6 Using the arrow keys, select an **option**.

7 Press **ENTER**.

8 Press the **OK** softkey.

Table 19 Connection Parameters

Name	Description
RS-232 Baud Rate	The signaling rate of the RS-232 port. The default option is 57600.

Regional Preferences

Use the Set Local Preferences screen to specify the type of language, date format, signal level units, temperature units, and digital performance units.

Configuring Regional Preferences

To configure regional settings

1 Press **Configure**.

2 Press the **General** softkey.

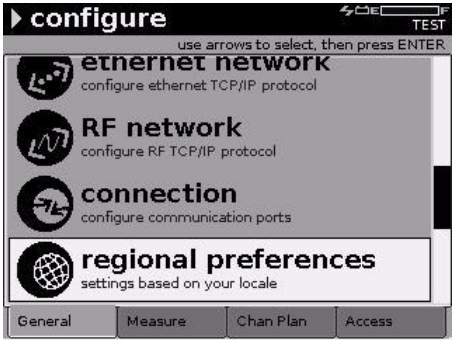

Figure 31 Configure – General Tab: Regional Preferences

3 Using the arrow keys, select **Regional Preferences**.

4 Press **ENTER**.

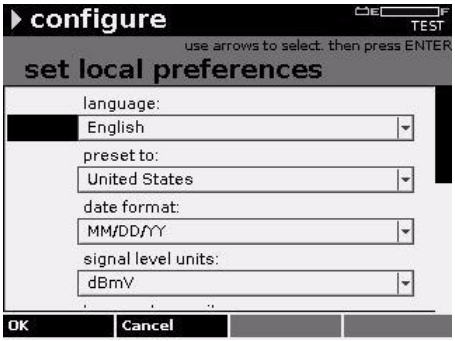

Figure 32 Configure – Set Local Preferences

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

NOTE

You can save time by choosing the Preset To parameter first. The Preset To value determines the corresponding defaults for the other options.

7 Using the arrow keys, select an **option**.

8 Press **ENTER**.

9 Press the **OK** softkey.

Table 20 Regional Preferences Parameters

Name	Description
Language	The language displayed in the user interface. Options are English, French, German and Spanish. (Other languages may be installed on your particular meter by the factory.) The default option is English. **NOTE:** You must restart the meter after changing the language for the new language to take effect.
Preset To	The country where the meter is used. The Preset To value determines the corresponding defaults for the other options. The default option is United States.

Table 20 Regional Preferences Parameters (Continued)

Name	Description
Date Format	The syntax for displaying dates in the user interface. The default option is MM/DD/YY.
Signal Level Units	The unit of measure used to select the signal level unit options. Valid options are dBmV, dBµV, and dBm. The default option is dBmV.
Temperature Units	The unit of measure used to select the temperature options. Valid options are Fahrenheit or Celsius. The default option is Fahrenheit.
Distance Units	The unit of measure used to select the distant or length options. Valid options are Feet or Meters. The default option is Feet.
Digital Performance Units	The unit of measure used to select the performance rating options. Valid options are MER (modulation error ratio) or EVM (error vector magnitude – or MER presented in percentage format). The default option is MER.
Hum Result Units	The unit of measure used to select the Hum options. Valid options are Percent (%) or Decibels (dB). The default option is Percent (%).
Hum Power Grid	The frequency at which the electric network operates. Valid options are 50 Hz and 60 Hz. The default option is 60 Hz.

Security

Use the Administer Security screen to set your personal identification number (PIN) or to enable/disable security protection on the meter. When security protection is enabled, you must enter your PIN to select or modify a channel plan, and to select or modify limit sets.

Setting Your PIN

To set your PIN

1 Press **Configure**.

2 Press the **General** softkey.

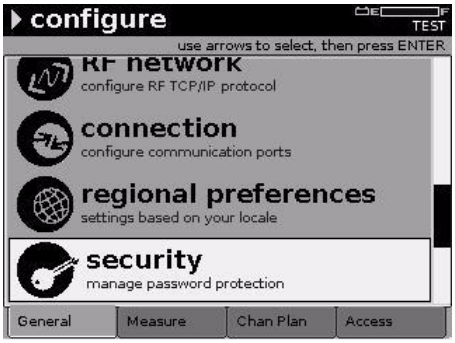

Figure 33 Configure – General Tab: Security

3 Using the arrow keys, select **Security**.

4 Press **ENTER**.

Figure 34 Configure – Administer Security

5 Using the arrow keys, select **Set your personal identification number (PIN)**.

6 Press **ENTER**.

7 Type your **four-digit PIN** using only digits 0 through 9.

8 Press the **Next** softkey.

9 Type your **PIN** again to confirm it.

10 Press the **OK** softkey.

Enabling/Disabling Security Protection

To enable/disable security protection

1. Press **Configure**.
2. Press the **General** softkey.
3. Using the arrow keys, select **Security**.
4. Press **ENTER**.
5. Using the arrow keys, select **Enable/disable security protection**.
6. Press **ENTER**.
7. Press **ENTER**.
8. Using the arrow keys, select **Enable** or **Disable**.
9. Press **ENTER**.
10. Press the **OK** softkey.

NOTE

The default setting for security is Disabled.

Choose a Utility

Use the Choose a Utility screen to:

Clear All Files

This utility deletes all measurement files and channel plans currently stored in your meter, including protected files.

Restore Factory Defaults

This utility restores all configuration parameters to their factory-preset values.

Reset Meter

This utility returns all parameters to the factory default values. It also disables security protection and removes the existing personal identification number (PIN). Even protected files are affected.

NOTE

Reset Meter deletes all measurement files and channel plans.

To choose a utility

1. Press **Configure**.
2. Press the **General** softkey.

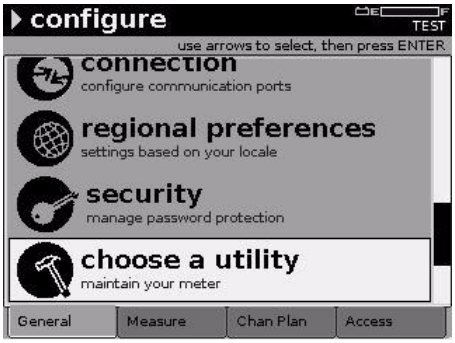

Figure 35 Configure – General Tab: Choose a Utility

3 Using the arrow keys, select **Choose a Utility**.

4 Press **ENTER**.

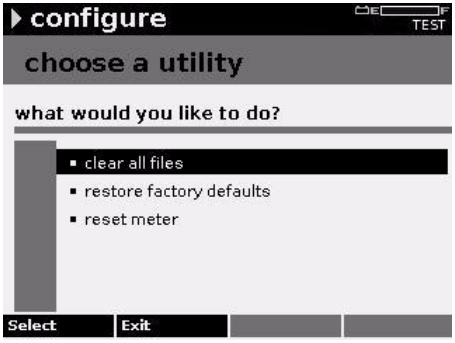

Figure 36 Configure – Choose a Utility

5 Using the arrow keys, select the **task** you want to perform.

6 Press the **Select** softkey.

Clone

Use the Clone screen to copy configuration parameters, channel plans, and limit plans between meters.

Sending Settings

To send settings

1 Connect the meters via **Ethernet cable**.

The Ethernet port is located at the top of each meter. Use an Ethernet crossover cable or a standard ethernet cable with a crossover adapter to connect meters.

2 Press **Configure**.

3 Press the **General** softkey.

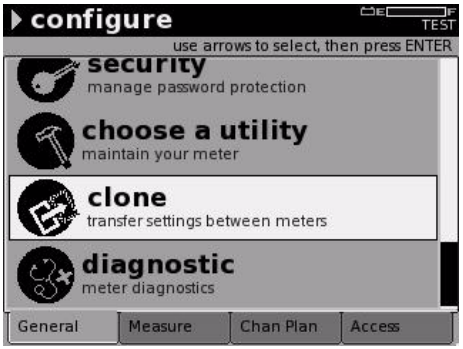

Figure 37 Configure – General Tab: Clone

4 Using the arrow keys, select **Clone**.

5 Press **ENTER**.

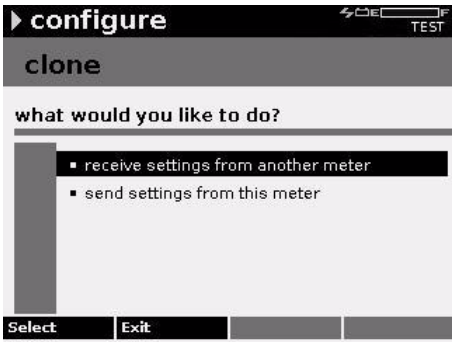

Figure 38 Configure – Clone

6 Using the arrow keys, select **Send settings from this meter**.

7 Press the **Select** softkey.

8 Using the arrow keys and the **Select** softkey, select (or deselect) the **configuration group(s)** you want to clone.

9 Press the **OK** softkey.

10 Press the **Done** softkey.

11 Using the arrow keys, select **receive settings from another meter**.

12 Press the **Select** softkey.

13 If cloning to multiple meters, attach the **Ethernet cable** to a different meter and repeat.

Receiving Settings

To receive settings

1 Connect the meters via **Ethernet cable**.

The Ethernet port is located at the top of each meter. Use an Ethernet ***crossover*** cable or a standard ethernet cable with a ***crossover*** adapter to connect meters.

2 Press **Configure**.

3 Press the **General** softkey.

4 Using the arrow keys, select **Clone**.

5 Press **ENTER**.

6 Using the arrow keys, select **receive settings from another meter**.

Diagnostic

Use the Diagnostic screen to test the keypad and/or connect to the TPP network and control the DSAM from your computer.

Testing the Keypad

To test the keypad

1 Press **Configure**.

2 Press the **General** softkey.

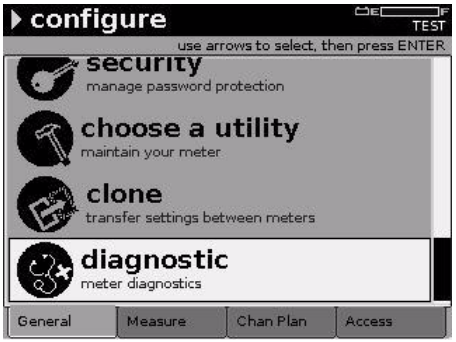

Figure 39 Configure – General Tab: Diagnostic

3 Using the arrow keys, select **Diagnostic**.

4 Press **ENTER**.

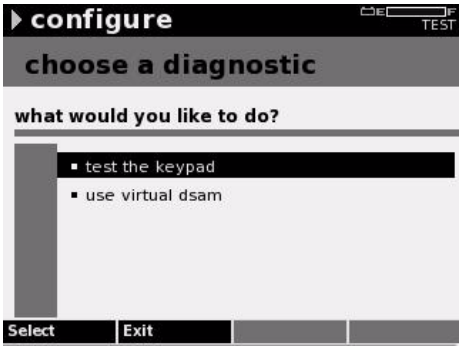

Figure 40 Configure – Choose a Diagnostic

5 Using the arrow keys, select **Test the Keypad**.

6 Press **ENTER**.

An image of the keypad is displayed. When you press each key on the pad, it is highlighted on the screen if functioning properly. The key should remain highlighted as long as you press it.

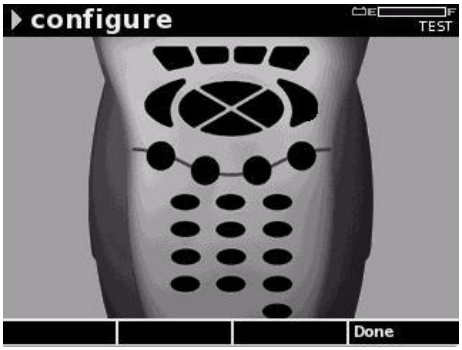

Figure 41 Configure – Keypad Test

7 If the keypad fails to function properly, contact your **JDS Uniphase Corporation Customer Service Representative**.

8 Press the **Done** softkey.

NOTE

During the test, the only keys that function normally are the Power key and the Done softkey.

Using Virtual DSAM

To use Virtual DSAM

1 Connect an **Ethernet cable** to the DSAM.

NOTE

In order to use Virtual DSAM, your computer and the Ethernet cable must be connected to the same IP network or a public IP network.

2 Press **Configure**.

3 Press the **General** softkey.

4 Using the arrow keys, select **Diagnostic**.

5 Press **ENTER**.

6 Using the arrow keys, select **Use Virtual DSAM**.

7 Press the **Select** softkey.

The DSAM searches for an IP address. Once the meter obtains an IP address, the Bind Results screen is displayed. The Bind Results screen displays network assignments (IP address, Subnet address, and Default Gateway) and meter information (CPE MAC address).

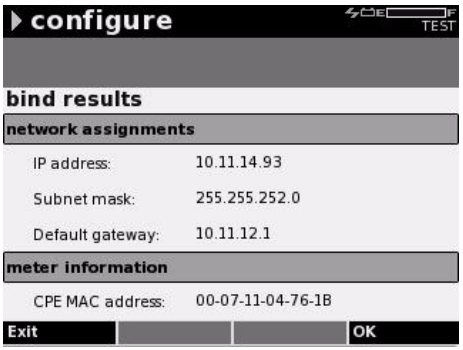

Figure 42 Configure – Bind Results

8 Launch the **TPP Client applicatio**n from your PC.

Figure 43 TPP – DSAM Remote Access

9 Click **DSAM Remote Access**.

The JDSU Remote DSAM window is displayed.

Figure 44 TPP – JDSU Remote DSAM

10 From the Connection menu, select **Connect to Meter**.

The Connect to Meter window is displayed.

Figure 45 TPP – JDSU Remote DSAM

11 From the Bind Results screen (Figure 42), type the IP address.

12 Press the **OK** softkey.

Configure – Measure Tab

The Configure mode – Measure tab enables you to edit the following configuration areas for the DSAM:

– Sweep Settings
– Limit Sets
– DOCSIS Throughput
– FDR Settings
– Other Settings
– Return QAM Generator
– Test Point Compensation

Sweep Settings

The Sweep Settings screen enables you to set the sweep, tilt, limit, and reverse sweep port parameters.

Configuring Sweep Settings

To configure sweep settings

1 Press **Configure**.

2 Press the **Measure** softkey.

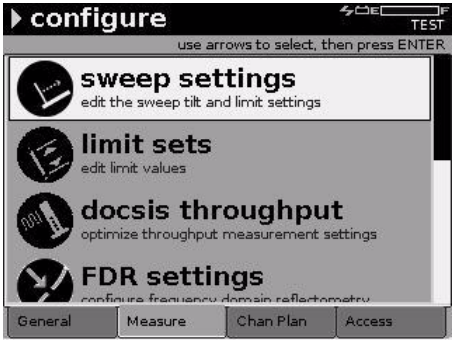

Figure 46 Configure – Measure Tab: Sweep Settings

3 Using the arrow keys, select **Sweep Settings**.

4 Press **ENTER**.

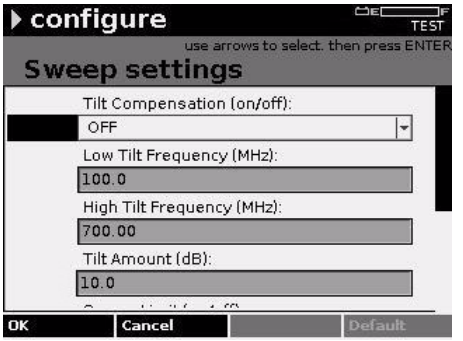

Figure 47 Configure – Sweep Settings

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

OR

8 Using the arrow keys, select an **option**.

9 Press **ENTER**.

10 Press the **OK** softkey.

Table 21 Sweep Settings Parameters

Name	Description
Tilt Compensation	Sweep Tilt Compensation is different from the standard DSAM Tilt mode. Typically, Tilt Compensation is used to adjust the sweep response on a branch of a network where the branch tilt is not the same as the mainline network. Valid options are On and Off. The default option is Off.
Low Tilt Frequency	Use the up and down arrow keys to increase or decrease the value in 10 kHz increments. The valid range is 5.0 to 999.99 MHz. The default value is 5.0 MHz.

Table 21 Sweep Settings Parameters (Continued)

Name	Description
High Tilt Frequency	Use the up and down arrows to increase or decrease the value in 10 kHz increments. The valid range is 6.00 to 1,000.00 MHz. The default value is 1,000.00 MHz.
Tilt Amount	The tilt adjustment required (positive or negative), that adds to or subtracts from the mainline network tilt represented in the sweep reference file (which is typically captured at the output of the node amp). Use the up and down arrows to increase or decrease the value in .01 dB increments. The valid range is -50.0 to +50.0 dB. The default value is 0.0 dB.
Sweep Limit	Valid options are On and Off. The default option is Off.
Sweep Limit Value	The greatest deviation allowed for a passing sweep response. The measured deviation is referred to as the sweep max-min value or sweep peak-to-valley value, both in dB delta. Thus, a Sweep Limit Value of 2.0 dB allows a sweep max-min value in the DSAM sweep display no greater than +1.0 to -1.0 dB on either side of the ideal sweep response. The valid range is 0.00 to 5.0 dB. The default value is 2.00 dB.
Reverse Sweep Port	Valid options are Port 1 - Bidirectional and Port 2 - Reverse Only. If you select Port 2, both ports are functional for connecting to directional test points. Port 1 handles the downstream or forward traffic while Port 2 handles upstream or reverse traffic. Two-way test modes other than sweep may use this configuration as well, such as DOCSIS and VoIP testing on directional test points. The default option is Port 2 - Reverse Only. **NOTE:** – If Port 1 is selected, both upstream and downstream traffic is handled through Port 1. – Reverse Sweep Port only applies to DSAM 6000 models.

Limit Sets

Use Limit Sets to configure the limit sets for measurements for tap, ground block, TV, cable modem, proof, and up to three custom limits. The limit set parameters you define remain constant for all channel plans and measurement modes.

Configuring Limit Sets

To configure limit sets

1 Press **Configure**.

2 Press the **Measure** softkey.

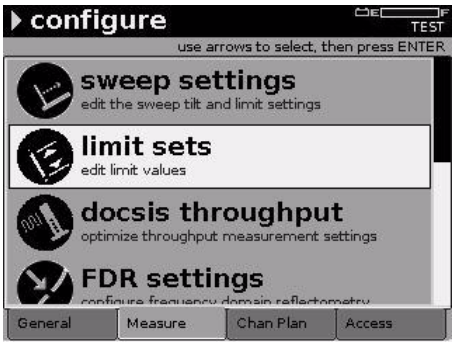

Figure 48 Configure – Measure Tab: Limit Sets

3 Using the arrow keys, select **Limit Sets**.

4 Press **ENTER**.

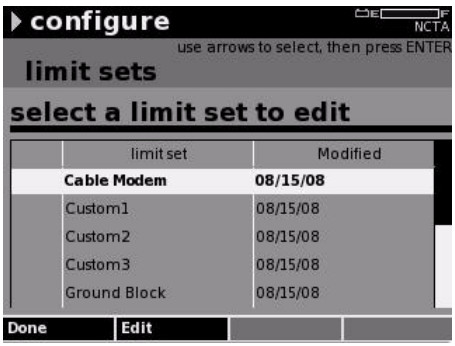

Figure 49 Configure – Limit Sets

5 Using the arrow keys, select the **limit set** you want to edit.

6 Press the **Edit** softkey.

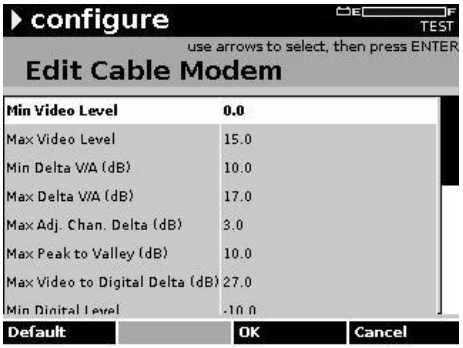

Figure 50 Configure – Edit Cable Modem

7 Using the arrow keys, select the **parameter** you want to edit.

8 Press **ENTER**.

9 Using the arrow keys and the alphanumeric keypad, edit the **value**.

10 Press **ENTER**.

11 Press **ENTER**.

12 Press the **OK** softkey.

13 Press the **Done** softkey.

NOTE

If a “key” icon is displayed to the left of a limit set, it indicates that the limit set is locked and requires a PIN entry prior to editing.

To reset the currently selected parameter to its factory default value, press the **Default** softkey.

Table 22 Limit Set Parameters

Name	Description
Min Video Level	The minimum video signal level before it exceeds your set limit. The default value is 0.0.
Max Video Level	The maximum video signal level before it exceeds your set limit. The default value is 15.0.

Table 22 Limit Set Parameters (Continued)

Name	Description
Min Delta V/A (dB)	The minimum delta video to audio before it exceeds your set limit. Delta V/A is calculated by subtracting the audio carrier level (first if DUAL) from the video carrier level (for analog TV and DUAL type channels only). The valid range is 0.0 to 17.0. The default value is 10.0.
Max Delta V/A (dB)	The maximum delta video to audio before it exceeds your set limit. Delta V/A is calculated by subtracting the audio carrier level (first if DUAL) from the video carrier level (for analog TV and DUAL type channels only). The valid range is 0.0 to 100.0. The default value is 17.0.
Max Adj. Chan. Delta (dB)	(An adjacent channel is the next channel up to 9 MHz in front of the current channel. This limit check is only applicable in AutoTests.) The maximum adjacent channel delta before it exceeds your set limit. The valid range is 0.0 to 100.0. The default value is 3.0.
Max Peak to Valley (dB)	(The peak-to-valley is the highest level in the channel plan less the lowest level in the channel plan or, the delta between the highest and lowest levels in the channel plan.) The maximum peak to valley before it exceeds your set limit. The valid range is 0.0 to 100.0. The default value is 10.0.
Max Video to Digital Delta (dB)	The maximum video to digital delta before it exceeds your set limit. The valid range is 0.0 to 100.0. The default value is 27.0.
Min Digital Level	The minimum digital level (in decibels) before it exceeds your set limit. The valid range is -40.0 to 60.0. The default value is -15.0.
Max Digital Level	The maximum digital level before it exceeds your set limit. The valid range is -40.0 to 60.0. The default value is 10.0.
Signal Quality 64 QAM	The minimum signal quality at 64 QAM. before it falls below your set limit. The default value is 28.0 dB if digital the performance unit is set to MER in Regional Preferences. The default value is 2.61 if the digital performance unit is set to EVM in Regional Preferences.

Table 22 Limit Set Parameters (Continued)

Name	Description
Signal Quality 128 QAM	The minimum signal quality at 128 QAM before it falls below your set limit. The default value is 32.0 dB if digital the performance unit is set to MER in Regional Preferences. The default value is 1.08 if the digital performance unit is set to EVM in Regional Preferences.
Signal Quality 256 QAM	The minimum signal quality at 256 QAM before it falls below your set limit. The default value is 32.0 dB if digital the performance unit is set to MER in Regional Preferences. The default value is 1.55 if the digital performance unit is set to EVM in Regional Preferences.
Max Pre BER	The maximum bit error rate prior to forward error correction before it exceeds your set limit. The default value is 1.0E-7.
Max Post BER	The maximum bit error rate after forward error correction before it exceeds your set limit. The default value is 1.0E-9.
Min CM Headroom (dB)	The minimum cable modem headroom (in decibels) before it exceeds your set limit. The default value is 5.0.
Max Ingress	The maximum amount of noise before it exceeds your set limit. The default value is -30.0.
Min CN Level	The minimum carrier-to-noise before it exceeds your set limit. The default value is 43.0.
Max Hum Level	The maximum undesired modulation before it exceeds your set limit. The default value is 3.0% (-30.5dB) per FCC limit.

DOCSIS Throughput

Use the DOCSIS Throughput screen to:

– Set a downstream HTTP server IP address

– Define a relative path to the file and file name to be transferred by the meter

Configuring DOCSIS Throughput

To configure DOCSIS throughput

1 Press **Configure**.

2 Press the **Measure** softkey.

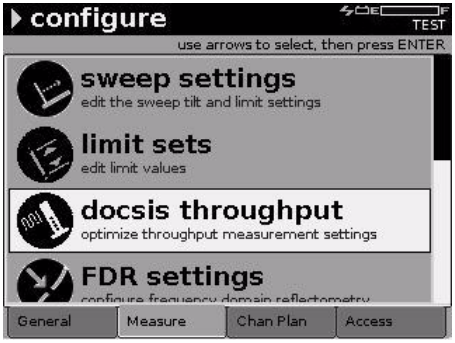

Figure 51 Configure – Measure Tab: DOCSIS Throughput

3 Using the arrow keys, select **DOCSIS Throughput**.

4 Press **ENTER**.

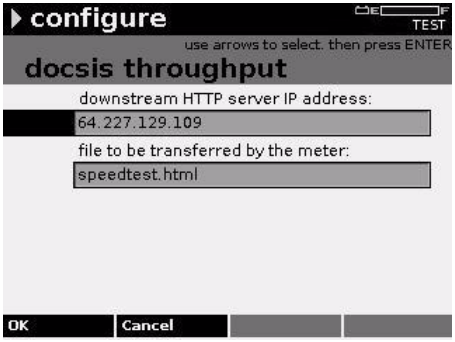

Figure 52 Configure – DOCSIS Throughput

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

NOTE

The default values for the server IP address and file to be transferred are maintained by JDS Uniphase Corporation. For more accurate results, JDS Uniphase Corporation recommends that you set up your own throughput server close to your gateway.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

9 Press the **OK** softkey.

Table 23 DOCSIS Throughput Parameters

Name	Description
Downstream HTTP Server IP Address	A numeric, static IP address for the HTTP server.
File to be Transferred by the Meter	The name of the file to download. The recommended file size is 20MB).

FDR Settings

Use the FDR Settings screen to configure the following components of the LST1700.

Configuring FDR Settings

To configure FDR settings

1 Press **Configure**.

2 Press the **Measure** softkey.

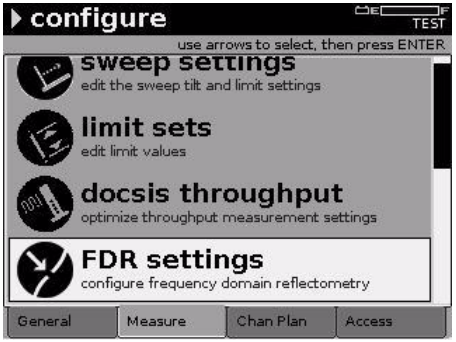

Figure 53 Configure – Measure Tab: FDR Settings

3 Using the arrow keys, select **FDR Settings**.

4 Press **ENTER**.

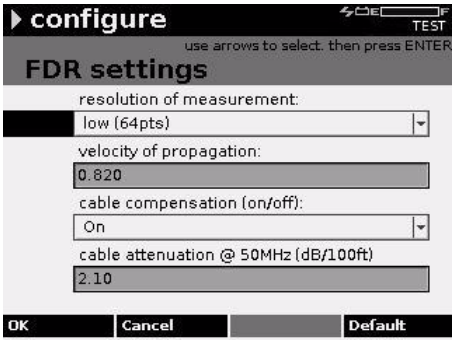

Figure 54 Configure – FDR Settings

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

OR

8 Using the arrow keys, select an **option**.

9 Press **ENTER**.

10 Press the **OK** softkey.

Table 24 FDR Parameters

Name	Description
Resolution of Measurement	The resolution of measurement determines the number of data points, maximum distance of, and distance resolution/accuracy of the measurement. This setting affects the time per measurement cycle, with LOW being fast (least accurate) and ULTRA being slow (most accurate). Valid options are: – LOW (64pts) – MEDIUM (128pts) – HIGH (256pts) – ULTRA (512pts) The default option is LOW (64pts).

Table 24 FDR Parameters (Continued)

Name	Description
Velocity of Propagation	The velocity of propagation (VOP) is a property of the cable in use and greatly affects the measurement accuracy. Possible values are 0.3 through 1.0. The default value is .820.
Cable Compensation	Valid options are On and Off. The default option is On.
Cable Attenuation	The cable attenuation parameter is only used if Cable Compensation is set to ON. Cable Attenuation calibrates the distance measurement for distant breaks. The valid range is 0.01 through 3.5. The default value is 2.1.

Other Settings

Use the Other Settings screen to select or define the best measurement parameters for your current work practices.

Configuring Other Settings

To configure other settings

1 Press **Configure**.

2 Press the **Measure** softkey.

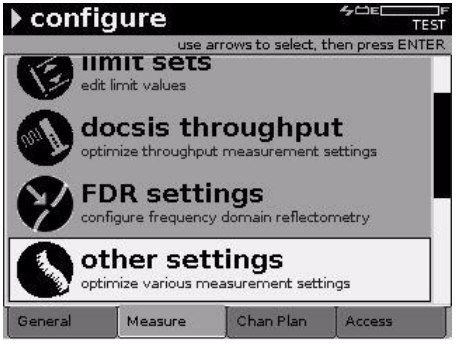

Figure 55 Configure – Measure Tab: Other Settings

3 Using the arrow keys, select **Other Settings**.

4 Press **ENTER**.

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

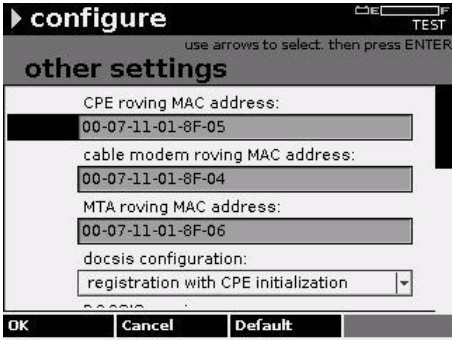

Figure 56 Configure – Other Settings

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

OR

8 Using the arrow keys, select an **option**.

9 Press **ENTER**.

10 Press the **OK** softkey.

Table 25 Other Settings Parameters

Name	Description
CPE Roving MAC Address	The roving MAC (Media Access Control) address for the Customer Premises Equipment (CPE) in hexadecimal format.
Cable Modem Roving MAC Address	The roving MAC address for the Cable Modem in hexadecimal format.
MTA Roving MAC Address	The roving MTA (Multimedia Terminal Adapter) MAC address for VoIP in hexadecimal format.
DOCSIS Configuration	Select Range Only, Range and Registration, or Registration with CPE Initialization for DOCSIS configuration. The default value is Registration with CPE Initialization.

Table 25 Other Settings Parameters (Continued)

Name	Description
DOCSIS Version	The version of DOCSIS on the CMTS. Valid options are DOCSIS 1.0, DOCSIS 1.1, or DOCSIS 2.0. The default option is DOCSIS 1.1. The compatible DOCSIS version depends on the DOCSIS version of the meter.
DOCSIS Security Mode	The version of BPI (Baseline Privacy Initialization) for DOCSIS. Valid options are BPI or BPI+. The default value is BPI.
Channel Order for Lists and Tuning	Select an option to sort by channel or frequency for lists and tuning. Valid options are Channel and Frequency. The default value is Channel.
When Tuning with Arrows, Increment by (MHz)	Use the up and down arrow keys to define the amount of increase or decrease (in 0.01 MHz increments) the amount by which the meter uses to tune. The valid range is .01 to 100 MHz. The default value is 0.01.
TruPacket™ SNMP (On/Off)	Valid options are On and Off. The default option is Off.
QAM Sensitivity	Valid options are Normal and High. The default option is High.

VoIP Check

Use the VoIPCheck screen to indicate the server IP address, ethernet port, codec, and jitter size.

Configuring VoIPCheck

To configure VoIPCheck

1 Press **Configure**.

2 Press the **Measure** softkey.

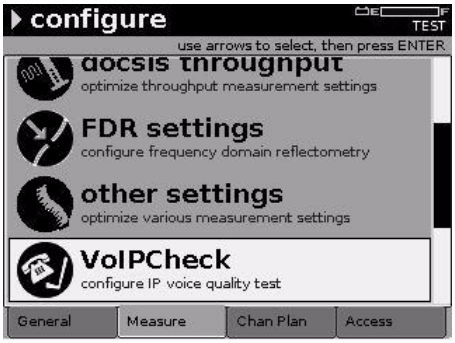

Figure 57 Configure – Measure Tab: VoIP Check

3 Using the arrow keys, select the **parameter** you want to edit.

4 Press **ENTER**.

NOTE

For more accurate results, JDS Uniphase Corporation recommends that you set up your own VoIPCheck server close to your gateway.

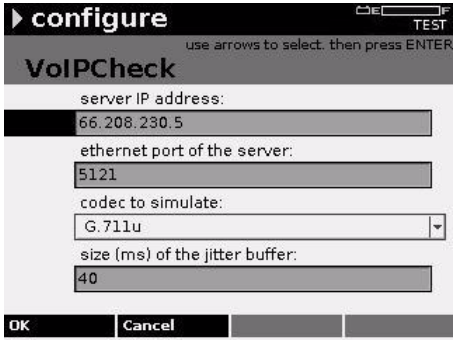

Figure 58 Configure – VoIPCheck

5 Using the arrow keys and the alphanumeric keypad, edit the **value**.

OR

6 Using the arrow keys, select an **option**.

7 Press the **OK** softkey.

Table 26 VoIPCheck Parameters

Name	Description
Server IP Address	The numerical identification (logical address) assigned to the server that identifies it to the network. The valid range for this value is 0.0.0.0 to 255.255.255.255. All IP addresses are numeric only.
Ethernet Port of the Server	The 4-digit port number on the Ethernet server.
Codec to Simulate	The ID of the device used to convert analog signals to digital signals. The default option is G.711u.
Size (ms) of the Jitter Buffer	Size (or time in ms) to be used to buffer temporary effects caused by instability in transmission. The default value is 40.

Return QAM Generator

Use the Return QAM Generator screen to select or define the best measurement parameters for your current work practices.

Configuring Return QAM Generator

To configure Return QAM Generator

1 Press **Configure**.

2 Press the **Measure** softkey.

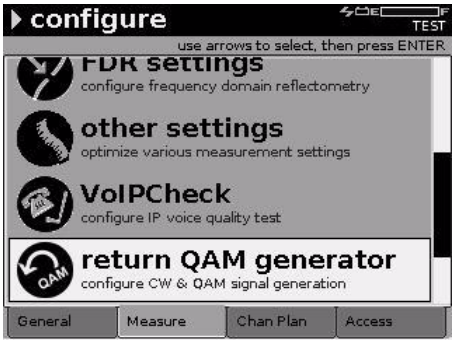

Figure 59 Configure – Measure Tab: Return QAM Generator

3 Using the arrow keys, select **Return QAM Generator**.

4 Press **ENTER**.

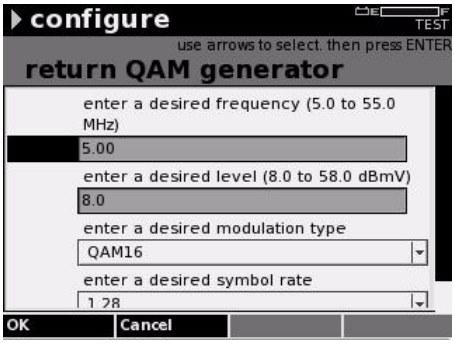

Figure 60 Configure – Return QAM Generator

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

OR

8 Using the arrow keys, select an **option**.

9 Press **ENTER**.

10 Press the **OK** softkey.

Table 27 Return QAM Generator Parameters

Name	Description
Frequency	The valid range is 5.00 to 55.00 MHz. The default value is 5.00.
Level	The valid range is 8.0 to 58.0 dBmV. The default value is 8.00.
Modulation Type	The type of modulation used to transmit signals. Valid options are CW (carrier wave), 16 QAM, or 64 QAM. The default option is CW.
Symbol Rate	The number of symbol changes (signalling events) made to the transmission medium per second using a digitally modulated signal or a line code. The Symbol rate is measured in baud (Bd) or symbols/second. Valid QAM symbol rates are 1.28, 2.56, 3.84, or 5.12. The default value is 1.28.

Test Point Compensation

Use the Test Point Compensation (TPC) screen, to mathematically adjust DSAM level readings.

TPC better represents the level value at a common point of reference.

– For example, adding 10 dB automatically to level readings taken at a 10 dB down tap better represents the level value on the main distribution hard line.

– TPC affects the measurement levels of most measurement modes on the DSAM.

– A graphical representation of the way the user-entered TPC values affect the level readings is available by pressing the Summary softkey while in the configuration mode.

– TPC values are saved inside each saved measurement file and permanently associated with the file.

Also, TPC icons display for each mode.

– If a mode is created that has a total effect of 0 dB on the current mode, the icon does not appear. The default setting of “Off” has an effect of 0 dB.

– The total effect of the current Test Point Compensation file (if non-zero) is displayed to the right of the icon.

– The Test Point Compensation screen can be reached within each of these modes by pressing the keypad shortcut of Shift, 4.

– When finished with the Test Point Compensation configuration, press Done to return to the original measurement mode.

Test point compensation applies to the following modes:

– Level

– MiniScan

– Full Scan

– Tilt

– Constellation

– DOCSIS Range (downstream results only)

– Upstream Spectrum

– Downstream Spectrum

– Ingress Resistance

– Forward Sweep
– Reverse Sweep
– Combo Autotest
– Video Autotest
– CM Autotest
– Home Certification

NOTE

Forward TPC values are applied to all modes except Reverse Sweep and Reverse Alignment modes.

Reverse TPC values are only applied to Reverse Sweep and Reverse Alignment modes.

Adding a TPC Plan

To add a TPC plan

1 Press **Configure**.

2 Press the **Measure** softkey.

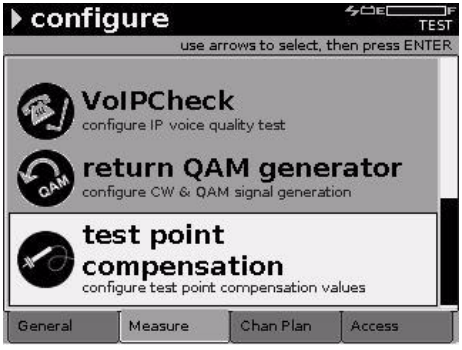

Figure 61 Configure – Measure Tab: Test Point Compensation

3 Using the arrow keys, select **Test Point Compensation**.

4 Press **ENTER**.

NOTE

If you select Off, no TPC is applied and you can only modify the Reverse Telemetry Level and Reverse Sweep Insertion Level.

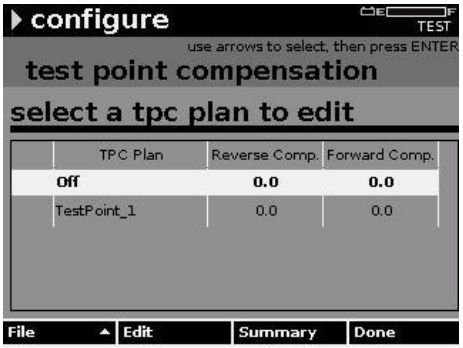

Figure 62 Configure – Test Point Compensation

5 Press the **File** softkey.

6 Using the arrow keys, select **New**.

7 Press **ENTER**.

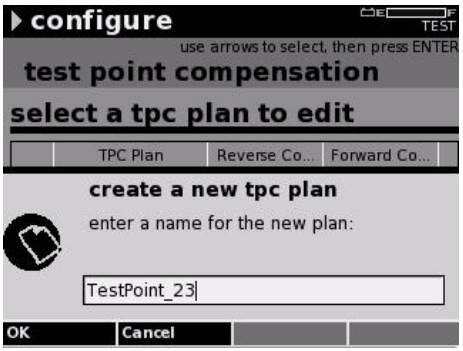

Figure 63 Configure – Create a New TPC Plan

8 Using the arrow keys and the alphanumeric keypad, edit the **value**.

9 Press the **OK** softkey.

Editing a TPC Plan

To edit a TPC plan

1 Using the arrow keys, select the **TPC plan** you want to edit.

2 Press the **File** softkey.

3 Using the arrow keys, select **Edit**.

4 Press **ENTER**.

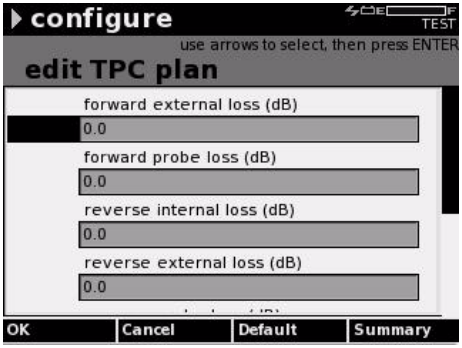

Figure 64 Configure – Edit TPC Plan

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

OR

7 To set each parameter to its default value, press the **Default** softkey.

8 Using the arrow keys and the alphanumeric keypad, edit the **value**.

9 Press **ENTER**.

NOTE

The sum of the Reverse Internal Loss, Reverse External Loss, Reverse Probe Loss, and Reverse Telemetry Level must be **between** -100 dBmV and +55 dBmV; however, this number changes based on the active units.

The sum of the Reverse Internal Loss, Reverse External Loss, Reverse Probe Loss and Reverse Sweep Insertion Level must be **less than** -100 dBmV and +55 dBmV; however, this number changes based on the active units.

10 Press the **OK** softkey.

Table 28 TPC Plan Parameters

Name	Description
Forward External Loss	Example: A distribution tap value on a drop. The valid range is -50.0 to 50.0 dB. The default value is 0.0 dB.
Forward Probe Loss	Example: Attenuator added inline with test lead. The valid range is -50.0 to 50.0 dB. The default value is 0.0 dB.
Reverse Internal Loss	Example: Attenuation pad within an amplifier under test. The sum of the internal, external and probe losses plus the Telemetry level must be greater than or equal to 10 dBmV. The default value is 0.0 dB.
Reverse External Loss	Example: A distribution tap value on a drop. The sum of the internal, external and probe losses plus the Telemetry level must be greater than or equal to 10 dBmV. The default value is 0.0 dB.
Reverse Probe Loss	Example: Attenuator added inline with test lead. The sum of the internal, external and probe losses plus the Telemetry level must be greater than or equal to 10 dBmV. The default value is 0.0 dB.
Reverse Telemetry Level	The sum of the internal, external and probe losses plus the Telemetry level must be greater than or equal to 10 dBmV. The default value is 20 dBmV.
Reverse Sweep Insertion Level	The sum of the internal, external and probe losses plus the Telemetry level must be greater than or equal to 10 dBmV. The default value is 20 dBmV.

Renaming a TPC Plan

To rename a TPC plan

1 Using the arrow keys, select the **TPC plan** you want to rename.

2 Press the **File** softkey.

3 Using the arrow keys, select **Rename**.

4 Press **ENTER**.

NOTE

If the TPC plan is set to Off, the **Rename** option is disabled.

5 Using the arrow keys and the alphanumeric keypad, edit the **value**.

6 Press the **OK** softkey.

Deleting a TPC Plan

To delete a TPC plan

1 Using the arrow keys, select the **TPC plan** you want to delete.

2 Press the **File** softkey.

3 Using the arrow keys, select **Delete**.

4 Press **ENTER**.

NOTE

If the TPC plan is set to Off, the **Delete** option is disabled.

5 Press the **Yes** softkey to confirm.

Viewing a Graphical Summary

To view a graphical summary

1 Using the arrow keys, select the **TPC plan** you want to view.

2 Press the **Summary** softkey.
The TPC Summary screen is displayed.

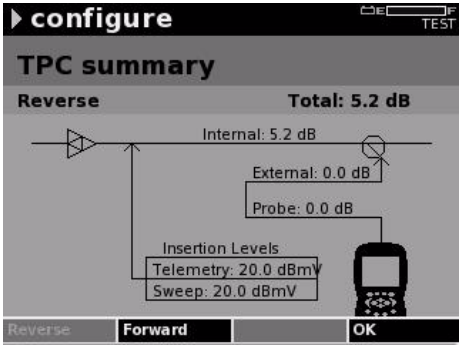

Figure 65 Configure – TPC Summary

3 Press the **Forward** softkey to view more of the plan.

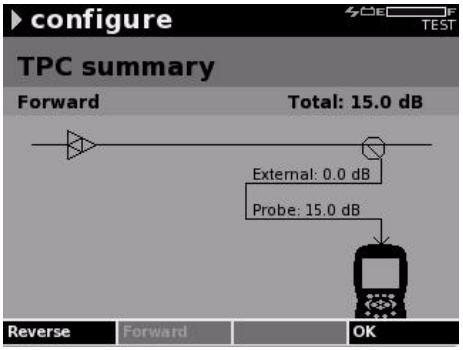

Figure 66 Configure – TPC Summary

4 Press the **OK** softkey.

Configure – Channel Plan Tab

Overview

A CATV (Community Antenna Television or Cable TV) system consists of channels that represent the channel plan for that system. Each channel is identified by its carrier type, frequency, and other parameters. You can edit the parameters of individual channels within a plan to meet a variety of measurement objectives.

NOTE

The default channel plan is NCTA. You can build, clone, or synchronize (through TPP) other plans.

Use channel plan configuration to:

– Select a channel plan

– Edit a channel plan

– Enable/disable channels in a channel plan

– Configure MiniScan channels

– Configure AutoTest parameters for the currently selected plan

– Build a new, custom channel plan

– Configure telemetry settings for sweep or field view

– Select browser and synchronization channels

– Configure location settings

Downstream Plans

Each channel is identified by its carrier type, frequency, and other parameters. You can edit the parameters of individual channels within a plan to meet a variety of measurement objectives.

Choosing a Channel Plan

To select a channel plan

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

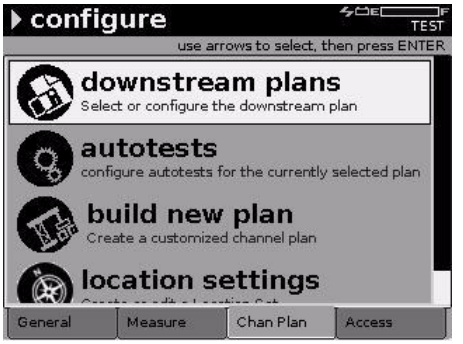

Figure 67 Configure – Channel Plan Tab: Downstream Plans

3 Using the arrow keys, select **Downstream Plans**.

4 Press **ENTER**.

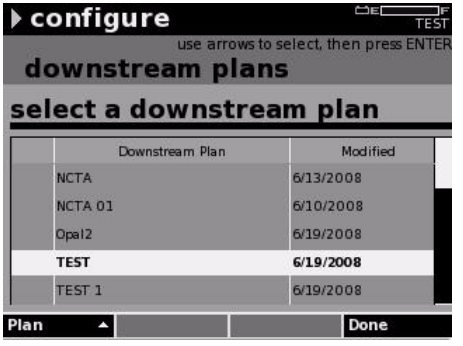

Figure 68 Configure – Downstream Plans

5 Using the arrow keys, select the **plan** you want to use for the network you are servicing.

6 Press **ENTER** or the **Done** softkey.

NOTE

The plan name is displayed in the title bar for all subsequent screens until you change plans.

Before you conduct measurements or configure other parameters, confirm that the correct plan name is displayed in the title bar.

7 Using the arrow keys, select a **menu option**.

8 Press **ENTER**.

Each option is described in the following pages.

Editing a Channel Plan

To edit a channel plan

You can edit an existing channel plan to meet your needs by editing the channels within the plan. You can change the parameters of individual channels or add and delete channels from the plan.

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

3 Using the arrow keys, select **Downstream Plans**.

4 Press **ENTER**.

5 Using the arrow keys, select a **plan**.

6 Press the **Plan** softkey.

7 Using the arrow keys, select **Edit**.

8 Press **ENTER**.

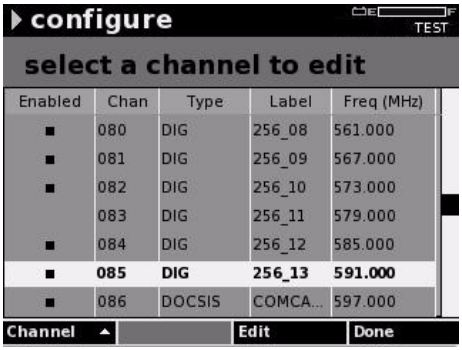

Figure 69 Configure – Select a Channel to Edit

9 Using the arrow keys, select a **channel** then:

10 Press the **Edit** softkey and edit the **channel parameters**.

OR

11 Press the **Channel** softkey, highlight.

- **Find** – To enter a channel number.
- **Add –** To add a new channel.
- **Delete** – To delete the selected channel.
- **Enabled(/Disabled)** – To enable/disable the current channel. A disabled channel does not appear in any measurements but remains in your channel plan until you delete it. You cannot disable all channels in a plan; at least one channel must be enabled.
- **Delete All Disabled** – To delete all disabled channels from the plan.

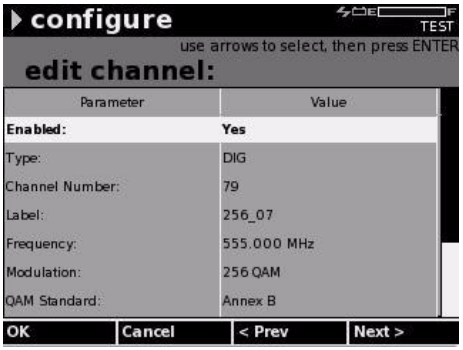

Figure 70 Configure – Edit Channel

Table 29 Common Channel Parameters

Name	Description
Enabled	Whether or not the channel is enabled. Options are Yes and No.
Type	The channel type. Options are TV, Single, Dual, DIG and DOCSIS.
Channel Number	The number assigned to the frequency.
Label	You can create a distinctive label to identify the channel. The label associates the channel's number to programming. The label is displayed to the left of the channel number on most screens.
Frequency	The rate at which the signal pattern is repeated.

Table 30 TV Channel Parameters

Name	Description
Video Signal	The video signal type. Valid options are NTSC, B/Pal, B/SECAM, B1/PAL. The default option is NTSC.
Scrambled	An indication of whether the channel is scrambled or not. Valid options are Yes and No.
CN Enabled	(Carrier-to-noise enabled) Valid options are Yes and No.
Audio 1 Offset	Carrier to noise offset for the first audio frequency.

Table 30 TV Channel Parameters (Continued)

Name	Description
CN Offset	(Carrier-to-noise offset) The difference between the carrier frequency and noise frequency.
CN BW	(Carrier-to-noise bandwidth) The difference between the carrier frequency and bandwidth.

Table 31 Single Channel Parameters

Name	Description
Single Channel Parameters	The list of single channel parameters are the same as the list of common channel parameters on page 81.

Table 32 Dual Channel Parameters

Name	Description
Video Signal	The video signal type. Valid options are NTSC, B/Pal, B/SECAM, B1/PAL. The default option is NTSC.
Scrambled	An indication of whether the channel is scrambled or not. Valid options are Yes and No.
CN Enabled	(Carrier-to-noise enabled) Valid options are Yes and No.
Audio 1 Offset	Carrier to noise offset for the first audio frequency.
Audio 2 Offset	Carrier to noise offset for the second audio frequency.
CN Offset	(Carrier-to-noise offset) The difference between the carrier frequency and noise frequency.
CN BW	(Carrier-to-noise bandwidth) The difference between the carrier frequency and bandwidth.

Table 33 Digital Channel Parameters

Name	Description
Modulation	The process whereby a transmission signal is modified to carry information. Options are 256 QAM, 128 QAM, 64 QAM and Other.
QAM Standard	A method of combining amplitude modulation with phase shift modulation that allows for the transfer of several bits of information at the same time. Options are DOCSIS and EuroDOCSIS.
Symbol Rate	The symbol rate corresponds to the size and shape (bandwidth) of the digital signal. The symbol rate changes to carrier bandwidth if you select “Other” for Modulation.
Inverted Spectrum	Designates whether or not the signal is inverted. Valid options are Yes and No. The default option is No.

Table 34 DOCSIS Channel Parameters

Name	Description
Enabled	Whether or not the channel is enabled. Options are Yes and No.
Type	The channel type. Options are TV, Single, Dual, DIG and DOCSIS.
Channel Number	The number assigned to the frequency.
Label	A user-defined distinctive label used to identify the channel. The label associates the channel’s number to programming. The label is displayed to the left of the channel number on most screens.
Frequency	The rate at which the signal pattern is repeated.
Modulation	The process whereby a transmission signal is modified to carry information. Options are 256 QAM, 128 QAM, 64 QAM and Other.
QAM Standard	A method of combining amplitude modulation with phase shift modulation that allows for the transfer of several bits of information at the same time. Options are DOCSIS and EuroDOCSIS.

Table 34 DOCSIS Channel Parameters (Continued)

Name	Description
Symbol Rate	The symbol rate corresponds to the size and shape (bandwidth) of the digital signal. The symbol rate changes to carrier bandwidth if you select “Other” for Modulation.
Inverted Spectrum	Designates whether or not the signal is inverted. Valid options are Yes and No. The default option is No.

Configuring Channels for MiniScan

To configure channels for MiniScan

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

3 Using the arrow keys, select **Downstream Plans**.

4 Press **ENTER**.

5 Using the arrow keys, select the **plan** you want to work with.

6 Press the **Plan** softkey.

7 Using the arrow keys, select **MiniScan Channels**.

8 Press **ENTER**.

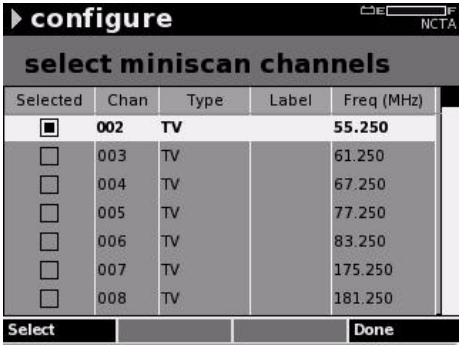

Figure 71 Configure – Select MiniScan Channels

9 Using the arrow keys, select a **channel** you want to include.

10 Press the **Select** softkey.

The minimum number of channels is one. The maximum number of channels is twelve.

11 Press the **Done** softkey.

Configuring Channels for Tilt

To configure channels for Tilt

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

3 Using the arrow keys, select **Downstream Plans**.

4 Press **ENTER**.

5 Using the arrow keys, select the **plan** you want to work with.

6 Press the **Plan** softkey.

7 Using the arrow keys, select **Tilt Channels**.

8 Press **ENTER**.

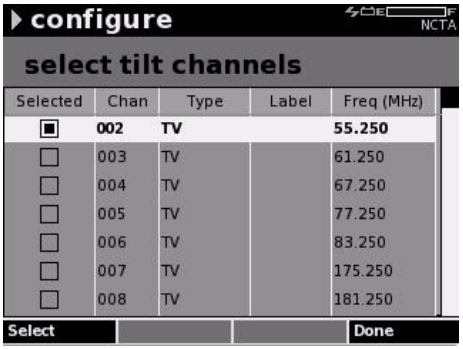

Figure 72 Configure – Select Tilt Channels

9 Using the arrow keys, select **each channel** you want to include.

10 Press the **Select** softkey.

The minimum number of channels is one. The maximum number of channels is 12.

11 Press the **Done** softkey.

Configuring Access Channels

This function lists all DOCSIS channels and lets you indicate which channels to use when browsing and which to use for synchronization.

To configure access channels

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

3 Using the arrow keys, select **Downstream Plans**.

4 Press **ENTER**.

5 Using the arrow keys, select the **plan** you want to work with.

6 Press the **Plan** softkey.

7 Using the arrow keys, select **Access Channels**.

8 Press **ENTER**.

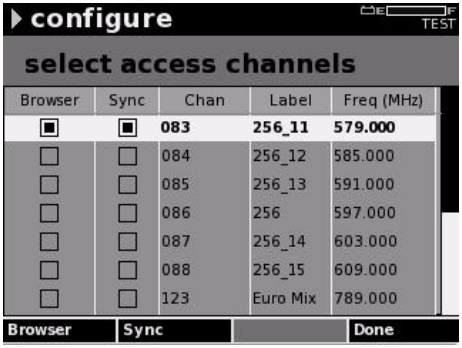

Figure 73 Configure – Select Access Channels

9 Using the arrow keys, select the **channel** you want to include.

10 Press the **Select** softkey.

Configuring Telemetry Frequency

The Telemetry frequency is the frequency used to transmit data from the headend modem to the DSAM. Telemetry frequency on the DSAM must match the frequency at which the headend modem (HSM 1000) is broadcasting. The valid frequency range is between 50 MHz and 1000 MHz.

To configure telemetry frequency

1 Press the **Plan** softkey.

2 Using the arrow keys, select **Telemetry**.

3 Press **ENTER**.

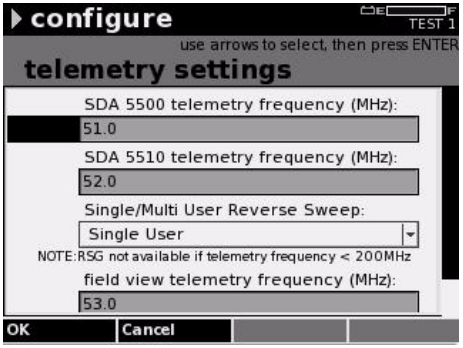

Figure 74 Configure – Telemetry Settings

4 Using the arrow keys, select a **parameter**.

5 Press **ENTER**.

6 Using the arrow keys and the alphanumeric keypad, enter a **telemetry frequency between 50 MHz and 1000 MHz**.

7 Press **ENTER**.

8 Press the **OK** softkey.

Table 35 Telemetry Settings Parameters

Name	Description
SDA 5500 Telemetry Frequency (MHz)	The transmission frequency of the SDA 5500.
SDA 5510 Telemetry Frequency (MHz)	The transmission frequency of the SDA 5510.
Single/Multi User Reverse Sweep	Valid options are Single User (for SDA 5500) and Multi User (for SDA5510).
Field View Telemetry Frequency (MHz)	The transmission frequency of the HSM.

NOTE

When you configure a telemetry setting, the parameters apply only to the current active plan. Other channel plans require their own telemetry configuration.

AutoTests

Use the Select an AutoTest screen to configure how AutoTests function using the active channel plan.

NOTE

When you configure an AutoTest, the parameters apply only to the current active plan. Other channel plans require their own AutoTest configuration.

At least one DOCSIS channel must be enabled in your active channel plan before you can conduct a Cable Modem AutoTest or Home Certification test.

Configuring AutoTest for Cable Modem

To configure AutoTest for cable modems

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

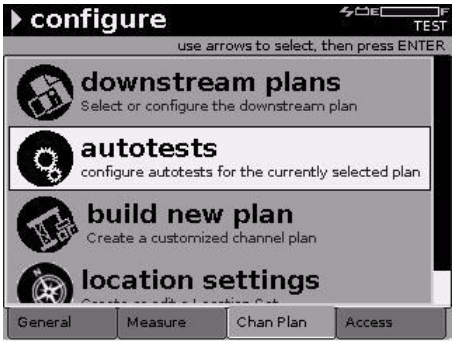

Figure 75 Configure – Channel Plan Tab: Autotests

3 Using the arrow keys, select **AutoTests**.

4 Press **ENTER**.

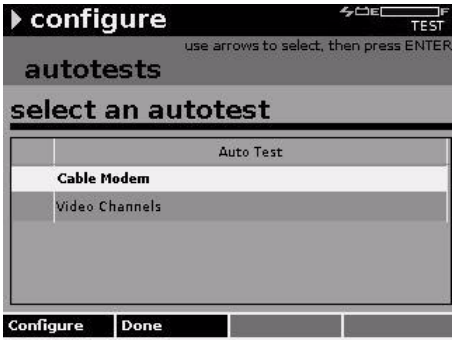

Figure 76 Configure – Select an Autotest

5 Using the arrow keys, select **Cable Modem**.

6 Press the **Configure** softkey.

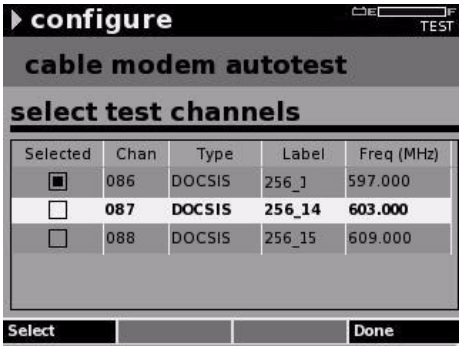

Figure 77 Configure Mode – Cable Modem AutoTest

7 Using the arrow keys, select a **DOCSIS channel** you want to include or exclude.

8 Press the **Select** softkey.

9 Press the **Done** softkey.

Configuring AutoTest for Video Channels

To configure AutoTest for video channels

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

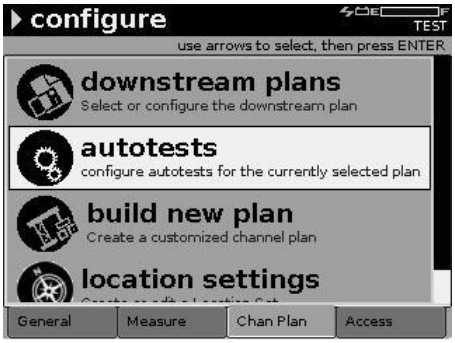

Figure 78 Configure – Channel Plan Tab: AutoTests

3 Using the arrow keys, select **AutoTests**.

4 Press **ENTER**.

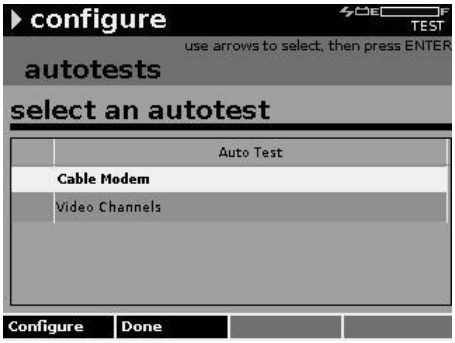

Figure 79 Configure – Select an Autotest

5 Using the arrow keys, select **Video Channels**.

6 Press the **Configure** softkey.

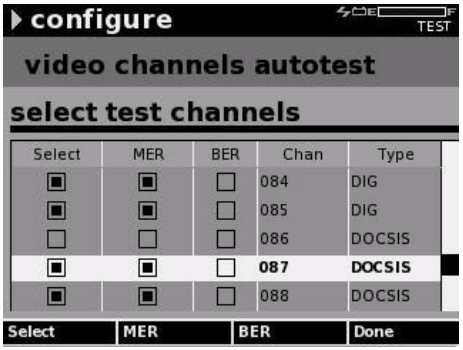

Figure 80 Configure Mode – Video Channels AutoTest

7 Using the arrow keys, select a **channel** you want to include or exclude.

8 Press the **Select** softkey.

9 Press the **MER** softkey to include the measurement as a part of the AutoTest. (The **MER** softkey is enabled when modulation error ratio measurements are available on certain digital channels.)

10 Press the **BER** softkey to include the measurement as a part of the AutoTest. (The **BER** softkey is enabled when bit error ratio measurements are available on certain digital channels.)

11 Press the **Done** softkey.

Build New Plan

Use the Build New Plan option to let the meter identify and characterize the channels in your system.

NOTE

The built plan will consist of only analog TV channels.

Building a New Channel Plan

To build a new channel plan

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

Figure 81 Configure – Channel Plan Tab: Build New Plan

3 Using the arrow keys, select **Build New Plan**.

4 Press **ENTER**.

Figure 82 Configure – Build a New Plan (step 1)

5 Using the arrow keys and the alphanumeric keypad, type the **plan name**.

6 Press the **Next** softkey.

7 Press **ENTER**.

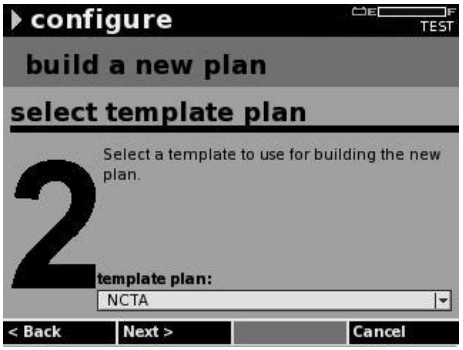

Figure 83 Configure – Build a New Plan (step 2)

8 Using the arrow keys, select a **template plan**.

9 Press **ENTER**.

10 Press the **Next** softkey.

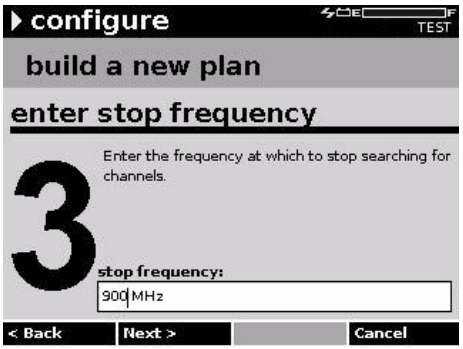

Figure 84 Configure – Build a New Plan (step 3)

11 Using the arrow keys and the alphanumeric keypad, enter the **stop frequency (up to 1000 MHz)**.

12 Press the **Next** softkey.

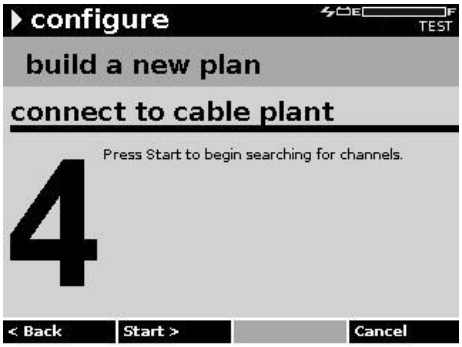

Figure 85 Configure – Build a New Plan (step 4)

13 Connect to **cable plant**.

14 Press the **Start** softkey.

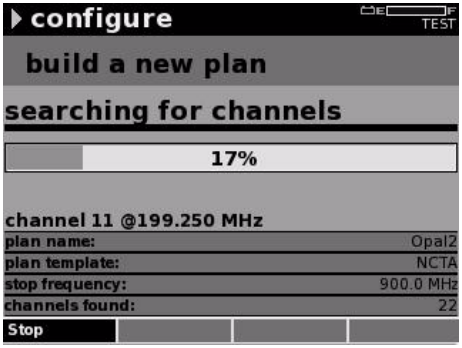

Figure 86 Configure – Build a New Plan (searching)

The meter searches the cable system for active channels and displays the following:

– the plan name you entered
– the template you used
– the stop frequency
– the number of channels found

Figure 87 Configure – Build a New Plan (complete)

Location Settings

The Test Productivity Pack (TPP) software determines what parameters appear on the Location Settings screen. Use the Location Settings screen to create or edit a location setting.

NOTE

The Location Settings screen can be disabled on your meter from TPP.

Configuring Location Settings

To configure location settings

1 Press **Configure**.

2 Press the **Chan Plan** softkey.

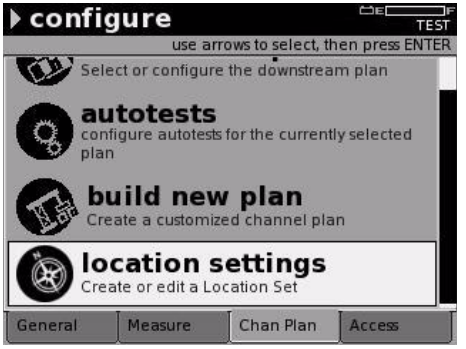

Figure 88 Configure – Channel Plan Tab: Location Settings

3 Using the arrow keys, select **Location Settings**.

4 Press **ENTER**.

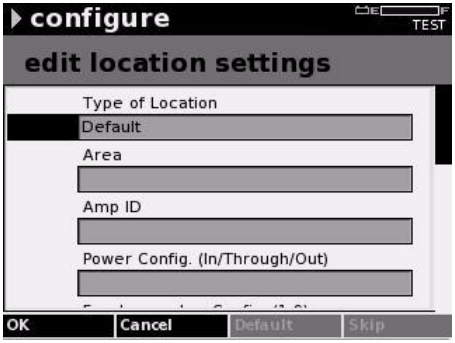

Figure 89 Configure – Edit Location Settings

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

9 Press the **OK** softkey.

Location Settings Parameters

Location Settings parameters are uniquely defined in TPP.

Configure – Access Tab

The Access tab enables you to select a PC connection (Ethernet or RF) and to define the IP address.

The Access tab also provides WFA browser parameters to enter the preferred ethernet or RF connection, home URL, proxy server parameters (optional) and CM diagnostic web page information.

PC Connection

Use the PC Connection screen to select which network interface to use (Ethernet or RF) to connect to a PC, and the IP address at which the PC is located. The default connection is Ethernet and the valid IP address range is from 0.0.0.0 to 255.255.255.255. (This is for connecting to a PC with TPP or FDM100 installed.)

Configuring a PC Connection

To configure a PC connection

1 Press **Configure**.

2 Press the **Access** softkey.

Figure 90 Configure – Access Tab: PC Connection

3 Using the arrow keys, select **PC Connection**.

4 Press **ENTER**.

Figure 91 Configure – PC Connection

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

NOTE

The Secure Synchronization parameters can be disabled on your meter from TPP. If the Secure Synchronization parameters are disabled, you cannot change them from your meter.

7 Using the arrow keys and the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

9 Press the **OK** softkey.

Table 36 PC Connection Parameters

Name	Description
Preferred Connection	The connection type. Valid options are Ethernet and RF. The default value is Ethernet.
IP Address	The numerical identification (logical address) assigned to the PC that identifies it to the network. The valid range for this value is 0.0.0.0 to 255.255.255.255. All IP addresses are numeric only.
Secure Sync Port With Certificates	The 4-digit port number of the secure Sync Port with certificates.
Secure Sync Port Without Certificates	The 4-digit port number of the secure Sync Port without certificates.

WFA Browser Settings

Use the Browser Settings screen (additional purchase required) to configure browser parameters.

Configuring WFA Browser Settings

To configure WFA browser settings

1 Press **Configure**.

2 Press the **Access** softkey.

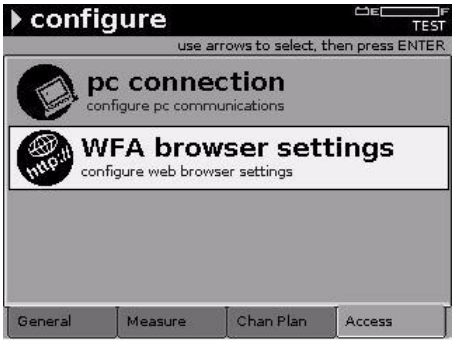

Figure 92 Configure – Access Tab: WFA Browser Settings

3 Using the arrow keys, select **WFA Browser Settings**.

4 Press **ENTER**.

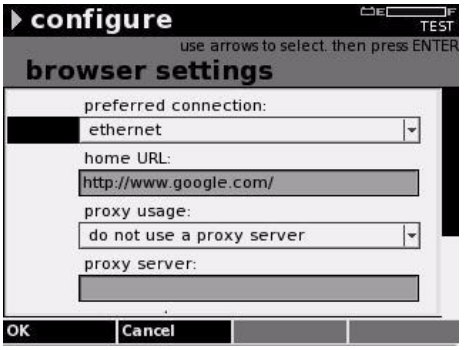

Figure 93 Configure – Browser Settings

5 Using the arrow keys, select the **parameter** you want to edit.

6 Press **ENTER**.

7 Using the arrow keys or the alphanumeric keypad, edit the **value**.

8 Press **ENTER**.

9 Press the **OK** softkey.

Table 37 WFA Browser Settings Parameters

Name	Description
Preferred Connection	The type of connection. Valid options are Ethernet and RF. The default value is Ethernet.
Home URL	This parameter is “view only” from the DSAM meter. It is changed via the JDS Uniphase Corporation Test Productivity Pack (TPP) software. The home URL address may vary for each network.
Proxy Usage	The DSAM allows a proxy server within the Browser and Web Access Test. A proxy can be used as a caching mechanism or as a part of a back-end firewall. To enable a proxy server for use with the Browser mode or Web Access Test, select “Use a Proxy Server.”
Proxy Server	If you have enabled proxy usage, enter the proxy server IP address. The valid IP address ranges are 0.0.0.0 to 255.255.255.255.
Proxy Port	If you have enabled proxy usage, enter the 4-digit proxy server port number. The default value is 8080.

Access Mode

6

This chapter provides task-based instructions for using the DSAM Product Family Series Access Mode features. Topics discussed in this chapter are as follows:

Overview

Use the Access mode to efficiently manage your measurement files and folders. You can also use the Access mode to synchronize your data with optional TPP software.

Access – Files Tab

Work Folders

The Work Folders function enables you to:

- Create a new folder for your measurement files
- Open a file within a folder
- Rename or examine the properties of a folder (you cannot rename the Default Folder)
- Delete a selected folder (you cannot delete the Default Folder)
- Purge all folders that have been synchronized with JDS Uniphase Corporation Test Productivity Pack (TPP) software (you cannot purge the Default folder)

Opening a File in Folder

To open a folder

1 Press **Access**.

2 Press the **Files** softkey.

Figure 94 Access – Files Tab: Work Folders

3 Using the arrow keys, select **Work Folders**.

4 Press **ENTER**.

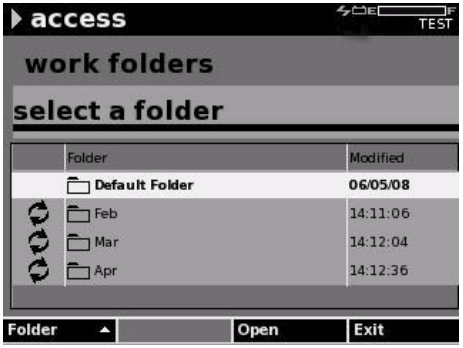

Figure 95 Access – Work Folders

5 Using the arrow keys, select a **folder**.

6 Press the **Open** softkey or **ENTER**.

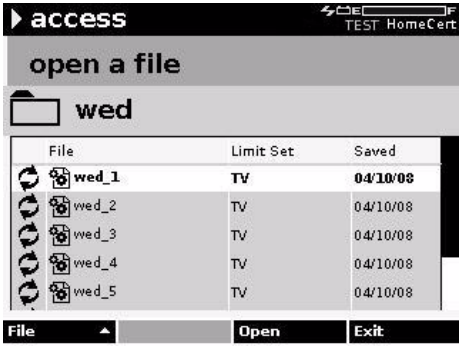

Figure 96 Access – Open a File

7 Using the arrow keys, select a **file**.

8 Press the **Open** softkey or **ENTER**.

Creating a Folder To create a new folder

1 Press **Access**.

2 Press the **Files** softkey (Figure 94 on page 102).

3 Using the arrow keys, select **Work Folders**.

4 Press **ENTER** (Figure 95 on page 103).

5 Press the **Folders** softkey.

6 Using the arrow keys, select **New**.

7 Press **ENTER**.

Figure 97 Access – Create New Work Folder

8 Using the arrow keys and alphanumeric keypad, type the **new folder name**.

9 Press the **OK** softkey.

Deleting a Folder

To delete a folder

1 Press **Access**.

2 Press the **Files** softkey (Figure 94 on page 102).

3 Using the arrow keys, select **Work Folders**.

4 Press **ENTER** (Figure 95 on page 103).

5 Press the **Folders** softkey.

6 Using the arrow keys, select the **folder** you wish to delete.

7 Using the arrow keys, select **Delete**.

8 Press **ENTER**.

The folder name is removed from the list.

Purging Synchronized Folders

You can purge synchronized folders (folders with a synchronize icon) all at once.

To purge synchronized folders

1 Press **Access**.

2 Press the **Files** softkey (Figure 94 on page 102).

3 Using the arrow keys, select **Work Folders**.

4 Press **ENTER** (Figure 95 on page 103).

5 Press the **Folders** softkey.

6 Using the arrow keys, select **Purge**.

7 Press **ENTER**.
A confirmation screen is displayed.

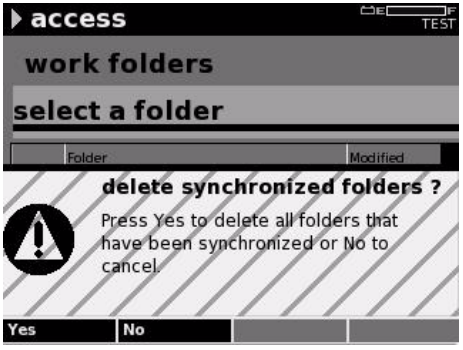

Figure 98 Access – Purge Confirmation

8 Press the **Yes** softkey.
All synchronized folders disappear from the list.

Renaming a Folder

To rename a folder

1 Press **Access**.

2 Press the **Files** softkey (Figure 94 on page 102).

3 Using the arrow keys, select **Work Folders**.

4 Press **ENTER** (Figure 95 on page 103).

5 Using the arrow keys, select the **folder** you want to work with.

6 Press the **Folders** softkey.

7 Using the arrow keys, select **Rename**.

8 Press **ENTER**.

The folder rename screen is displayed.

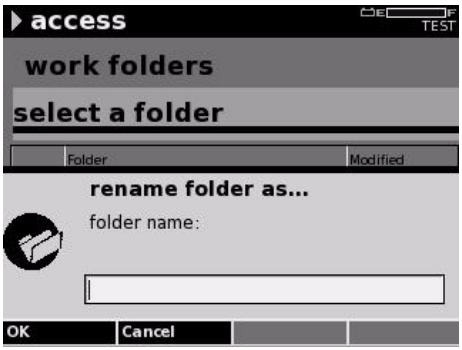

Figure 99 Access – Folder Rename

9 Using the arrow keys and the alphanumeric keypad, type a **new name**.

10 Press the **OK** softkey.

Viewing Folder Properties

To view folder properties

1 Press **Access**.

2 Press the **Files** softkey (Figure 94 on page 102).

3 Using the arrow keys, select **Work Folders**.

4 Press **ENTER** (Figure 95 on page 103).

5 Using the arrow keys, select the **folder** you want to work with.

6 Press the **Folders** softkey.

7 Using the arrow keys, select **Properties**.

8 Press **ENTER**.

Synchronization

The Synchronize function enables you to synchronize your folders (and the files in them) with optional JDS Uniphase Corporation Test Productivity Pack (TPP) software. Through synchronization, this software can receive, transfer, manage, and archive the measurement data of multiple DSAM meters.

NOTE

Firmware upgrades are only supported via the Ethernet port. When you perform a firmware upgrade, the DSAM must be connected through the charger to a power outlet. If it is not connected to a power outlet, the firmware upgrade will fail.

You can also use the synchronization function to receive firmware upgrades to your meter.

After initial setup and configuration you can synchronize your data with JDS Uniphase Corporation Test Productivity Pack (TPP) software using an Ethernet connection or an RF connection.

Configuring for Synchronization

To configure for synchronization

1. Configure the DSAM for PC access via Ethernet or RF cable. For more information, see "PC Connection" on page 96.
2. Connect an Ethernet cable to a computer or network device and to the Ethernet port on the top of the meter.

   OR
3. Connect a Coax cable to an RF connection and to RF connection 1 on the back of the meter.

NOTE

When connecting directly to a PC (not through a network), use an Ethernet crossover cable.

When connecting to a network, use a standard Ethernet patch cable.

Synchronizing Files

To synchronize files

1. Press **Access**.
2. Press the **Files** softkey.

Figure 100 Access – Files Tab: Synchronize

3 Using the arrow keys, select **Synchronize**.

4 Press **ENTER**.

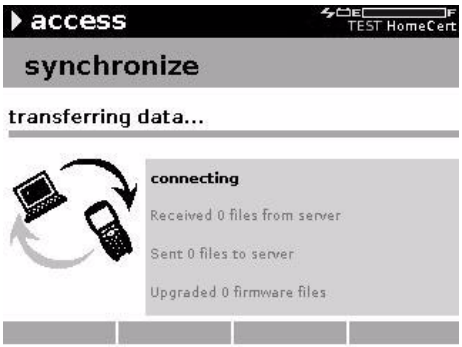

Figure 101 Access – Synchronize

NOTE

Once synchronization begins you cannot cancel it. It must complete or time out on its own. Once synchronization is complete, the DSAM does not reboot if it only file synchronization was performed. The DSAM does reboot if synchronization included a firmware upgrade.

Access – Browser Tab

Overview The Browser tab provides access to the following browser modes:

– WFA Browser (additional purchase required)
– Local Browser (additional purchase required)
– Web Access Test

WFA Browser

Use the WFA Browser (additional purchase required) as a web browser.

Configuring Web Access

To configure web access

1 To select your connection type and enter proxy information, follow the instructions under "Configuring WFA Browser Settings" on page 98.

2 To select a DOCSIS channel, follow the instructions under "Configuring Access Channels" on page 85.

Accessing the WFA Browser

To access the WFA browser

1 Press **Access**.

2 Press the **Browser** softkey.

Figure 102 Access – Browser Tab: WFA Browser

3 Using the arrow keys, select **WFA Browser**.

4 Press **ENTER**.

Figure 103 Access – WFA Browser

Graphical Pointer A graphical pointer is displayed on the browser screen. Use Table 38 on page 110 to understand how the graphical pointer works.

NOTE

You can connect a USB mouse to the meter instead of using the graphical pointer.

Table 38 WFA Browser Graphical Pointer

Pointer Motion	– The pointer motion is controlled by the arrow keys. To move the pointer in the same direction as an arrow's direction, press the corresponding arrow key. – The pointer may be moved diagonally by pressing two arrow keys.
Mouse Buttons	– The **ENTER** key functions as the left mouse button. – The DSAM keypad mouse only supports the left mouse button.

Softkeys The softkeys change function and use based on the HTML mode. The HTML modes are:

– Normal mode (includes File and Nav options)

– Alphabetic mode

– List Box mode

Table 39 on page 111 describes softkey use and behavior for each mode.

Table 39 Browser Softkeys

Normal Mode Softkeys	
FILE Menu Options	
– Save	Saves the current page. (You can save only the most current page. You cannot save multiple pages.)
– Open	Opens the saved page.
NAV MENU Options	
– Back	Displays the previous page.
– Forward	Displays the next page.
– Home	Displays the home page.
– Refresh	Reloads the most recent version of the current page.
– Alpha Only	Toggles from normal mode to text only mode.
Up (softkey)	Scrolls toward the top of the page.
Down (softkey)	Scrolls toward the bottom of the page.
Alphabetic Mode Softkeys	
ABC 123 / ABC	Toggles between alphabetic and alphanumeric mode.
<==	Backspace
>	End of line.
New Line	Skips to the next line in a multi-line text box.
List Box Softkeys	
Ctrl	Selects an item in a multi-select list box. (Use **Ctrl** and the arrow keys to select multiple items.)
Up (softkey)	Scrolls toward the top of the page.
Down (softkey)	Scrolls toward the bottom of the page.

Error Messages

When an error occurs in WFA Browser mode, one of the following error messages appear:

– Could not lock to the downstream channel

– The meter could not range over the browser DOCSIS channel

– The meter was unable to register with the CMTS

– An internal DOCSIS error occurred

– The meter lost communication with the CMTS

Local Browser

The Local Browser function enables you to open a saved browser page. Since it does not connect to an Ethernet or RF network, no network or server configurations are required.

Keypad and pointer functions in the Local Browser are the same as those in the WFA Browser. See “Graphical Pointer” on page 110 and “Softkeys” on page 110 for a full description how to use the interface.

Accessing the Local Browser

To access the local browser

1 Press **Access**.

2 Press the **Browser** softkey.

Figure 104 Access – Browser Tab: Local Browser

3 Using the arrow keys, select **Local Browser**.

4 Press **ENTER**.

Figure 105 Access – Local Browser

Web Access Test

The Web Access Test enables you to connect to a JDS Uniphase Corporation test page on the internet to ensure internet connectivity. It accesses a single screen for view only.

Configuring Web Access

To configure web access

1. To select your connection type and enter proxy information, follow the instructions under "Configuring WFA Browser Settings" on page 98.
2. To select a DOCSIS channel, follow the instructions under "Configuring Access Channels" on page 85.

Testing Web Access

To test web access

1. Press **Access**.
2. Press the **Browser** softkey.

Figure 106 Access – Browser Tab: WFA Browser

3 Using the arrow keys, select **Web Access Test**.

4 Press **ENTER**.

If the test is successful, the DSAM Web Access Test screen is displayed.

Figure 107 Access – DSAM Web Access Test

AutoTest Mode

7

This chapter describes how to configure, execute, and interpret the results of automated test sequences available on the DSAM.

AutoTest Overview

AutoTests are automated test sequences. The following AutoTests are available:

Combo Test A user-configured sequential combination of analog and digital video channels, as well as DOCSIS connectivity tests.

Video Channels A user-configured level measurements of a series of analog and/or digital video channels.

Home Certification (additional purchase required) A user-configured sequential combination of analog and digital video channels, as well as DOCSIS connectivity and data tests. (DOCSIS data tests must be enabled through TPP.)

Proof of Performance A video channels test that can be configured to run at a scheduled interval and automatically save results.

Cable Modem A user-configured verification of upstream/downstream connectivity, ranging emulation, and quality parameter measurements of a series of DOCSIS channels.

AutoTests Tab

Combo Test A Combo Test is a user-configured sequential combination of analog and digital video channels, as well as DOCSIS connectivity tests.

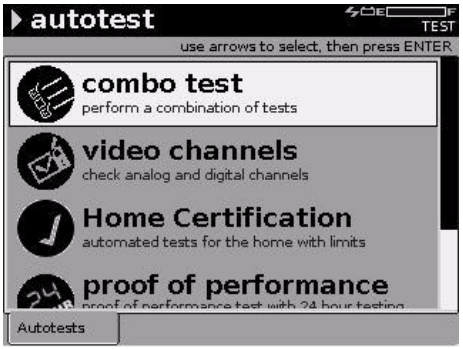

Figure 108 AutoTest – AutoTests Tab

Running a Combo Test

To run a combo test

1 If necessary, configure the limit sets to meet your needs for **tap**, **ground block**, **TV**, **cable modem**, **proof**, or **custom limits 1-3**.

NOTE

The limit set parameters you set remain constant for all channel plans and measurement modes.

2 Press **AutoTest**.

3 Using the arrow keys, select **Combo Test**.

4 Press **ENTER**.

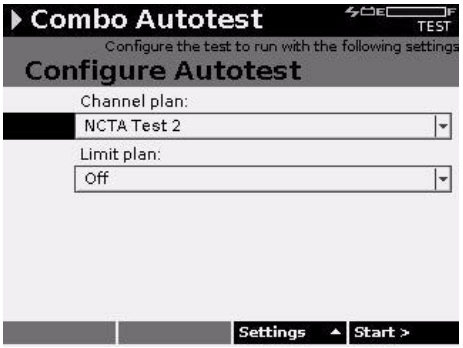

Figure 109 AutoTest – Configure AutoTest

5 Using the arrow keys, select **Channel Plan**.

6 Press **ENTER**.

7 Using the arrow keys, select an **option**.

8 Press **ENTER**.

9 Using the arrow keys, select **Limit Plan**.

10 Press **ENTER**.

NOTE

To perform the test without checking the results against limit values, select Off.

If you select Off as the limit plan value, no pass/fail information is displayed in the test results.

11 Using the arrow keys, select an **option**.

12 Press **ENTER**.

NOTE

Use "Regional Preferences" on page 43 to specify the type of signal level units and digital performance units to display.

Use "Limit Sets" on page 58 to edit limit set parameters to meet your needs.

Use "Other Settings" on page 65 to define the best measurement settings (such as DOCSIS settings) for your current work practices.

13 Press the **Settings** softkey.

14 Using the arrow keys, select the following options:

- **Edit Test Point Compensation** – See page 71.
- **Edit MAC Address** – See page 65.
- **Edit AutoTest Settings** – When the select an AutoTest screen is displayed, use the arrow keys to select one of the following **options** then press the **Configure** softkey.
  - **Video Channels** – See "Configuring AutoTest for Video Channels" on page 89.
  - **Cable Modem** – See "Configuring AutoTest for Cable Modem" on page 88.

15 Press **ENTER**.

16 Press the **Done** softkey.

17 Press the **Start** softkey.

The AutoTest in Progress screen is displayed, then the results are displayed.

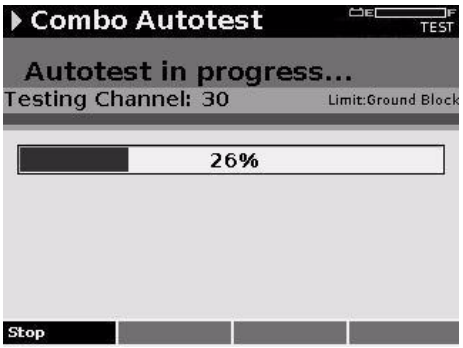

Figure 110 AutoTest – AutoTest in Progress

NOTE

The Help system is disabled during all tests while they are in progress.

To stop the Combo Test, press the **Stop** softkey.

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Combo Test Results

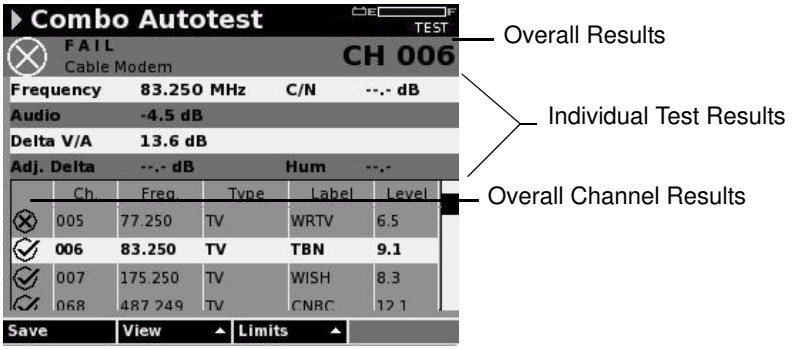

Figure 111 AutoTest – Combo AutoTest Results

Table 40 Home Certification Test Results

Name	Description
Overall Results	This area displays the overall pass/fail results for the test, the limit set applied (if applicable), and the currently selected channel.
Individual Test Results	This area displays the results of individual tests for the currently selected channel. When a measurement falls outside the acceptable range, an arrow to the right of the numeric value indicates the direction in which the failure occurred. An up arrow indicates a measurement over the limit range. A down arrow indicates a measurement below the limit range.
Channel Results	A symbol indicating whether the channel passed or failed the overall test.

NOTE

Only valid measurements resulting from completed tests are displayed. When an error occurs prohibiting a valid measurement, a dash indicates an invalid numeric value.

Viewing Combo Test Results

Video Summary View (Default)

To display the video summary view

1 Press the **View** softkey.

2 Using the arrow keys, select **Video Summary**.

3 Press **ENTER**.

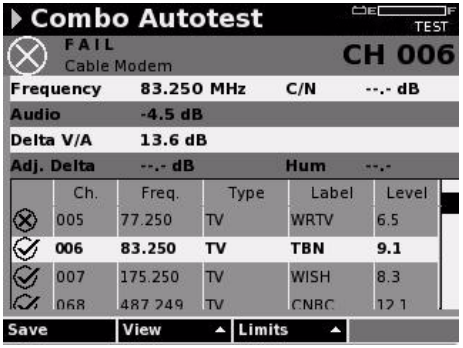

Figure 112 AutoTest – Combo AutoTest: Video Summary

DOCSIS Summary View

To display the DOCSIS summary view

1 Press the **View** softkey.

2 Using the arrow keys, select **DOCSIS Summary**.

3 Press **ENTER**.

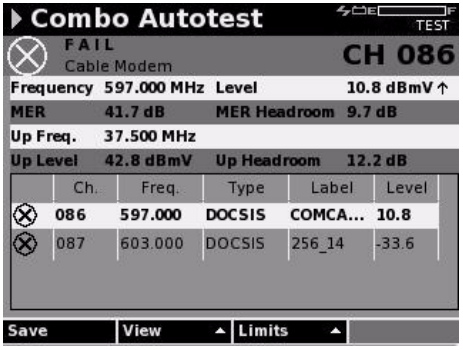

Figure 113 AutoTest – Combo AutoTest: DOCSIS Summary

DOCSIS Status View

To display the DOCSIS status view

1 From the DOCSIS summary view, use the arrow keys to highlight the **DOCSIS channel** you wish to view.

2 Press the **View** softkey.

3 Using the arrow keys, select **DOCSIS Status**.

4 Press **ENTER**.

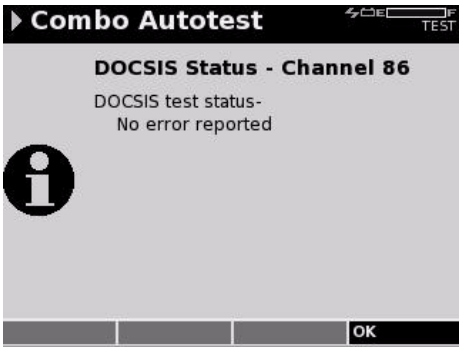

Figure 114 AutoTest – Combo AutoTest: DOCSIS Status

Video Channels Test

A Video Channels test is an automated test sequence designed to assess the signal performance of a user-configured series of analog and/or digital video channels. An RF plant that passes this test meets the minimum requirements for the delivery of video services. When necessary, you can troubleshoot an installation by performing this test at various locations to determine which components require repair or replacement. You can store the test results for later reference.

Running a Video Channels Test

To run a video channels test

1 If necessary, configure the limit sets to meet your needs for **tap**, **ground block**, **TV**, **cable modem**, **proof**, or **custom limits 1-3**.

NOTE

The limit set parameters you set remain constant for all channel plans and measurement modes.

2 Press the **AutoTest** button.

3 Using the arrow keys, select **Video Channels**.

4 Press **ENTER**.

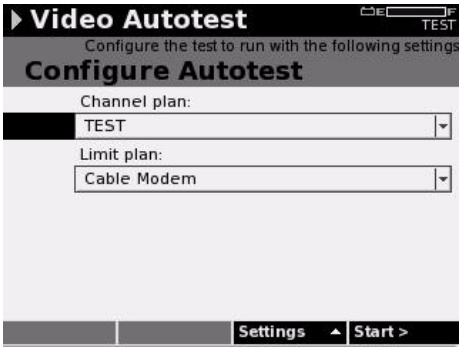

Figure 115 AutoTest – Video AutoTest

5 Using the arrow keys, select **Channel Plan**.

6 Press **ENTER**.

7 Using the arrow keys, select an **option**.

8 Press **ENTER**.

9 Using the arrow keys, select **Limit Plan**.

10 Press **ENTER**.

NOTE

To perform the test without checking the results against limit values, select Off.

If you select Off as the Limit Plan value, no pass/fail information is displayed in the test results.

11 Using the arrow keys, select an **option**.

12 Press **ENTER**.

NOTE

Use “Regional Preferences” on page 43 to specify the type of signal level units and digital performance units to display.

Use “Limit Sets” on page 58 to edit limit set parameters to meet your needs.

Use “Other Settings” on page 65 to define the best measurement settings (such as DOCSIS settings) for your current work practices.

13 Press the **Settings** softkey.

14 To select Edit Test Point Compensation, press **ENTER**. (For detailed instructions on choosing a TPC plan see page 71.)

15 Using the arrow keys, select a **TPC plan**.

16 Press the **Done** softkey.

17 Press the **Start** softkey.

The AutoTest in Progress screen is displayed.

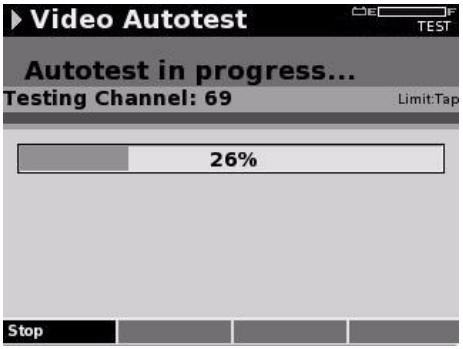

Figure 116 AutoTest – AutoTest in Progress

NOTE

The Help system is disabled during all tests while they are in progress.

To stop the test, press the **Stop** softkey.

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

The results appear on the Video AutoTest screen.

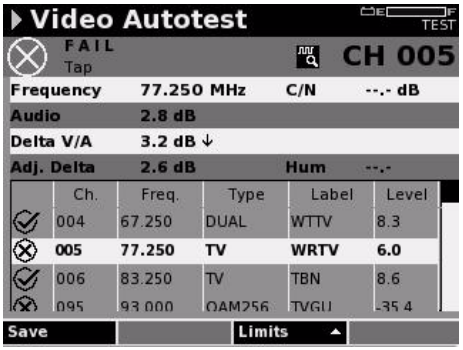

Figure 117 AutoTest – Video AutoTest

Understanding Video Channels Results

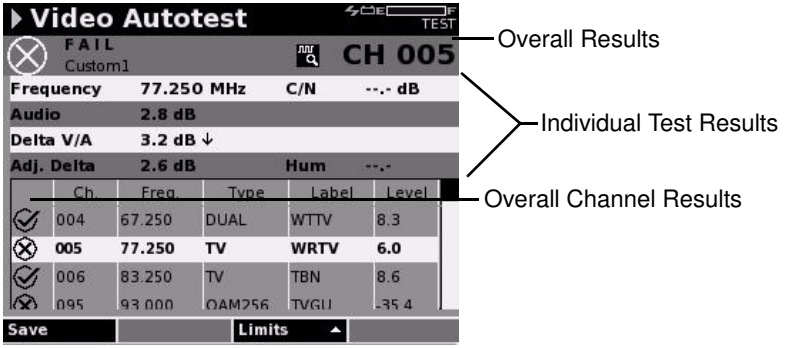

Figure 118 AutoTest – Video AutoTest Results

Table 41 Home Certification Test Results

Name	Description
Overall Results	This area displays the overall pass/fail results for the test, the limit set applied (if applicable), and the currently selected channel.
Individual Test Results	This area displays the results of individual tests for the currently selected channel. When a measurement falls outside the acceptable range, an arrow to the right of the numeric value indicates the direction in which the failure occurred. An up arrow indicates a measurement over the limit range. A down arrow indicates a measurement below the limit range.

Table 41 Home Certification Test Results

Name	Description
Channel Results	A symbol indicating whether the channel passed or failed the overall test.

NOTE

Only valid measurements resulting from completed tests are displayed. When an error occurs prohibiting a valid measurement, a dash indicates an invalid numeric value.

Home Certification Test

A Home Certification test (additional purchase required) is a user-configured sequential combination of analog and digital video channels, as well as DOCSIS connectivity and data tests. (DOCSIS data tests must be enabled through TPP.) The test configuration must be deployed to the meter before you can run a Home Certification test.

Running a Home Certification Test

To run a Home Certification test

1 If necessary, configure the limit sets to meet your needs for **tap**, **ground block**, **TV**, **cable modem**, **proof**, or **custom limits 1-3**.

NOTE

The limit set parameters you set remain constant for all channel plans and measurement modes.

2 Press **AutoTest**.

3 Using the arrow keys, select **Home Certification**.

4 Press **ENTER**.

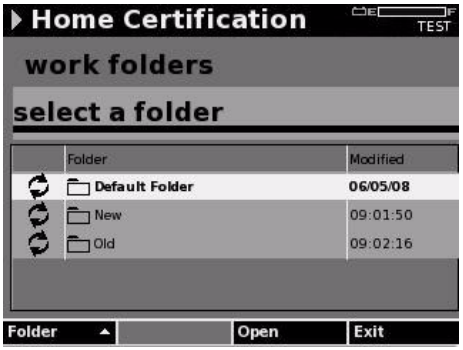

Figure 119 AutoTest – Work Folders

5 Using the arrow keys, select the **folder** you want to work with.

6 Press the **Open** softkey or **ENTER**.

7 Using the arrow keys, select **Channel Plan**.

8 Press **ENTER**.

9 Using the arrow keys, select an **option**.

10 Press **ENTER**.

11 Using the arrow keys, select **Limit Plan**.

12 Press **ENTER**.

NOTE

Note the name of the folder in the Active Work Folder box. If the folder name is incorrect, press the **Back** softkey and select a different folder.

NOTE

To perform the test without checking the results against limit values, choice Off.

If you select Off as the limit plan value, no pass/fail information is available in the test results.

Data plans are deployed to the DSAM through TPP.

13 Using the arrow keys, select an **option**.

14 Press **ENTER**.

15 Using the arrow keys, select **Data Plan**.

16 Press **ENTER**.

17 Using the arrow keys, select an **option**.

18 Press **ENTER**.

NOTE

Use "Regional Preferences" on page 43 to specify the type of signal level units and digital performance units you prefer.

Use "Limit Sets" on page 58 to edit limit-set parameters to meet your needs.

Use "Other Settings" on page 65 to define the best measurement settings (such as DOCSIS settings) for your current work practices.

19 Press the **Settings** softkey.

20 Using the arrow keys, select the following options.

- **Edit Test Point Compensation** – See page 71.
- **Edit MAC Address** – See page 65.
- **Edit AutoTest Settings** – When the Choose an AutoTest screen is displayed, use the arrow keys to select one of the following **options** then press the **Configure** softkey.
  - **Video Channels** – See "Configuring AutoTest for Video Channels" on page 89.
  - **Cable Modem** – See "Configuring AutoTest for Cable Modem" on page 88.

21 Press **ENTER**.

22 Press the **Done** softkey.

23 Press the **Start** softkey.

The Certification in Progress screen is displayed.

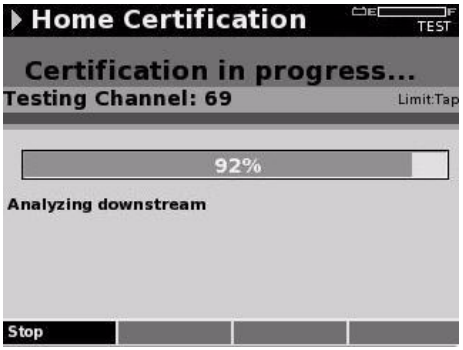

Figure 120 AutoTest – Certification in Progress

NOTE

The Help system is disabled during all tests while they are in progress.

To stop the test, press the **Stop** softkey.

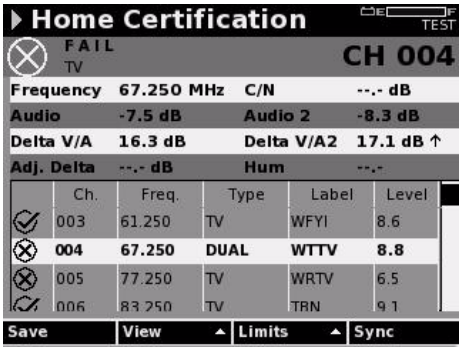

Figure 121 AutoTest – Home Certification

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Home Certification Test Results

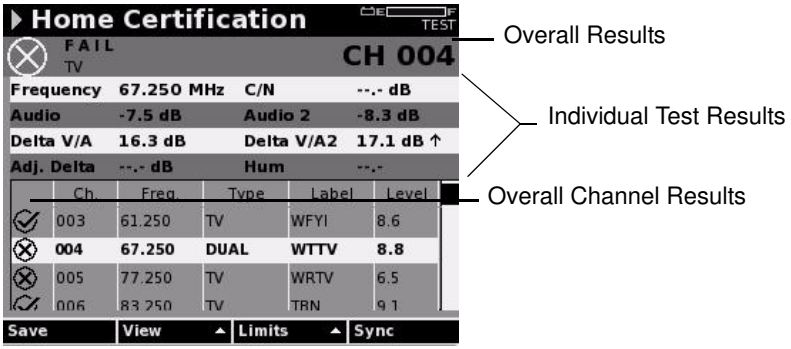

Figure 122 AutoTest – Video AutoTest Results

Table 42 Home Certification Test Results

Name	Description
Overall Results	This area displays the overall pass/fail results for the test, the limit set applied (if applicable), and the currently selected channel.
Individual Test Results	This area displays the results of individual tests for the currently selected channel. When a measurement falls outside the acceptable range, an arrow to the right of the numeric value indicates the direction in which the failure occurred. An up arrow indicates a measurement over the limit range. A down arrow indicates a measurement below the limit range.
Channel Results	A symbol indicating whether the channel passed or failed the overall test.

NOTE

Only valid measurements resulting from completed tests are displayed. When an error occurs prohibiting a valid measurement, a dash indicates an invalid numeric value.

Viewing Home Certification Results

Video Summary View (Default)

To display the video summary view

1 Press the **View** softkey.

2 Using the arrow keys, select **Video Summary**.

3 Press **ENTER**.

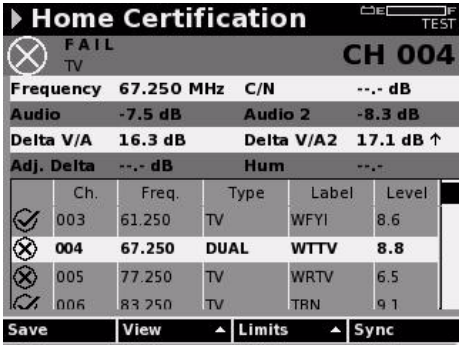

Figure 123 AutoTest – Home Certification: Video Summary

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

DOCSIS Summary View

To display the DOCSIS summary view

1 Press the **View** softkey.

2 Using the arrow keys, select **DOCSIS Summary**.

3 Press **ENTER**.

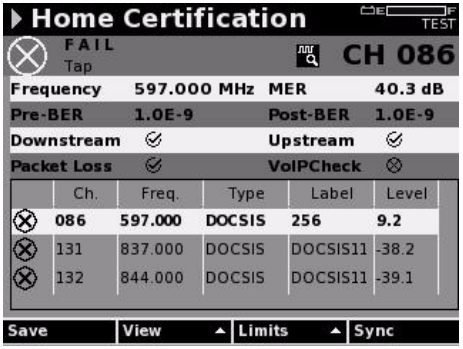

Figure 124 AutoTest – Home Certification: DOCSIS Summary

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

DOCSIS Details View

To display the DOCSIS details view

1 From the DOCSIS summary view, use the arrow keys to highlight the **DOCSIS channel** you wish to view.

2 Press the **View** softkey.

3 Using the arrow keys, select **DOCSIS Details**.

4 Press **ENTER**.

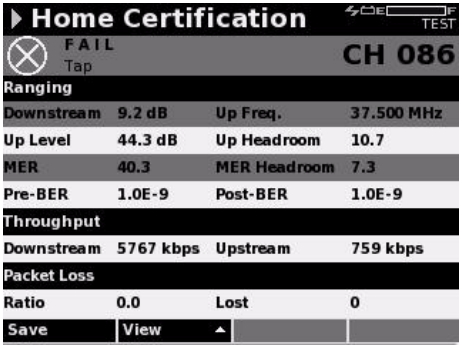

Figure 125 AutoTest – Home Certification: DOCSIS Channel Details

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

Registration View

To view registration detail for the selected channel

1 Using the arrow keys, select the **channel** you wish to view.

2 Press the **View** softkey.

3 Using the arrow keys, select **Registration**.

4 Press **ENTER**.

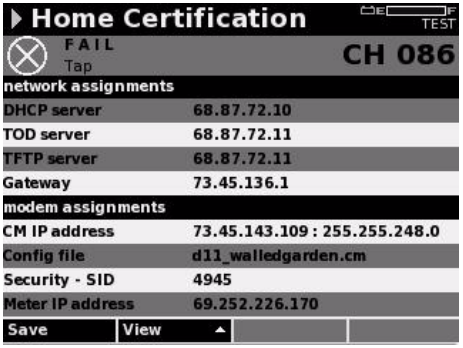

Figure 126 AutoTest – Home Certification Registration

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

VoIPCheck View

To view VoIPCheck detail for the selected channel

1 Using the arrow keys, select the **channel** you wish to view.

2 Press the **View** softkey.

3 Using the arrow keys, select **VoIPCheck**.

4 Press **ENTER**.

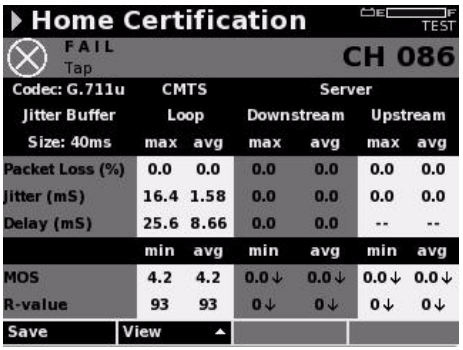

Figure 127 AutoTest – Home Certification VoIPCheck

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

DOCSIS Status View

To view DOCSIS status

1. Using the arrow keys, select the **DOCSIS channel** you wish to view.
2. Press the **View** softkey.
3. Using the arrow keys, select **DOCSIS Status**.
4. Press **ENTER**.

Figure 128 AutoTest – Home Certification DOCSIS Status

NOTE

Only valid measurements resulting from completed tests are displayed. When an error occurs prohibiting a valid measurement, a dash indicates an invalid numeric value.

Synchronizing Home Certification Results with TPP

To synchronize the meter with the JDS Uniphase Corporation Test Productivity Pack (TPP) software

1. Press the **Save** softkey.
2. Using the arrow keys and the alphanumeric keypad, type the **file name** in the **File Name** box.
3. Press the **Save** softkey.

4 Press the **Sync** softkey.

NOTE

If you do not save the results before you press the **Sync** softkey, the DSAM will automatically prompt you to save the results to a file.

Proof of Performance Test

The Proof of Performance test is a video channels test that can be configured to run at a scheduled interval. An RF plant that passes this test meets the minimum requirements for the delivery of video services. When necessary, you can troubleshoot an installation by performing this test at various locations to determine which components require repair or replacement. You can save test results for later reference.

Use scheduled tests for:

– 24 Hour AutoTests (per FCC)

– AutoTests with C/N, Hum & BER

– AutoTests that automatically run at a scheduled interval

Running a Proof of Performance Test

To run a Proof of Performance test

1 If necessary, configure the limit sets to meet your needs for tap, ground block, TV, cable modem, proof, or custom limits 1-3.

NOTE

The limit set parameters you set remain constant for all channel plans and measurement modes.

2 Press **AutoTest**.

3 Using the arrow keys, select **Proof of Performance**.

4 Press **ENTER**.

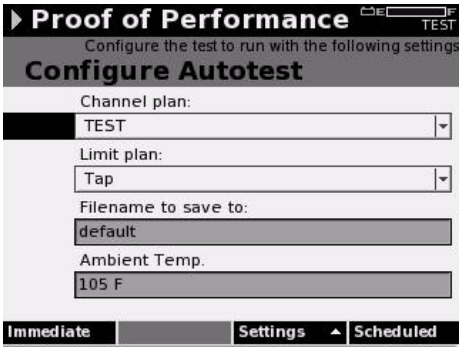

Figure 129 AutoTest – Configure Proof of Performance

5 Using the arrow keys, select **Channel Plan**.

6 Press **ENTER**.

7 Using the arrow keys, select an **option**.

8 Press **ENTER**.

9 Using the arrow keys, select **Limit Plan**.

10 Press **ENTER**.

11 Using the arrow keys, select an **option**.

12 Press **ENTER**.

NOTE

To perform the test without checking the results against limit values, select Off.

If you select Off as the limit plan value, no pass/fail information is available in the test results.

13 Using the arrow keys, select **Filename to Save to**.

14 Press **ENTER**.

NOTE

The DSAM automatically creates a folder with the name you specified.

If you run a single immediate test, the meter saves the results to a file of the same name in the created folder.

If you set up a series of scheduled tests, the saves the results of each test to a file of the same name with an appended sequential number (test1_, test_2, etc.) in the created folder.

15 Using the arrow keys and alphanumeric keypad, enter the **file name** for the test results.

16 Press **ENTER**.

17 Using the arrow keys, select **Ambient Temp**.

18 Press **ENTER**.

NOTE

The DSAM automatically populates the Ambient Temp field with it's own temperature reading.

The DSAM automatically appends a "C" (Centigrade), or an "F" (Farenheight), based on your regional preferences.

19 Using the arrow keys and alphanumeric keypad, enter the **ambient temperature**.

20 Press **ENTER**.

NOTE

Use "Regional Preferences" on page 43 to specify the type of signal level units and digital performance units you prefer.

Use "Limit Sets" on page 58 to edit limit-set parameters to meet your needs.

Use "Other Settings" on page 65 to define the best measurement settings (such as DOCSIS settings) for your current work practices.

21 Press the **Settings** softkey.

22 Using the arrow keys, select the following **option**.

– **Edit Test Point Compensation** – See page 71.

23 Press **ENTER**.

24 To run a single, immediate Proof of Performance test, press the **Immediate** softkey, use the arrow keys to highlight the location settings parameters then press the **ENTER** key, edit the entry, then press the **OK** softkey.

OR

25 To schedule a sequential series of tests, press the **Scheduled** softkey.

The Configure Scheduling screen is displayed.

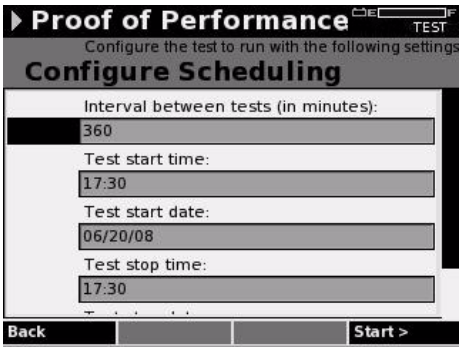

Figure 130 AutoTests – Configure Scheduling

26 Using the arrow keys, select **Interval Between Tests (in minutes)**.

27 Press **ENTER**.

28 Using the numeric keys, type the **number of minutes** between when the meter shuts down after a test and when it starts up for the next test.

29 Press **ENTER**.

30 Using the arrow keys, select **Test Start Time**.

31 Press **ENTER**.

32 Using the numeric keys, type the **start time** of the first test.

33 Press **ENTER**.

34 Using the arrow keys, select **Test Start Date**.

35 Press **ENTER**.

36 Using the numeric keys, type the **start time** of the first test.

37 Press **ENTER**.

38 Using the arrow keys, select **Test Stop Time**.

39 Press **ENTER**.

40 Using the numeric keys, type the **start time** of the first test.

41 Press **ENTER**.

42 Using the arrow keys, select **Test Stop Date**.

43 Press **ENTER**.

44 Using the numeric keys, type the **start time** of the first test.

45 Press **ENTER**.

46 Using the arrow keys and the alphanumeric keypad, enter the **value**.

47 Press **ENTER**.

48 Press the **Start** softkey.

If Location Settings is enabled through TPP, the Edit Location Settings screen is displayed.

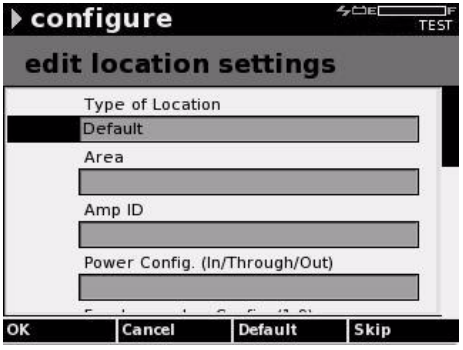

Figure 131 AutoTest – Edit Location Settings

49 Using the arrow keys, select the **parameter** you want to edit.

50 Press **ENTER**.

OR

51 To use the default Location settings, press the **Default** softkey.

52 Using the arrow keys and the alphanumeric keypad, edit the **entry**.

53 Press the **OK** softkey.

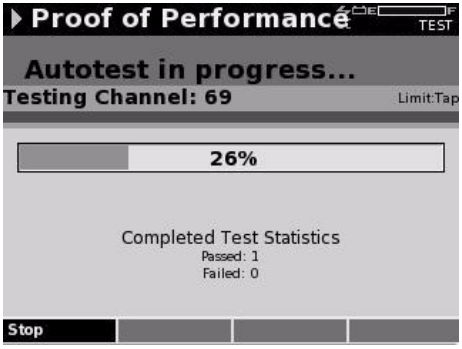

Figure 132 AutoTest – AutoTest in Progress

NOTE

The Help system on this meter is disabled during all tests while they are in progress.

To stop the test, press the **Stop** softkey.

If you are running a series of scheduled Proof of Performance tests, the Completed Test Statistics displays the number of passed and failed tests in the series. The counts reset when you select a new file name.

Once the first test in a series is complete, the meter shuts down until the next scheduled test. If you attempt to power up the meter while it is running a series of Proof of Performance tests, it prompts you to cancel the test or resume by powering the meter down until the next scheduled test. After the last scheduled test, the meter does not power down.

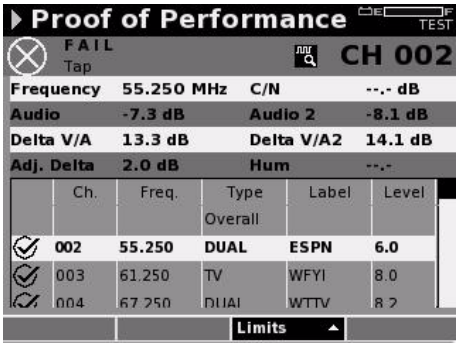

Figure 133 AutoTest – Proof of Performance

NOTE

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Proof of Performance Results

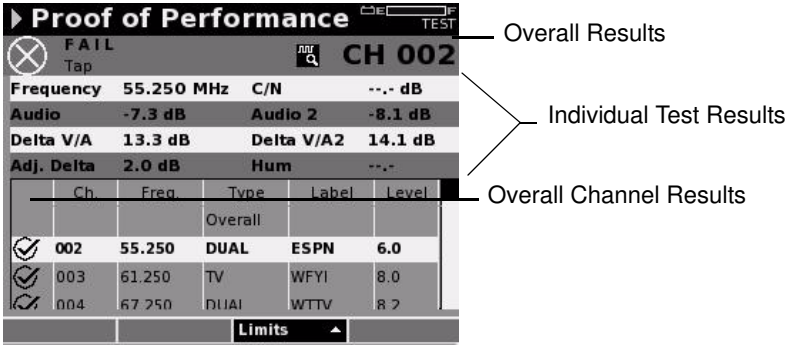

Figure 134 AutoTest – Video AutoTest Results

Table 43 Home Certification Test Results

Name	Description
Overall Results	This area displays the overall pass/fail results for the test, the limit set applied (if applicable), and the currently selected channel.

Table 43 Home Certification Test Results

Name	Description
Individual Test Results	This area displays the results of individual tests for the currently selected channel. When a measurement falls outside the acceptable range, an arrow to the right of the numeric value indicates the direction in which the failure occurred. An up arrow indicates a measurement over the limit range. A down arrow indicates a measurement below the limit range.
Channel Results	A symbol indicating whether the channel passed or failed the overall test. When a measurement fails, an arrow to the right of the numeric value indicates the direction in which the failure occurred. An up arrow indicates a measurement over the limit range. A down arrow indicates a measurement below the limit range.

NOTE

The results are automatically saved in the file you named on the Configure AutoTest screen (Figure 129).

NOTE

Only valid measurements resulting from completed tests are displayed. When an error occurs prohibiting a valid measurement, a dash indicates an invalid numeric value.

Cable Modem Test

A Cable Modem test is a user-configured verification of upstream/downstream connectivity, ranging emulation, and quality parameter measurements of a series of DOCSIS channels. When necessary, you can troubleshoot an installation by performing this test at various locations to determine which components require repair or replacement. You can store the test results for later reference.

Running a Cable Modem Test

To run a Cable Modem test

1 If necessary, configure the limit sets to meet your needs for **tap**, **ground block**, **TV**, **cable modem**, **proof**, or **custom limits 1-3**.

NOTE

The limit set parameters you set remain constant for all channel plans and measurement modes.

2 Press **AutoTest**.

3 Using the arrow keys, select **Cable Modem**.

4 Press **ENTER**.

5 Using the arrow keys, select **Channel Plan**.

6 Press **ENTER**.

7 Using the arrow keys, select an **option**.

8 Press **ENTER**.

9 Using the arrow keys, select **Limit Plan**.

10 Press **ENTER**.

11 Using the arrow keys, select an **option**.

12 Press **ENTER**.

NOTE

To perform the test without checking the results against limit values, select Off.

If you select Off as the limit plan value, no pass/fail information is available in the test results.

NOTE

Use "Regional Preferences" on page 43 to specify the type of signal level units and digital performance units you prefer.

Use "Limit Sets" on page 58 to edit limit set parameters to meet your needs.

Use "Other Settings" on page 65 to define the best measurement settings (such as DOCSIS settings) for your current work practices.

13 Using the arrow keys, select the following options.

– **Edit Test Point Compensation** – See page 71.

– **Edit MAC Address** – See page 65.

– **Edit AutoTest Settings** – When the Choose an AutoTest screen is displayed, use the arrow keys to select the following options then press the **Configure** softkey.
  – V**ideo Channels** – See “Configuring AutoTest for Video Channels” on page 89.
  – **Cable Modem** – See “Configuring AutoTest for Cable Modem” on page 88.

14 Press **ENTER**.

15 Press the **Start** softkey.

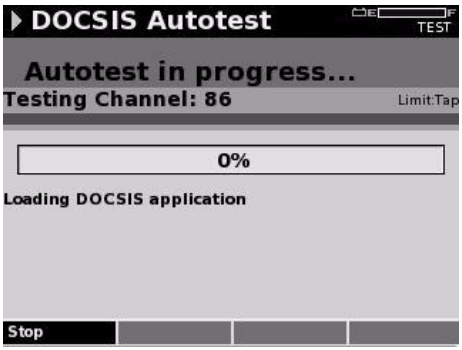

Figure 135 AutoTest – DOCSIS in Progress

NOTE

The Help system on this meter is disabled during all tests while they are in progress.

To stop the test, press the STOP softkey.

The results appear on the DOCSIS AutoTest screen.

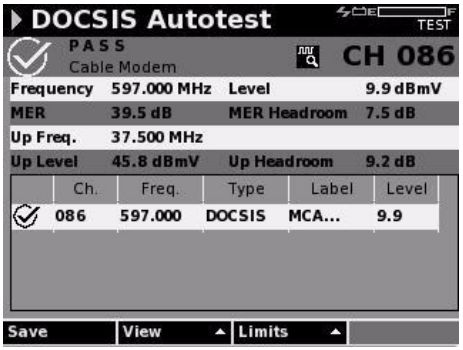

Figure 136 AutoTest – DOCSIS AutoTest

NOTE

To save the results to a file, press the **Save** softkey then follow step 4 through step 13 under "Saving Results" on page 198.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Cable Modem Test Results

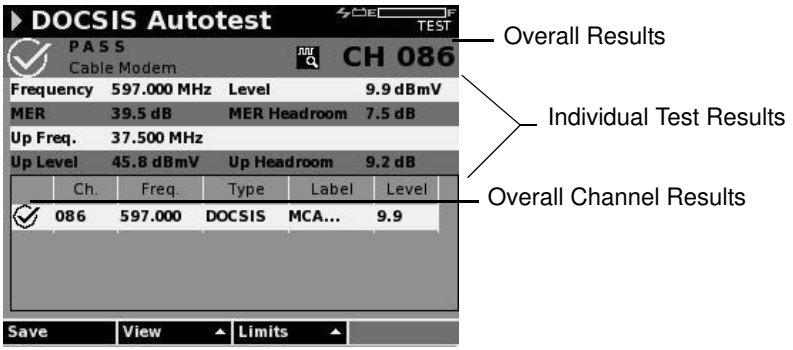

Figure 137 AutoTest – Video AutoTest Results

Table 44 DOCSIS AutoTest Results

Name	Description
Overall Results	This area displays the overall pass/fail results for the test, the limit set applied (if applicable), and the currently selected channel.

Table 44 DOCSIS AutoTest Results (Continued)

Name	Description
Individual Test Results	This area displays the results of individual tests for the currently selected channel. When a measurement falls outside the acceptable range, an arrow to the right of the numeric value indicates the direction in which the failure occurred. An up arrow indicates a measurement over the limit range. A down arrow indicates a measurement below the limit range.
Channel Results	A symbol indicating whether the channel passed or failed the overall test. When a measurement fails, an arrow to the right of the numeric value indicates the direction in which the failure occurred. An up arrow indicates a measurement over the limit range. A down arrow indicates a measurement below the limit range.

NOTE

Only valid measurements resulting from completed tests are displayed. When an error occurs prohibiting a valid measurement, a dash indicates an invalid numeric value.

Viewing Cable Modem Results

DOCSIS Status View

To display the DOCSIS status view

1. Using the arrow keys, select the **DOCSIS channel** you wish to view.
2. Press the **View** softkey.
3. Using the arrow keys, select **DOCSIS Status**.
4. Press **ENTER**.

   The status of the DOCSIS channel is displayed.

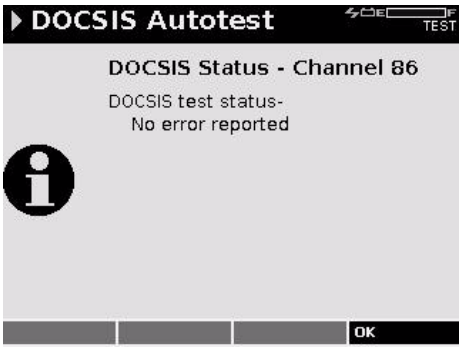

Figure 138 AutoTest – Cable Modem Test: DOCSIS Channel Status Successful

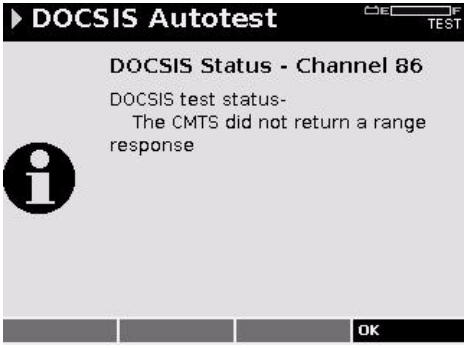

Figure 139 AutoTest – Cable Modem Test: DOCSIS Channel Status Error

Measure Mode – Basic Tab

8

This chapter describes the Measure Mode – Basic tab functionality. Topics discussed in this chapter are as follows:

Basic Measurement Modes

The functions under the Basic tab of the DSAM Measure mode provide the following measurement modes for viewing and analyzing CATV channels:

Level Views and analyzes the signal level of each carrier within a channel (as defined by the active channel plan).

MiniScan Views and analyzes the carrier levels of up to twelve channels and displays the results on a single screen.

Full Scan Views and analyzes the carrier levels of the entire channel plan at a time and displays the video and audio levels of a carrier on a single screen.

Tilt Analyzes and displays the signal level and tilt calculation of up to twelve channels and displays the results on a single screen.

Constellation Displays a constellation grid of the demodulated digital Quadrature Amplitude Modulation (QAM) type (64 QAM, 128 QAM or 256 QAM) signal prior to error correction. This option is only available on specific DSAM models.

FDR Provides a means of characterizing impedance mismatches in the home wiring and is used to detect potential faults that could disrupt signal transmission. This mode requires an LST-1700.

Return QAM Generator DSAM is equipped with this mode so you can evaluate problems in the network arising due to phase and amplitude distortions. Generally these problems need attention to take advantage of the higher capacity of the 16 QAM or 64 QAM.

QAM Ingress The QAM Ingress mode is a line plot which graphs signal error versus frequency of QAM signals. This mode supports Ingress Under Carrier for QAM 64 and QAM 256 signals. (Additional purchase required.)

Hum Displays the total hum percentage for a specified channel over a 1 kHz span. (Additional purchase required.)

DQI A real-time measurement that detects intermittent impairments within a downstream digital QAM carrier.

Return Loopback The Return Loopback mode enables you to quickly perform frequency response measurements of active or passive field devices using a single meter. A CW signal may be generated from the DSAM unit and injected to the input of a device under test. The DSAM can then measure the output, providing valuable information such as gain, loss, roll-off, or frequency response.

Level

A Level measurement views and analyzes the signal level of each carrier within a channel (as defined by the active channel plan).

You can tune level measurements by frequency or channel. Frequency Tuning measures signal levels at one specific frequency and signal levels can be measured at any discrete frequency within the tuning range. Channel Tuning measures the signal levels of carriers within a channel and carrier levels can be checked in relation to user-configured limit sets. In each tuning mode, level measurements are continuously updated on the screen.

When necessary, you can troubleshoot an installation by performing this test at various locations to determine which components require repair or replacement. You can store test results for later reference.

Frequency Tuning With Frequency Tuning, the signal level is displayed on a graph and as a numeric value. You use the alphanumeric keypad to tune directly to a frequency.

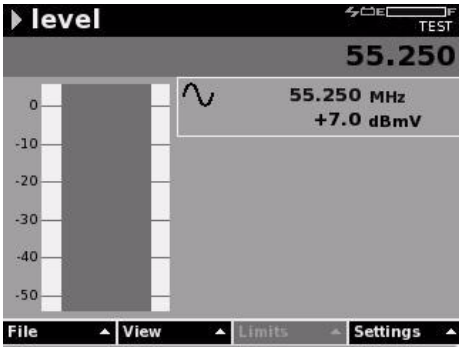

Figure 139 Measure Mode – Level Frequency

The arrow keys provide an alternate method to tune your meter. You use the left and right arrow keys to increment or decrement the frequency by the configured step size. (For information about changing the step size, see "Other Settings" on page 65.)

You use the up and down arrow keys to adjust the graph for the best viewing, or press the **View** softkey, and use the arrow keys to highlight **Auto Reference** (Shift, 9), then press the **ENTER** key to automatically view measurement results in the best reference setting.

Channel Tuning

With Channel Tuning, the signal level measurements are displayed on a graph and as a numeric value for each carrier within the channel. Relationships between carriers, such as the delta between video and audio levels, are automatically calculated and displayed. You use the alphanumeric keys to tune directly to a specific channel.

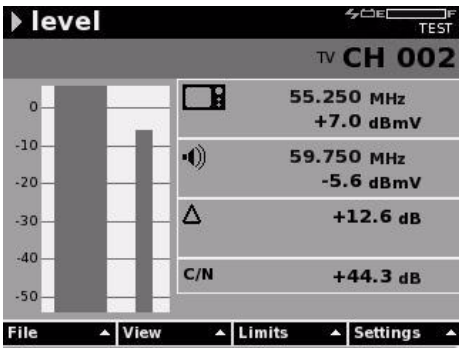

Figure 140 Measure Mode – Level Channel

The arrow keys provide an alternate method to tune the meter. Use the left and right arrow keys to move to the next or previous channel as defined in the current channel plan. Use the up and down arrow keys to adjust the graph for the best viewing, or press the **View** softkey and use the arrow keys to highlight **Auto Reference** (Shift, 9) then press the **ENTER** key to automatically view measurement results in the best reference setting.

Running a Level Measurement

To run a level measurement

1 Press **Measure**.

2 Press the **Basic** softkey.

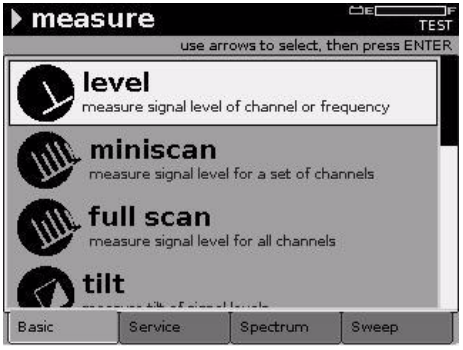

Figure 141 Measure Mode – Basic Tab

3 Using the arrow keys, select **Level**.

4 Press **ENTER**.

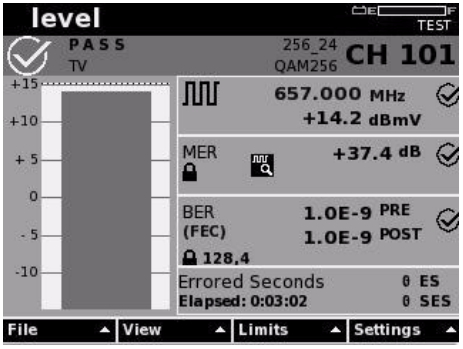

Figure 142 Measure Mode – Level

NOTE

To save the results to a file, refer to "Saving Results" on page 198.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Level Results

You can display level results in two ways: Digital or Analog.

Digital Channel Display

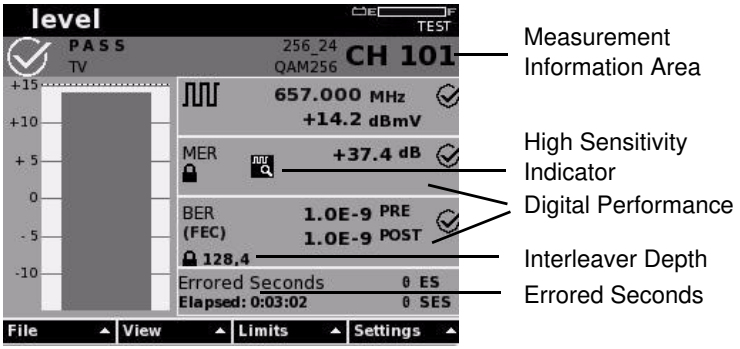

Figure 143 Measure Mode – Level (digital channel)

Measurement Information Area

This area displays information about the current channel. Information that is displayed in this area includes:

- Overall pass/fail indicator
- Channel label
- Channel type (Single, TV, Dual, Digital, or DOCSIS)
- Channel number
- Test point compensation (if applicable)
- High sensitivity indicator (for some modes)

High Sensitivity Indicator

This icon is displayed if QAM Sensitivity is set to high on the Other Settings configuration screen. (Refer to "Other Settings Parameters" on page 66.)

Digital Performance The screen displays the modulation error ratio (MER) and bit error rate (BER) before and after (pre/post) forward error correction (FEC). For analog performance, refer to Figure 144 on page 156.

Interleaver Depth Interleaver depth is displayed immediately to the right of the BER lock. The DSAM supports the following interleaver depth values:

- 1,128
- 2,64
- 4,32
- 8,16
- 16,8
- 32,4
- 64,2
- 128,1
- 128,4 (additional purchase required)

Deep interleaver channels (such as 128,4) require DSAM model 2600, 3600 or 6000. If you are using a different model, only the level and MER appear.

NOTE

If the displayed interleaver depth is greater than the interleaver depth supported, the BER values are displayed as dashes (-----). The frequency, level, MER and bar graph display remain accurate.

Errored Seconds The number of one second intervals in which the DSAM detected post-FEC bit errors since acquiring QAM lock.

NOTE

For information about how to read the graph, refer to “Reading Measurement Graphs” on page 196.

Analog Channel Display

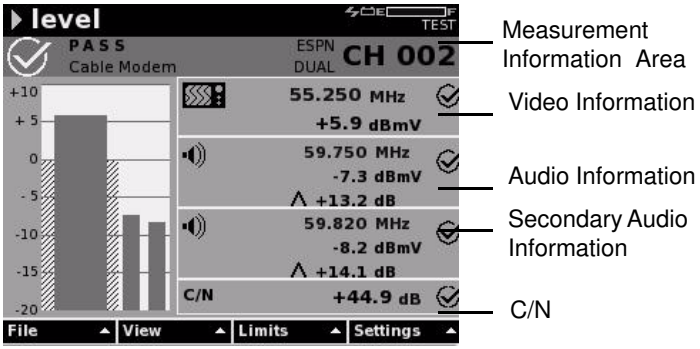

Figure 144 Measure Mode – Level (analog channel)

NOTE

For information about how to read the graph, see "Reading Measurement Graphs" on page 196.

Measurement Information Area This area displays information about the current channel. Information that is displayed in this area includes:

- Overall pass/fail indicator
- Channel label
- Channel type (Single, TV, Dual, Digital, or DOCSIS)
- Limit
- Channel number
- Test point compensation (if applicable)

Video Information This area displays the channel's video frequency and level.

Audio Information This area displays the channel's primary audio frequency and level as well as the delta between the video and audio levels.

Secondary Audio Information This area (if broadcast) displays the channel's secondary audio frequency and level as well as the delta between the video and audio levels.

C/N Carrier-to-noise ratio in decibels if the hardware supports it.

Changing the Tuning Mode

To change the tuning mode

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Channel Tuning** or **Frequency Tuning**.

3 Press **ENTER**.

For more information, see "Frequency Tuning" on page 151 and "Channel Tuning" on page 152.

Viewing Level Measurement Results

To view level measurement results in different ways

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

- **Auto Reference (Shift, 9)** – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

- **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.
- **DQI** – Enables you to view a time-elapsed view of DQI measurements on digital channels only (if the hardware supports it).
- **MiniScan** – Displays the MiniScan screen.
- **Tilt** – Displays the Tilt screen.
- **Full Scan** – Displays the Full Scan screen.
- **Constellation** – Displays the Constellation screen.
- **QAM Ingress** – Displays the QAM Ingress screen.
- **Hum** – Displays the total hum percentage for a specified channel over a 1 kHz span on digital channels only (if the hardware supports it).
- **Pause (Shift, 8)** – Suspends measurement updates.

3 Press **ENTER**.

MiniScan

A MiniScan analyzes and displays the carrier levels of up to twelve channels and displays the results on a single screen. You can view the results in graph or table form and measure them in relation to pre-configured limit sets. You can save test results for later reference.

NOTE

MiniScan measurement channels are user-defined and correspond to a single Channel Plan. You can select up to twelve channels within each Channel Plan. See "Configuring Channels for MiniScan" on page 84 for more information.

If no channels are enabled for MiniScan, an error message is displayed.

Running a MiniScan

To run a MiniScan

1 Press **Measure**.

2 Press the **Basic** softkey.

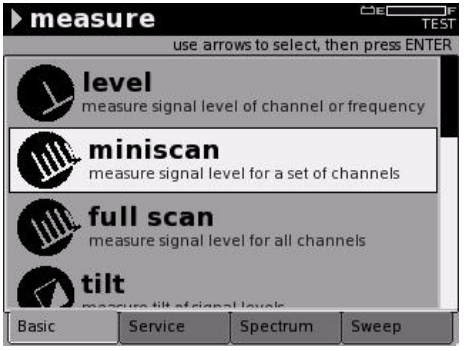

Figure 145 Measure Mode – Basic Tab

3 Using the arrow keys, select **MiniScan**.

4 Press **ENTER**.

NOTE

To save the results to a file, refer to "Saving Results" on page 198.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding MiniScan Results

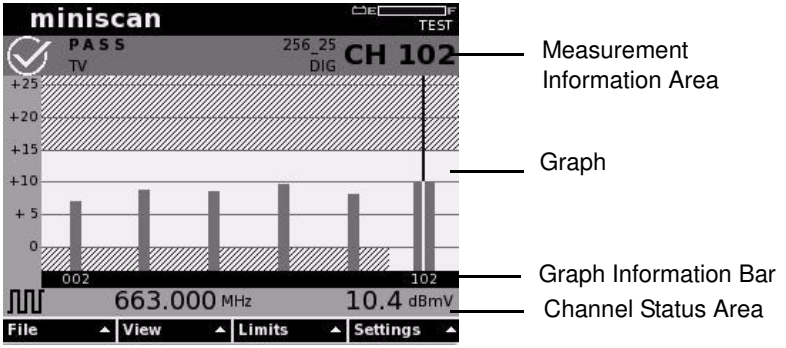

Figure 146 Measure Mode – MiniScan

NOTE

For information about how to read the graph, see "Reading Measurement Graphs" on page 196.

Measurement Information Area

This area displays information about the current channel. Information that is displayed in this area includes:

- Overall pass/fail indicator
- Channel label
- Channel type (Single, TV, Dual, Digital, or DOCSIS)
- Channel number
- Test point compensation (if applicable)

Graph

The graph displays channel numbers along the x-axis and signal level on the y-axis. A vertical bar is displayed above each channel number and the height of the bar represent the signal level of that channel.

Graph Information Bar

This bar displays the highest and lowest frequencies of the MiniScan channels.

Channel Status Area This area of the screen displays the channel type icon, channel frequency, and level.

Choosing MiniScan Channels

To select MiniScan channels

1 Press the **Settings** softkey.

2 Using the arrow keys, select **MiniScan Channels**.

3 Press **ENTER**.

4 Using the arrow keys and the **Select** softkey, select up to **twelve channels** to include in the scan.

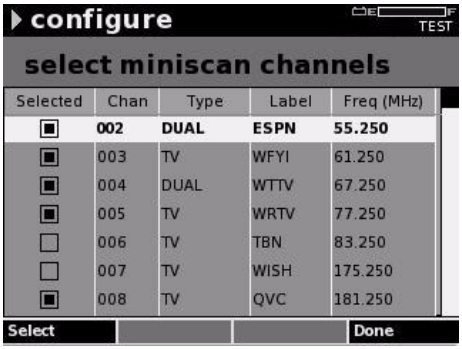

Figure 147 Measure Mode – MiniScan Channels

5 Press the **Done** softkey.

NOTE

You can also select channels for MiniScan from "Configuring Channels for MiniScan" on page 84.

When changing the channel plan using the Settings softkey, refer to "Downstream Plans" on page 78.

Viewing MiniScan Results

To view MiniScan results in different ways

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

Auto Reference (Shift, 9) – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

5 dB/div or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.

Graph (default)/**Table** – Displays the measurements in graph or table form. Measurements are continually updated in this graph view, but static in table view.

Single Channel – Displays the measurements one channel at a time.

Tilt – Displays the Tilt screen.

Full Scan – Displays the Full Scan screen.

Pause (Shift, 8) – Suspends measurement updates.

3 Press **ENTER**.

Full Scan

Full Scan measurement displays the carrier levels of the entire channel plan (up to 999 channels at a time) and displays the audio and video levels of a carrier on a single screen. You can view results in graph or table form and results can be measured in relation to user-defined limit sets. Results can also be stored for later reference.

Running a Full Scan

To run a Full Scan

1 Press **Measure**.

2 Press the **Basic** softkey.

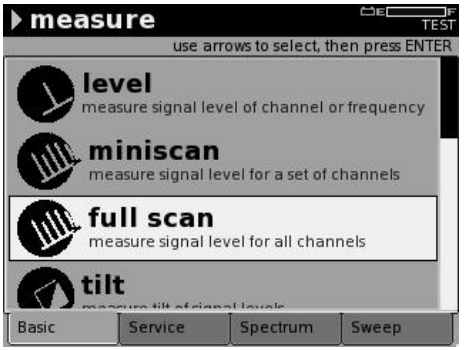

Figure 148 Measure Mode – Basic Tab

3 Using the arrow keys, select **Full Scan**.

4 Press **ENTER**.

NOTE

To save the results to a file, refer to "Saving Results" on page 198.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Full Scan Results (graph)

The Full Scan measurement mode provides two views (Graph and Table). Both views continuously update measurements for all the channels. Both views also display all signal level measurements in the current user-selected signal level units as specified in "Regional Preferences" on page 43.

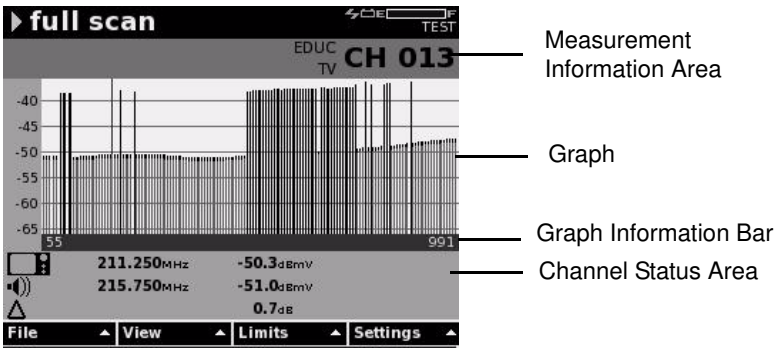

Figure 149 Measure Mode – Full Scan Graph

NOTE

For information about how to read the graph, see "Reading Measurement Graphs" on page 196.

Measurement Information Area

This area displays information about the current channel. Information that is displayed in this area includes:

- Overall pass/fail indicator
- Channel label
- Channel type (Single, TV, Dual, Digital, or DOCSIS)
- Channel number
- Test point compensation (if applicable)

Graph

The graph displays channel numbers along the x-axis and signal level on the y-axis. A vertical bar is displayed above each channel number and the height of the bar represent the signal level of that channel.

Graph Information Bar

This bar displays the highest and lowest frequencies of the Full Scan channels.

Channel Status Area

The Channel Status area is displayed below the graph. This area displays the following information for the current channel:

- Channel type (Single, TV, TV (scrambled), Dual, Digital, or DOCSIS)
- Carrier frequency (in MHz), and measured signal level for the channel
- Audio icon, audio carrier frequency (in MHz), and the delta value (in dB) between the video and audio levels (only if audio level measurement is enabled)

If the channel is of dual type, the second audio level value reading is displayed, instead of the delta value.

If the level reading is above or below the selected limits, an up or down arrow is displayed after the measurement unit for video level and the delta, not for the first and second audio levels.

NOTE

The height of the bar represents the signal level of that channel and a vertical marker is provided to designate the active channel.

When the marker is on a channel, the top of the marker is dark, and overstrike portion of the channel is light gray.

1 To move the marker, use the **left and right arrow keys**.

With each non-continuous key press, the marker moves left or right to the next channel.

You can also use the keypad to type the channel number.

2 Press **ENTER**.

3 To adjust the graph for best viewing of the signal level measurements, use the **up and down arrows**.

Each arrow key press changes the reference setting by one (1) dB. Reference level ranges are -40 to +60 dBmV.

NOTE

To perform a repetitive movement of the marker, press and hold the left or right arrow key.

NOTE

An audio reading is not applicable to single type, DOCSIS or digital channels.

Understanding Full Scan Results (table)

The Full Scan measurement mode provides two views (Graph and Table). Both views continuously update measurements for all the channels. Both views also display all signal level measurements in the current user-selected signal level units as specified in “Regional Preferences” on page 43.

The Full Scan Table view displays each available channel number, their video level readings, and available first and second video audio deltas.

The highlighted channel in the Table view corresponds to the marked channel from the Graph view and vice-versa.

When a channel reading is outside the limit boundaries, a Fail icon is displayed and an up or down arrow is displayed to the right of the Channel Status area below.

When you press the up or down arrows continuously, the highlight bar moves faster.

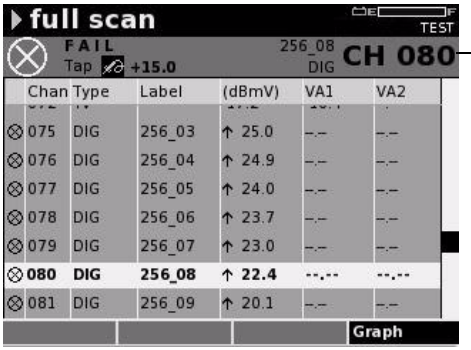

Figure 150 Measure Mode – Full Scan Table

NOTE

For information about how to read the graph, see "Reading Measurement Graphs" on page 196.

Measurement Information Area

This area displays information about the current channel. Information that is displayed in this area includes:

- Overall pass/fail indicator
- Channel label
- Channel type (Single, TV, Dual, Digital, or DOCSIS)
- Channel number
- Test point compensation (if applicable)
- High sensitivity indicator

Setting the Full Scan Speed

To set the scan speed

1. Press the **Settings** softkey.
2. Using the arrow keys, select **Normal Scan** or **Fast Scan**.
3. Press **ENTER**.

NOTE

A normal scan spends more time analyzing each channel, which provides the most accurate measurement.

Enabling Channels for Full Scan

To enable channels

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Channel Plans**.

3 Press **ENTER**.

Figure 151 Measure Mode – Downstream Plans

4 Press the **Plan** softkey.

5 Using the arrow keys, select a **channel plan**.

6 Press the **Done** softkey.

NOTE
The channel plan must include at least one channel.

7 Press the **Plan** softkey.

8 Using the arrow keys, select **Enabled Channels**.

9 Press **ENTER**.

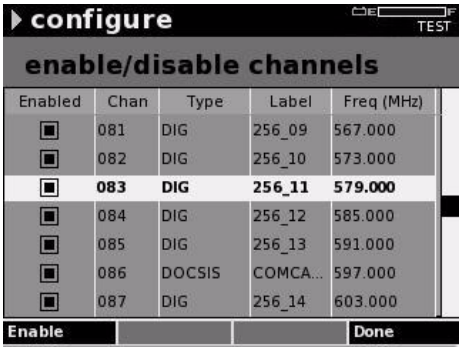

Figure 152 Measure Mode – Enable/Disable Channels

10 Using the arrow keys and the **Enable** softkey, select channels to include in the scan.

11 Press the **Done** softkey.

Enabling Audio Carrier Level for Full Scan

When audio carrier level measurement is enabled, each vertical bar that represents a channel level reading has two colors (if that channel has audio level reading). The audio level part of the bar is gray and video level part is black, so the delta portion is clearly displayed.

NOTE
Audio level measurement is not applicable to single type, DOCSIS, or digital channels.

To enable audio carrier level measurement

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Show Audio**.

3 Press **ENTER**.

View Menu

To access different functions and shortcuts to other tests

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

– **Auto Reference (Shift, 9)** – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

- **1 dB/div, 2 dB/div, 5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.
- **Graph** (default)/**Table** –Displays the measurements in graph or table form. Measurements are continually updated in these views for a Full Scan.
- **Single Channel** – Displays the measurements one channel at a time. First, use the arrow keys to move the marker to the preferred channel then select this option from the View menu.
- **MiniScan** – Displays the MiniScan screen.
- **Tilt** – Displays the Tilt screen.
- **Pause (Shift, 8)** – Suspends measurement updates.
- **Zoom 1x, Zoom 2x, Zoom 4x** – Magnifies the display to display increasing detail centered on the marker (active channel).

3 Press **ENTER**.

Tilt

Tilt is transmission loss in a coaxial cable. Transmission loss increases in proportion to the square root of frequency, thus affecting the tilt. As displayed by the DSAM, Tilt measurement displays levels across a band of channels. Tilt is displayed as the slope between lowest to highest channel. Levels for each intermediate channel should reach the line.

A marker provides channel number, channel type, and channel label in the sub title area.

Tilt measurements appear in order of frequency, with start and stop channels indicated on the horizontal axis at the bottom of the graph. Results are continually updated. Channel assignments are designated by the currently channel plan.

You can save results for later reference.

Measuring Tilt

To measure Tilt signals

1 Press **Measure**.

2 Press the **Basic** softkey.

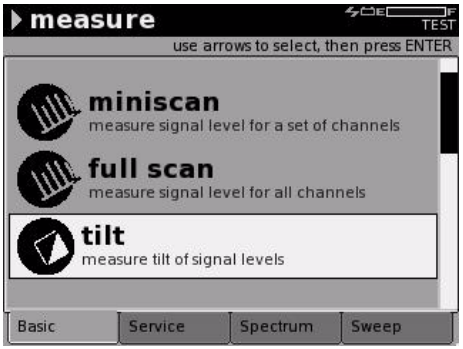

Figure 153 Measure Mode – Basic Tab

3 Using the arrow keys, select **Tilt**.

4 Press **ENTER**.

NOTE

To save the results to a file, refer to “Saving Results” on page 198.

If no channels are enabled for tilt in the channel plan, an error message is displayed.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Tilt Results

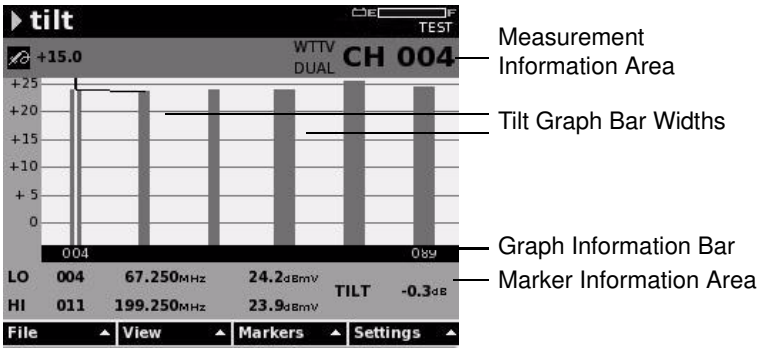

Figure 154 Measure Mode – Tilt

NOTE

For information about how to read the graph, see "Reading Measurement Graphs" on page 196.

Measurement Information Area

This area displays information about the current channel. Information that is displayed in this area includes:

- Channel label
- Channel type (Single, TV, Dual, Digital, or DOCSIS)
- Channel number
- Test point compensation (if applicable)

Tilt Graph Bar Widths

The Tilt graph displays up to twelve gray vertical bars. Depending on the channel type, a narrow or wide vertical bar is displayed above each channel number and the height of the bar represents the signal level of that channel. A **narrow** bar width represents a single, TV, or dual channel type. A **wide** bar width represents a digital or DOCSIS channel type.

Graph Information Bar

This bar displays the highest and lowest frequencies of the tilt scan channels.

Marker Information Area

This area is located below the graph and displays the following:

- Channel number
- Carrier frequency (in MHz)
- Measured carrier signal level for the low and high pilot channels

– Tilt value (in dB)

NOTE

JDSU does not recommend comparing tilt between analog and digital carriers. This practice could result in artificial tilt.

Enabling Tilt Channels

To enable tilt channels

NOTE

Tilt measurement channels are user-defined and correspond to the current channel plan. You can select up to twelve channels within each channel plan. A minimum of two channels are required to perform a tilt test.

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Channel Plans**.

3 Press **ENTER**.

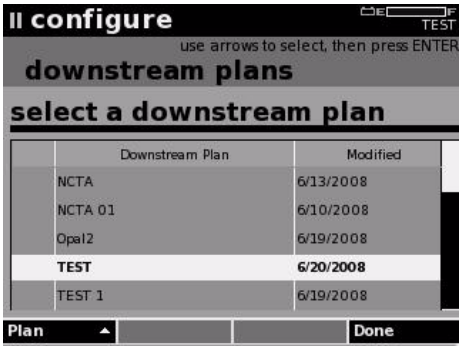

Figure 155 Measure Mode – Downstream Plans

4 Using the arrow keys, select a **channel plan**.

5 Press the **Plan** softkey.

6 Using the arrow keys, select **Tilt Channels**.

7 Press **ENTER**.

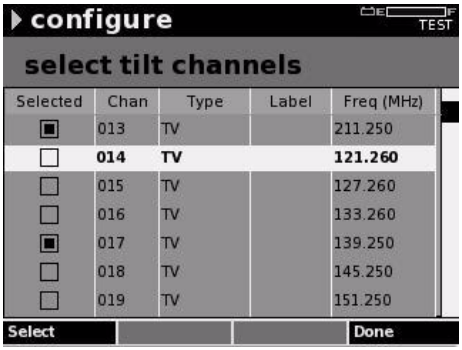

Figure 156 Measure Mode – Select Tilt Channels

8 Using the arrow keys and the **Select** softkey, select up to **twelve channels** for tilt measurement.

9 Press the **Done** softkey.

10 Press the **Done** softkey.

NOTE

You can also change the channels in the channel plans from "Downstream Plans" on page 78

Setting High and Low Pilot Channels

To set the high and low pilot channels

1 To move the marker horizontally to the low pilot channel, use the **left and right arrow keys**.

2 Press the **Markers** softkey.

3 Using the arrow keys, select **Low**.

If the marker is on a channel that is the high pilot or is greater in frequency than the high pilot, **Low** is disabled.

4 Press **ENTER**.

5 To move the marker horizontally to the high pilot channel, use the **left and right arrow keys**.

6 Press the **Markers** softkey.

7 Using the arrow keys, select **High**.

If the marker is on a channel that is the low pilot or is greater in frequency than the low pilot, High is disabled.

8 Press **ENTER**.

NOTE

If a digital channel is selected as either the low or high pilot to be compared to an analog channel, a warning dialog is displayed with the following prompt:

Are you sure you want to set a digital channel as a pilot channel?

– If you answer Yes, that channel is set as the new low or high pilot.

– If you answer No, the pilot settings are not changed.

View Menu

To access different functions and shortcuts to other tests

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

– **Auto Reference (Shift, 9)** – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

– **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.

– **MiniScan** – Displays the MiniScan screen.

– **Single Channel** – Displays measurements one channel at a time. First, use the arrow keys to move the marker to the preferred channel then highlight this option from the View menu.

– **Full Scan** – Displays the Full Scan screen.

– **Pause** (**Shift, 8**) – Suspends measurement updates.

– Use the left and right arrow keys to move the marker horizontally to the previous or to the next channel. You can also use the keypad to type the channel number.

3 Press **ENTER**.

4 To adjust the reference level by (1) dB increments, use the **up and down arrow keys**.

The reference level range is -40 to +60 dBmV.

5 Press **ENTER**.

Constellation

The Constellation measurement displays a constellation graph of the demodulated digital Quadrature Amplitude Modulation (QAM) type (64 QAM, 128 QAM, or 256 QAM) signal prior to error correction. The channel of interest must be defined as either digital or DOCSIS type, 64 QAM, 128 QAM, or 256 QAM, within the active channel plan. The Constellation measurement also displays:

– Channel number

– Channel frequency level information

– Modulation Error Ratio (MER)

– Bit Error Ratio (BER) Pre and Post data

Identifying a specific constellation pattern on the grid and associating this pattern with a specific type of impairment quickly leads to trouble-shooting options that minimize or eliminate the impairment.

NOTE

A good QAM signal displays a tight grouping of dots in the center of each square on the grid.

The current zoom level is displayed in the lower right corner of screen. “Zoom:1” indicates that the entire constellation is displayed with no zoom applied.

Running a Constellation Test

To run a Constellation test

1 Press **Measure**.

2 Press the **Basic** softkey.

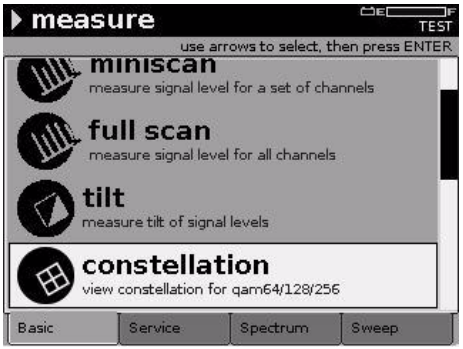

Figure 157 Measurement Mode – Basic Tab: Constellation

3 Using the arrow keys, select **Constellation**.

4 Press **ENTER**.

NOTE

To save the results to a file, refer to "Saving Results" on page 198.

Only digital and DOCSIS channels defined in the downstream (forward path) channel plan are available for Constellation testing.

Understanding Constellation Results

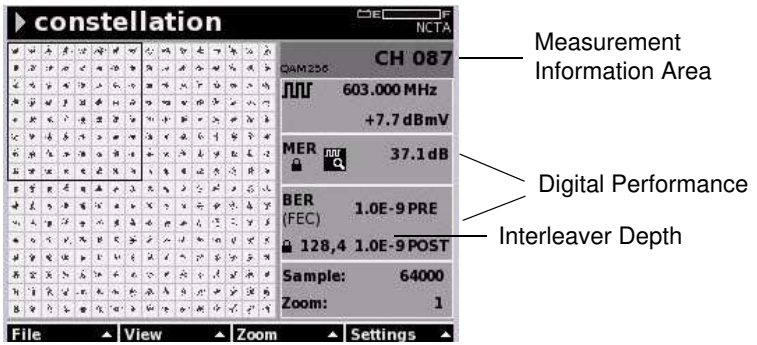

Figure 158 Measure Mode – Constellation

Measurement Information Area

The QAM type (64 QAM, 128 QAM, or 256 QAM) and channel number appear at the top of the screen in the right corner. Directly below the channel number is the channel frequency and channel level information.

Digital Performance The area displays the high sensitivity indicator, modulation error ratio (MER) and bit error rate (BER) before and after (pre/post) forward error correction (FEC).

Interleaver Depth Interleaver depth is displayed immediately to the right of the BER lock. The DSAM supports the following interleaver depth values:

– 1,128

– 2,64

– 4,32

– 8,16

– 16,8

– 32,4

– 64,2

– 128,1

– 128,4 (additional purchase required)

Deep interleaver channels (such as 128,4) require DSAM model 2600, 3600 or 6000. If you are using a different model, only the level and BER appear.

NOTE

If the displayed interleaver depth is greater than the interleaver depth supported, the BER values are displayed as dashes (-----). The frequency, level, MER and constellation display remain accurate.

Impairments The dots representing QAM symbols on the constellation grid should be well within the grid lines (decision boundaries). When the dots approach or exceed these boundaries, significant errors are occurring in the transmission of the signal. Impairment types are described as follows.

Thermal (system) Noise

Thermal noise impairments cause the dots on the graph to spread out toward the grid lines (decision boundaries), indicating significant errors such as low levels into amplifiers or too many amplifiers in cascade. The zoom feature would display more detail about the position of these dots in relation to the grid lines

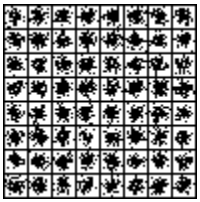

Figure 159 Constellation – Thermal (system) Noise

Phase Noise

Phase noise impairments cause the dots on the graph to form a circular pattern possibly caused by faulty modulators. Phase noise is best seen on the grid without the use of the zoom feature.

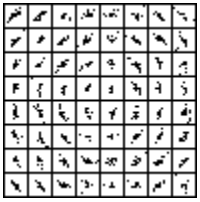

Figure 160 Constellation – Phase Noise

Coherent Interference

Coherent interference impairments – such as CTB, CSO, and spurs – cause the dots on the graph to cluster with an empty space in the middle.

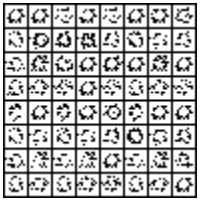

Figure 161 Constellation – Coherent Interface

Gain Compression

Gain compression impairment, possibly caused by over-driven amplifiers, cause the dots on the graph to be pulled in at the corners.

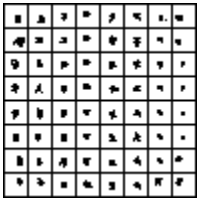

Figure 162 Constellation – Gain Compression

I/Q Imbalance

I/Q imbalance, possibly caused by intermittent ingress or a misplaced sweep point, cause a few pixels to be thrown from the center.

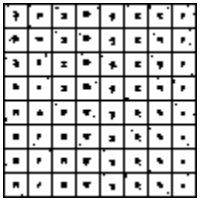

Figure 163 Constellation – I/Q Imbalance

Editing the Channel Plan

To edit the channel plan see "Downstream Plans" on page 78.

Setting the Sample Refresh Rate

To set the number of samples to be processed before refreshing the screen

1. Press the **Settings** softkey.
2. Using the arrow keys, select **Samples**.
3. Press **ENTER**.
4. Using the arrow keys, select an **option**.
5. Press **ENTER**.

Figure 164 Measure Mode – Constellation Refresh Rates

6 Press **ENTER**.

7 Press the **OK** softkey.

Using Zoom

To zoom in on a quadrant

1 Using the arrow keys, select **one of the four quadrants**.

2 Press the **Zoom** softkey.

3 Using the arrow keys, select **Zoom+** to zoom in one level, **Zoom-** to zoom out one level, or **Zoom 1x** to reset to 1:1.

4 Press **ENTER**.

NOTE

In 64 QAM, the following zoom levels are available for viewing:

- Zoom Level 1 - 8x8
- Zoom Level 2 - 4x4
- Zoom Level 3 - 2x2

In 128 QAM and 256 QAM, the following zoom levels are available for viewing:

- Zoom Level 1 - 16x16
- Zoom Level 2 - 8x8
- Zoom Level 3 - 4x4
- Zoom Level 4 - 2x2

NOTE

Within each zoom level you can navigate to the specific target quadrant of interest to focus the next zoom operation. The zoom level is represented in the lower right portion of the screen.

Interleaver Depth

When viewing a locked digital signal the interleaver depth is displayed in the BER area.

NOTE

If the displayed interleaver depth is greater than the interleaver depth supported, the BER values are displayed as dashes (-----). The frequency, level, MER and constellation display remain accurate.

View Menu

To access different functions and shortcuts to other tests

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

- **Reset** – Manually resets the Constellation function.
- **Pause** (**Shift, 8**) – Suspends measurement updates.
- **Single Channel** – Displays measurements one channel at a time. First, use the numeric keypad to enter the channel number then highlight this option from the **View** menu.
- **DQI** – Enables you to view a time-elapsed view of DQI measurements on digital channels only (if the hardware supports it).
- **QAM Ingress** – Displays the QAM Ingress screen.

3 Press **ENTER**.

FDR

A frequency domain reflectivity (FDR) test displays the location and severity of faults and breaks in a length of cable. This enables you to replace or repair faulty cables and components.

To use FDR, you must have a JDS Uniphase Corporation LST-1700 Signal Transmitter, which provides a source for a frequency domain reflectometry test (FDR) of home wiring.

Running an FDR Scan

1 Connect the **cable you want to test** to the LST-1700.

2 Connect the LST-1700 to the DSAM using one of the following cables:
   – **Part Number 1217-00-0251C** (for DSAM with standard battery)
   – **Part Number 21103805** (for DSAM with high capacity battery)

3 Apply power to **both devices**.

4 Press **Measure**.

5 Press the **Basic** softkey.

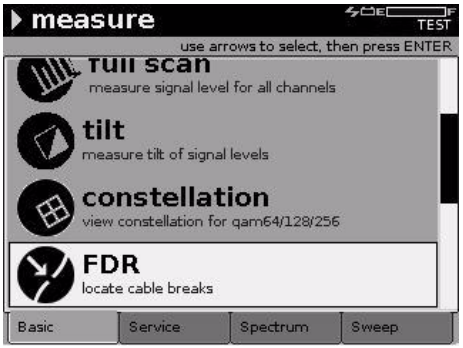

Figure 165 Measure Mode – Basic Tab: FDR

6 Using the arrow keys, select **FDR**.

7 Press **ENTER**.

8 Using the arrow keys, position the **distance marker** over a reflection to pinpoint its distance and amplitude. (The corresponding information is displayed directly below the graph.)

NOTE

To save the results to a file, refer to "Saving Results" on page 198.

Understanding FDR Results

The FDR graphs distance on the X-axis and amplitude on the Y-axis as the LST-1700 transmits signals down the cable and looks for RF energy being reflected back. Reflections occur when there is a change in impedance possibly caused by such things as cable damage, unterminated ports, or improper installation.

A reflection is displayed on the graph as a peak in amplitude located at the distance where the impedance has changed. The amplitude of the reflection indicates the severity of the impedance change. For example, a large reflection results if the cable is broken or un-terminated.

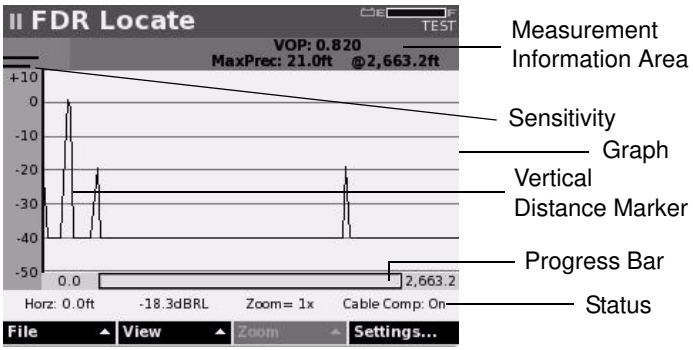

Figure 166 Measure Mode – FDR Locate

NOTE

For information about how to read the graph, see "Reading Measurement Graphs" on page 196.

Measurement Information Area

This area displays the following information:

VOP – (Velocity of Propagation) is the speed at which signals travel the length of a cable. VOP is determined by the dielectric material used to separate the two conductors and is usually specified by the manufacturer.

Max Precision – The maximum precision is the cable attenuation.

Resolution of Measurement

The resolution of measurement determines the number of data points, maximum distance of, and distance resolution/accuracy of the measurement. This setting affects the time per measurement cycle, with LOW being fast (least accurate) and ULTRA being slow (most accurate). Valid options are:

– LOW (64pts) = 1 bar

– MEDIUM (128pts) = 2 bars

– HIGH (256pts) = 3 bars

– ULTRA (512pts) = 4 bars

To set the resolution of measurement, refer to "FDR Settings" on page 63.

Graph The graph presents a view of distance on the X-axis and amplitude on the Y-axis.

Vertical Distance Marker Position the vertical distance marker over a reflection so to pinpoint its distance and amplitude. You can see the marker information directly beneath the graph.

Progress Bar Displays the status of the measurement cycle.

Status This area consists of the following:

- Horizontal status
- dBRL
- Zoom level
- Cable compensation status (ON or OFF)

Using Zoom

To use the zoom feature

1. After scanning a few times, press Shift, 8 to pause the scan.
2. Press the **Zoom** softkey.
3. Using the arrow keys, select **Zoom+** to zoom in one level, **Zoom-** to zoom out one level, or **Zoom 1x** to reset to 1:1.
4. Press **ENTER**.

Modifying FDR Configuration Settings

To modify FDR configuration settings

1. Press the **Settings** softkey.

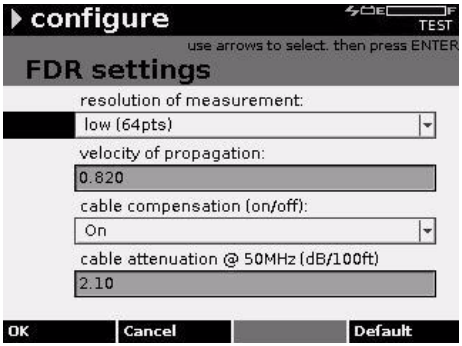

Figure 167 Configure – FDR Settings

2 See "FDR Parameters" on page 64.

Viewing FDR Results

To view FDR results in different ways

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

– **Auto Reference (Shift, 9)** – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

– **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.

– **Pause** (**Shift, 8**) – Suspends measurement updates.

3 Press **ENTER**.

Return QAM Generator

DSAM is equipped with this mode so you can evaluate problems in the network arising due to phase and amplitude distortions. Generally these problems need attention to take advantage of the higher capacity of the 16 QAM or 64 QAM.

The Return QAM Generator function generates an upstream signal of a desired frequency, desired level and desired modulation type (16 QAM, 64 QAM, or CW). The DSAM generates the signal and a signal demodulator can be used to demodulate/detect the signal.

Using the Return QAM Generator

To use the return QAM generator

1 Press **Measure**.

2 Press the **Basic** softkey.

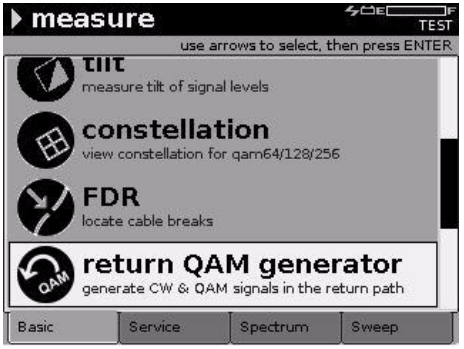

Figure 168 Measure Mode – Basic Tab: Return QAM Generator

3 Using the arrow keys, select **Return QAM Generator**.

4 Press **ENTER**.

Enable/Disable Transmit

To enable/disable transmit

1 To disable transmit, press the **Disable Tx** softkey.
The softkey turns to Enable Tx.

2 To enable transmit, press the **Enable Tx** softkey.
The softkey turns to Disable Tx.

Changing the Mod Type

To change the mod type

1 Press the **Settings** softkey.

2 Using the arrow keys, select one of the following:
   – **CW**
   – **QAM16**
   – **QAM64**

3 Press **ENTER**.

NOTE
The symbol rate is only configurable if you are in a QAM mode.

Changing the Msym/s

To change the Msym/s

1 Press the **Settings** softkey.

2 Using the arrow keys, select one of the following:
   – **1.28 Msym/s**
   – **2.56 Msym/s**
   – **3.84 Msym/s**
   – **5.12 Msym/s**

3 Press **ENTER**.

Understanding Return QAM Generator Results

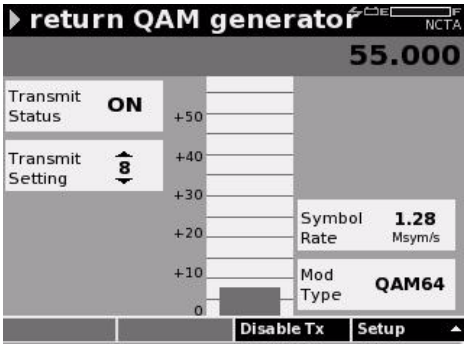

Figure 169 Measure Mode – Return QAM Generator

Measurement Information Area

This area displays information about the current channel. Information that is displayed in this area includes:

Graph Displays signal level on the Y-axis. A vertical bar is displayed and the height of the bar represents the signal level.

Symbol Rate The number of symbol changes (signaling events) made to the transmission medium per second using a digitally modulated signal or a line code. The Symbol Rate is measured in baud (Bd) or symbols/second. The default value is 1.28.

Transmit Status Indicates whether Tx is enabled or disabled.

NOTE

For information about how to read the graph, see "Reading Measurement Graphs" on page 196.

View Menu

To access different functions and shortcuts to other tests

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:
- **Single Channel** – Displays measurements one channel at a time. First, use the numeric keypad to enter the channel number then highlight this option from the **View** menu.
- **Constellation** – Displays the Constellation screen.
- **Upstream Spectrum** – Displays the Upstream Spectrum measurement mode.
- **Downstream Spectrum** – Displays the Downstream Spectrum measurement mode.

3 Press **ENTER**.

QAM Ingress

The QAM Ingress mode is a line plot which graphs signal error versus frequency of QAM signals. This mode supports Ingress Under Carrier for 64 QAM and 256 QAM signals. (Additional purchase required.)

The QAM Ingress mode enables you to:

- View a graphic depiction of the signal
- View the QAM type (64 or 256)
- View the channel number

– View the channel frequency level information

– Examine Modulation Error Ratio (MER)

The QAM Ingress mode continuously updates the graphic depiction of the signal along with the MER and BER data.

Using QAM Ingress

To use QAM ingress

1 Press **Measure**.

2 Press the **Basic** softkey.

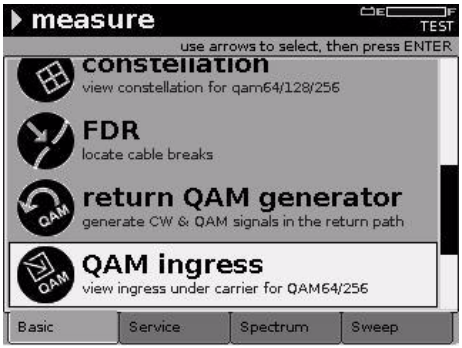

Figure 170 Measure Mode – Basic Tab: QAM Ingress

3 Using the arrow keys, select **QAM Ingress**.

4 Press **ENTER**.

Understanding QAM Ingress Results

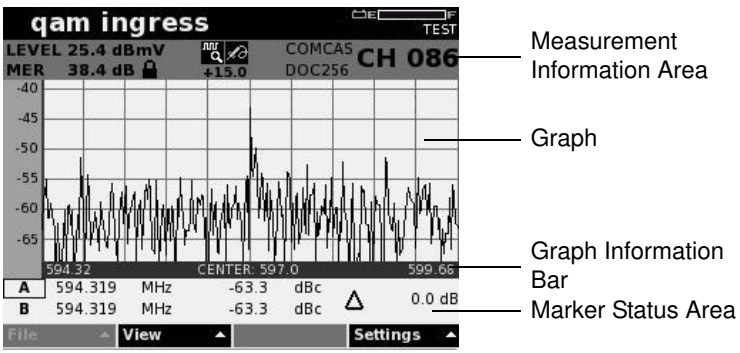

Figure 171 Measure Mode – QAM Ingress

NOTE

For information about how to read the graph, see "Reading Measurement Graphs" on page 196.

Measurement Information Area

The QAM type (64 or 256) and channel number appear at the top of the screen in the right corner. Directly below the channel number is the channel frequency and channel level information.

In the right corner under the selected channel plan the QAM type (64 or 256) and channel number is displayed. Directly below the channel number is the channel frequency and channel level information.

Graph

The trace changes only if levels are different from the levels of the previous trace.

Graph Information Bar

This area consists of the start, stop and center frequency.

Marker Status Area

The QAM ingress measurement mode also contains an area referred to as the Marker Status area (below the Graph Information Bar). This area consists of the marker name (A or B), marker frequency (in MHz), and measured signal level for the frequencies which the markers are on. The black square around the letter A or B below the graph displays the active marker. The delta value (in dB) between the markers is also displayed.

View Menu

To access different functions and shortcuts to other tests

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

Auto Reference (Shift, 9) – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

5 dB/div or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.

Peak Hold – When Peak Hold is enabled, peak values are reset.

Reset – Manually resets the QAM Ingress function. (Only enabled if Peak Hold is enabled.)

Single Channel – Displays measurements one channel at a time. First, use the arrow keys to move the marker to the preferred channel then highlight this option from the View menu.

MiniScan – Displays the MiniScan screen.

Constellation – Displays the Constellation screen.

Pause (**Shift, 8**) – Suspends measurement updates.

Marker A – Sets Marker A as the active marker. Using the arrow keys, move the marker on the grid.

Marker B – Sets Marker B as the active marker. Using the arrow keys, move the marker on the grid.

3 Press **ENTER**.

Hum Analysis

Hum is the undesirable modulation of the television video carrier by power line frequencies and harmonics, or other low frequency disturbances (FCC Limit: < 1 kHz) The Hum mode displays the total amount of hum for an analog channel over a 1 kHz span. An evenly spaced breakdown of hum percentages is displayed in a graph with bars at either a 50 or 60 Hz spacing.

Hum measurements are displayed on a graph and as a numeric value for each carrier within the channel.

1 To tune directly to a specific channel, use the **alphanumeric keys**.

2 Press **ENTER**.

Hum measurements are continuously updated on the screen.

Performing Hum Analysis

To perform hum analysis

1 Press **Measure**.

2 Press the **Basic** softkey.

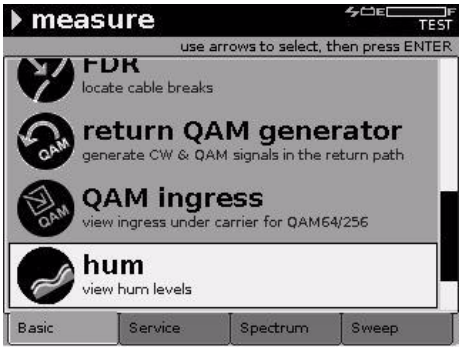

Figure 172 Measure Mode – Basic Tab: Hum

3 Using the arrow keys, select **Hum**.

4 Press **ENTER**.

NOTE

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Hum Analysis Results

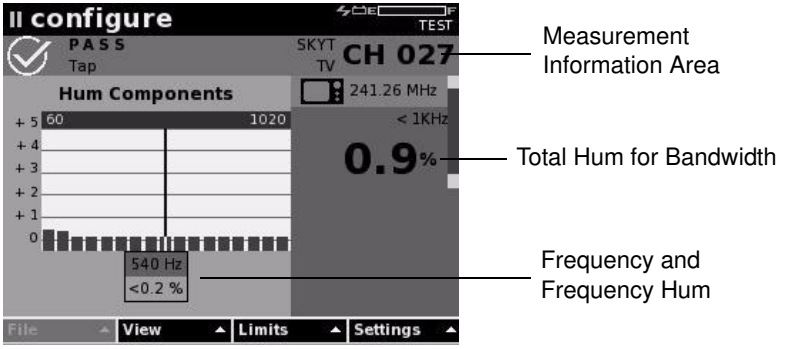

Figure 173 Measure Mode – Hum Analysis

NOTE

For information about how to read the graph, see “Reading Measurement Graphs” on page 196.

Measurement Information Area The channel type and number appear at the top right hand corner of the screen. Directly below the channel number is the channel frequency and hum information.

Total Hum This is the total sum of hum for the channel.

Frequency and Hum The hum frequency within the channel and the hum for that frequency.

Editing the Channel Plan

To edit the channel plan

1. Press the **Settings** softkey.
2. Using the arrow keys, select **Channel Plan**.
3. Press **ENTER**.
4. Refer to step 3 under "Editing a Channel Plan" on page 79.

DQI

Digital Quality Index (DQI) (additional purchase required for certain models) is a real-time measurement that detects intermittent impairments within a downstream digital QAM carrier.

The DQI measurement uses error magnitude information from the output of the QAM demodulator within DSAM, including error magnitudes that do not result in either pre or post BER errors. Measurement response is considerably faster and more sensitive to transient and intermittent issues than the MER measurement.

DQI only works on digital channels configured in the active channel plan as channel types DIG (digital QAM) or DOCSIS.

Performing DQI Analysis

To perform analysis

1. Press **Measure**.
2. Press the **Basic** softkey.

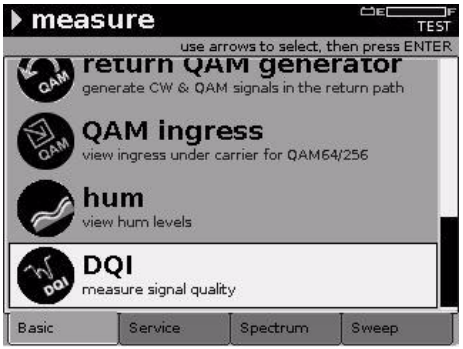

Figure 174 Measure Mode – Basic Tab: DQI

3 Using the arrow keys, select **DQI**.

4 Press **ENTER**.

Understanding DQI Results

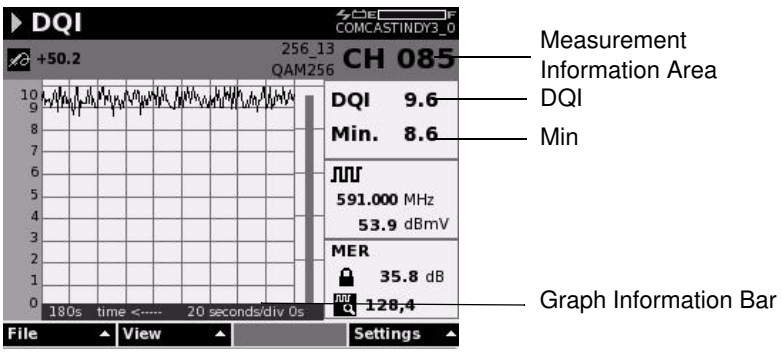

Figure 175 Measure Mode – DQI

NOTE

For information about how to read the graph, see “Reading Measurement Graphs” on page 196.

To save the results to a file, refer to “Saving Results” on page 198.

To open a saved measurement file, see “Opening a Saved File” on page 201.

Measurement Information Area

The channel type (QAM 64 or QAM 256) and channel number appear at the top of the screen in the right corner. Directly below the channel number is the channel frequency and channel level information.

DQI Digital Quality Index where 0 = worst and 10 = best.

Min The lowest DQI value generated since starting the node.

Graph Changes only if the levels are different from the levels of the previous trace.

Graph Information Bar This area consists of the total time in seconds it takes to display a complete trace and the number of seconds per division.

Changing/Editing the Channel Plan

To change the channel plan

1 Press the **Settings** softkey.

2 Refer to "Downstream Plans" on page 78.

View Menu

To access different functions and shortcuts to other tests

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

- **Single Channel** – Displays measurements one channel at a time. First, use the arrow keys to move the marker to the preferred channel then highlight this option from the **View** menu.
- **MiniScan** – Displays the MiniScan screen.
- **Tilt** – Displays the Tilt screen.
- **Full Scan** – Displays the Full Scan screen.
- **Constellation** – Displays the Constellation screen.
- **QAM Ingress** – Displays the QAM Ingress screen.
- **Pause (Shift, 8)** – Suspends measurement updates.

3 Press **ENTER**.

Return Loopback

The Return Loopback mode enables you to quickly perform frequency response measurements of active or passive field devices using a single meter. A CW signal may be generated from the DSAM unit and

injected to the input of a device under test. The DSAM can then measure the output, providing valuable information such as gain, loss, roll-off, or frequency response.

Performing Return Loopback

To perform return loopback

1 Press **Measure**.

2 Press the **Basic** softkey.

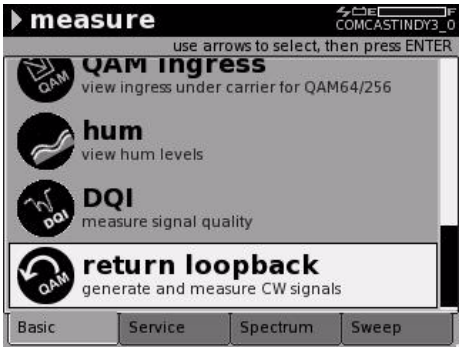

Figure 176 Measure – Return Loopback

3 Using the arrow keys, select **Return Loopback**.

4 Press **ENTER**.

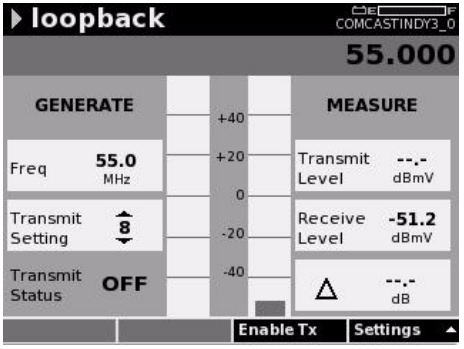

Figure 177 Measure Mode – Loopback

Enabling/ Disabling Transmit

To enable/disable transmit

1. To disable transmit, press the **Disable Tx** softkey.
   The softkey turns to Enable Tx.
2. To enable transmit, press the **Enable Tx** softkey.
   The softkey turns to Disable Tx.

Setting the Transmit Level

To set the transmit level

1. Press the **Settings** softkey.
2. Using the arrow keys, select **Transmit Level**.
3. Press **ENTER**.
   The Transmit Level Setting screen is displayed.
4. Using the arrow keys and numeric keypad, enter a **transmit level between 8 and 58**.
5. Press the **OK** softkey.

Performing a Transmit Reference

To Perform a Transmit Reference

1. Connect a **short cable** between **port 1** and **port 2**.
2. Press the **Settings** softkey.
3. Using the arrow keys, select **Reference**.
4. Press **ENTER**.
5. Press the **Reference** softkey.

Reading Measurement Graphs

Reading Bar Graphs

Bar graphs are comprised of up to four contrasting shades:

White The background color of the graph when limit check is disabled. Also the background area within limit boundaries when limit check is enabled.

Gray The color of the measurement bar when limit check is disabled. Also the color of the measurement bar when limit check is enabled and the signal level is within the configured boundaries.

Black/White Diagonal Hash Lines The area above and below the configured limit boundaries (also described as the area “out of range”).

Black The color of the measurement bar when the signal level is not within the limit set range. This occurs when the top of the measurement bar overlaps the area of black/white diagonal hash lines, indicating measurement failure in relation to the selected limit set.

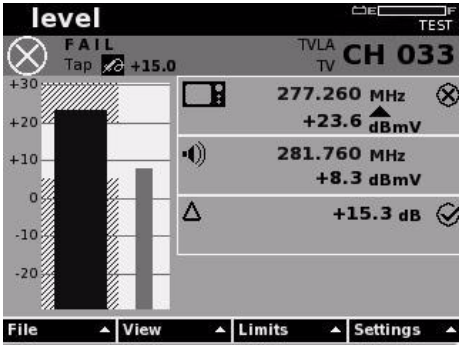

Figure 178 Measure Mode – Level Channel

Reading Line Graphs

Bar graphs are comprised of up to three contrasting shades:

White The background color of the graph when limit check is disabled. Also the background area within limit boundaries when limit check is enabled.

Black/White Diagonal Hash Lines The area above and below the configured limit boundaries (also described as the area “out of range”).

Black The trace line is typically black. However, if Peak Hold is enabled, the peak trace is displayed in black and the normal line trace is gray. When viewing this type of sweep results, the area under the trace is also black.

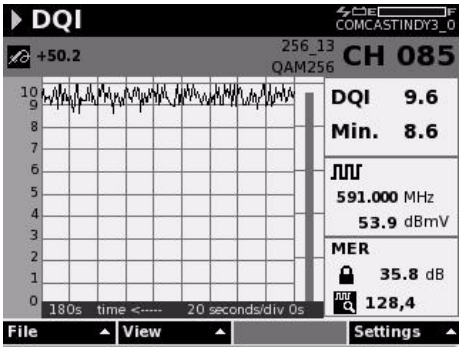

Figure 179 Measure – DQI Results

Saving Results

Saving Results

The File softkey enables you to save your results and manage saved file folders.

NOTE

To freeze any live fluctuating data, pause the meter by pressing **Shift, 8** before you save your results to a file.

To save your results

1 Press the **File** softkey.

2 Using the arrow keys, select **Save**.

3 Press **ENTER**.

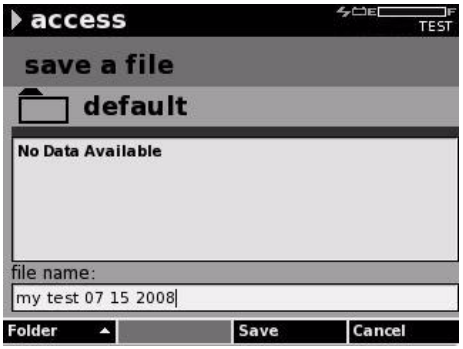

Figure 180 Save a File screen

4 Using the arrow keys and the alphanumeric keypad, enter a **file name** for your results.

5 Press the **Save** softkey.

If Location Settings is enabled through TPP, the Edit Location Settings screen is displayed.

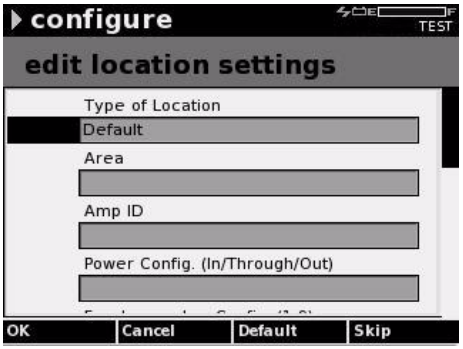

Figure 181 AutoTest – Edit Location Settings

6 Using the arrow keys, select the **parameter** you want to edit.

7 Press **ENTER**.

OR

8 To use the default location settings, press the **Default** softkey.

9 Press the **OK** softkey.

OR

10 Press the **Skip**.

11 Using the arrow keys and the alphanumeric keypad, edit the **entry**.

12 Press **ENTER**.

13 Press the **OK** softkey.

Creating a New Folder

To create a new folder

1 Press the **Folder** softkey.

2 Using the arrow keys, select **New**.

3 Press **ENTER**.

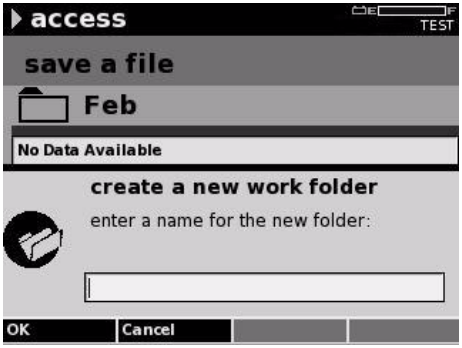

Figure 182 Create a New Work Folder screen

4 Using the alphanumeric keypad, enter the **folder name**.

5 Press the **OK** softkey.

Changing the Default Folder

To change the default folder

1 Press the **Folder** softkey.

2 Using the arrow keys, select **Change**.

3 Press **ENTER**.

4 Using the arrow keys, select a **different folder**.

5 Press **ENTER**.

6 Press the **OK** softkey.

Opening a Saved File

Opening a saved file is not applicable to AutoTest results.

To open a saved file

1. Press the **File** softkey.
2. Using the arrow keys, select **Open**.
3. Press **ENTER**.
4. Using the arrow keys, select the **folder** that contains the file you want to open.
5. Press the **Open** softkey.
6. Using the arrow keys, select the **file** you want to open.
7. Press the **Open** softkey.

NOTE

When you attempt to open a file within a mode, only saved files of that mode type are displayed in the file folder.

Measure Mode – Service Tab

9

This chapter describes the Measure Mode – Service tab functionality. Topics discussed in this chapter are as follows:

Service Measurement Modes

The functions under the Service tab of the DSAM Measure Mode provide the following modes for viewing and analyzing CATV channels:

DOCSIS Analyzes the digital performance of a DOCSIS channel to verify upstream and downstream connectivity.

Ethernet Analyzes the internet protocol (IP) performance through the Ethernet. (Additional purchase required.)

CM Diagnostics Page Displays a cable modem's internal web page. (Additional purchase required.)

VoIP Enables you to measure voice quality of your PacketCable™ VoIP networks and gateway, internet protocol (IP) phones and other end point devices. (Additional purchase required.)

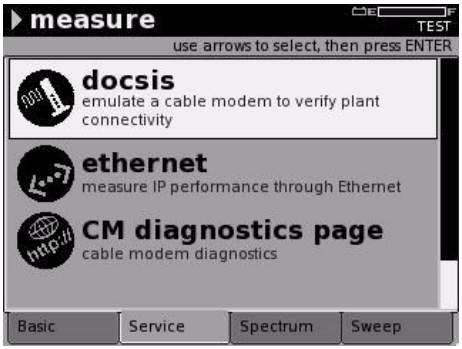

Figure 183 Measure Mode – Service Tab

DOCSIS

Introduction The DOCSIS (Data Over Cable Service Interface Specification) test analyzes the digital performance of selected DOCSIS channels to verify downstream and upstream connectivity.

Only DOCSIS channels defined in the downstream (forward path) channel plan are available for DOCSIS measurement testing.

You must build a channel plan prior to running a DOCSIS test.

Configuring DSAM for DOCSIS Tests

The first thing to check before you run a DOCSIS test is to make sure the CM MAC Address has been provisioned to your Cable Modem Terminal System (CMTS).

To configure DSAM for DOCSIS tests

1 Press **Configure**.

2 Press the **Measure** softkey.

3 Using the arrow keys, select the **DOCSIS Configuration** option.

4 Press **ENTER**.

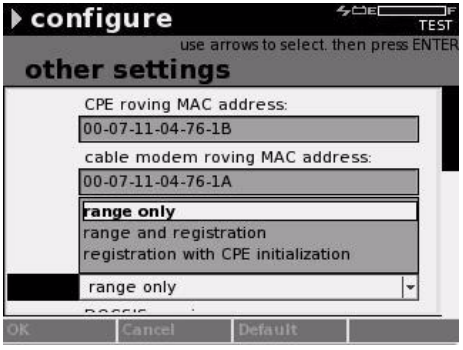

Figure 184 Configure Mode – Other Settings

5 Using the arrow keys, select one of the following:

- **Range Only**: If the DOCSIS Configuration field is set to Range Only, only the range results on the DOCSIS results screen is displayed after you run a DOCSIS test.
- **Range and Registration**: If the DOCSIS Configuration field is set to Range and Registration, the DOCSIS results screen is displayed after you run a DOCSIS test. In addition, you can display the Registration screen from the View menu.
- **Registration with CPE Initialization**: If the DOCSIS Configuration field is set to Registration with CPE Initialization, the DOCSIS results screen is displayed after you run a DOCSIS test. In addition, you can run data service tests.

6 Verify that the value in the **DOCSIS Version** field matches the CMTS you are testing.

7 Verify that the value in the **DOCSIS Security Mode** field matches the security mode for the CMTS you are testing.

8 Press the **OK** softkey.

Running a DOCSIS Test

You must build a channel plan prior to running a DOCSIS test.

To run a DOCSIS test

1 Check your **preliminary configurations** ("Configuring DSAM for DOCSIS Tests" on page 205).

2 Press **Measure**.

3 Press the **Service** softkey.

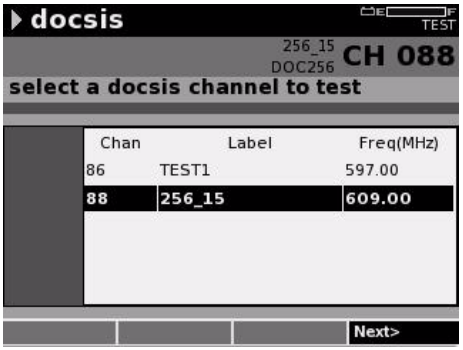

Figure 185 Measure Mode – Select a DOCSIS Channel to Test

4 Using the arrow keys, select a **channel plan**.

5 Press the **Next** softkey.

NOTE

Only DOCSIS channels defined in the downstream (forward path) channel plan are available for DOCSIS measurement testing.

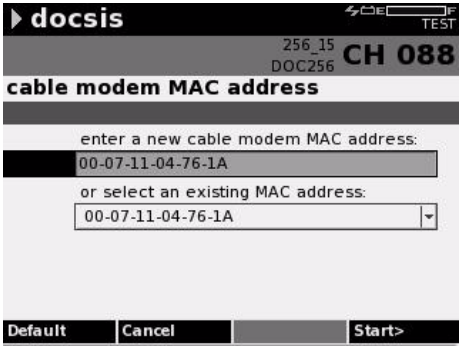

Figure 186 Measure Mode – Cable Modem MAC Address

6 To set the roving MAC address as the default, press the **Default** softkey.

NOTE

The roving MAC address must be recognized by your CMTS to achieve DOCSIS ranging.

A MAC address is not required if the DOCSIS Configuration is set to Range Only. (See "Configuring DSAM for DOCSIS Tests" on page 205.)

7 Press the **Start** softkey.

NOTE

For instructions on how to save measurement results, see "Saving Results" on page 198.

For detailed information about what happens in the different stages of the DOCSIS test, see "DOCSIS Test Steps" on page 209.

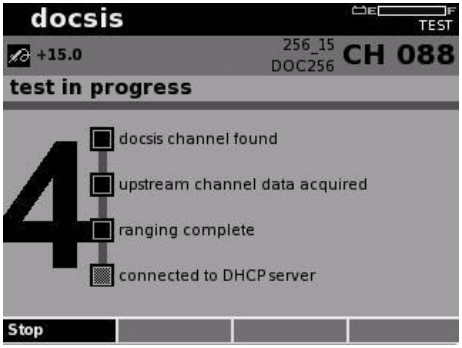

Figure 187 Measure Mode – DOCSIS Test in Progress

The results appear on the DOCSIS Results screen.

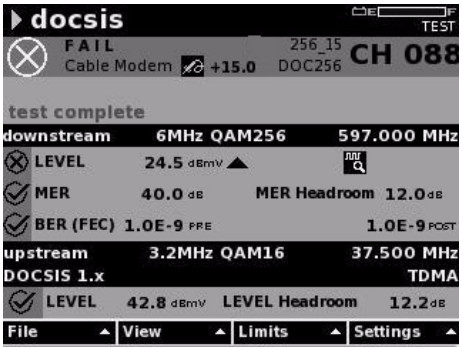

Figure 188 Measure Mode – DOCSIS

NOTE

To save the results to a file, refer to "Saving Results" on page 198.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Use the Edit option to edit limit set parameters for tap, ground block, TV, cable modem, proof, or custom limits 1 through 3.

The limit set parameters you set remain constant for all channel plans and measurement modes.

When limit check is enabled, an overall pass or fail symbol and the name of the selected limit set are displayed directly above the results.

When a measurement falls outside the selected limit set range, an up or down arrow is displayed to the right of the measurement indicating that the value is too high or too low.

No pass/fail information is available when limit check is disabled.

DOCSIS Test Steps

This section provides detailed information of a DOCSIS test. While the test is in progress, the steps are counted and annotated on the Test in Progress screen.

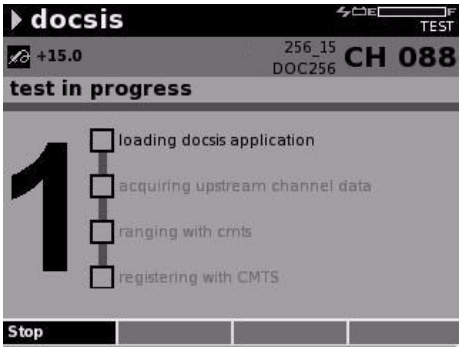

Figure 189 Measure Mode – DOCSIS Test in Progress

Step 1 During Step 1 of the DOCSIS Test process, DSAM attempts to tune in to and measure the downstream DOCSIS channel attributes and displays the following text next to the first box:

- Loading DOCSIS application
- Locking on to downstream
- Analyzing downstream
- DOCSIS channel found

Step 2 During Step 2 of the DOCSIS Test process, DSAM captures the system timing (SYNCs), upstream channel information (UCDs), and time slots (MAPs) and displays the following text next to the second box:

- Acquiring upstream channel data
- Upstream channel data acquired

Step 3 During step 3 of the DOCSIS Test process, DSAM establishes the optimum cable modem transmitter output power level through a process defined in the DOCSIS specification and displays the following text next to the third box:

- Ranging with CMTS
- Ranging complete

Step 4 During step 4 of the DOCSIS Test process, DSAM establishes registration activities for the cable modem as defined by the DOCSIS specification and displays the following text next to the third box:

- Connecting to DHCP server
- Connected to DHCP server
- Registering with CMTS
- Connecting to TFTP server
- Connected to TFTP server

Understanding Range Results

The DOCSIS screen displays resulting ranging and displays measurement performance data on the upstream and downstream signal level, downstream modulation error ratio (MER) or EVM, as configured, and the estimated downstream bit error rate (BER) before and after forward error correction (FEC).

You can view the range measurement data in relation to user-configured limits to determine the pass/fail status of the DOCSIS channel. Values are continuously updated.

Only valid measurements and parameters appear. When incomplete measurements occur due to system errors or a manual termination of the measurement procedure, dashes (---) appear instead of invalid numeric values. When limit test results are incomplete, a question mark (?) is displayed.

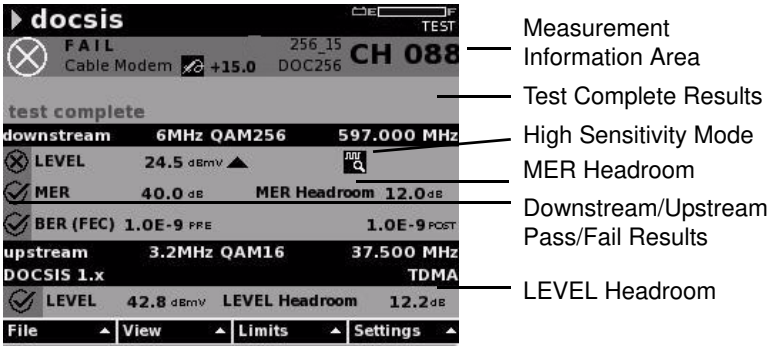

Figure 190 Measure Mode – DOCSIS

Measurement Information Area The overall pass/fail result is displayed in the top left corner next to the selected limit set. The failure of any one item produces an overall failure.

Test Complete Results Directly below the overall pass/fail result is an indication that the test was completed successfully (Test Complete), or an indication of what error occurred.

High Sensitivity Mode This icon is displayed if QAM Sensitivity is set to high on the Other Settings configuration screen. (See "Other Settings Parameters" on page 66.)

MER Headroom The DSAM default limits are set at the recommended minimum MER values for a TV/Modem. The default limit for 64 QAM carriers is 28 dB. The default limit for 256 QAM carriers is 32 dB. You can set other limit sets at the Limit Sets screen ("Limit Sets" on page 58). If limits is set to Off, the MER Headroom reading is not applicable.

EXAMPLE 1

A MER reading of 36 dB is obtained from a 64 QAM DOCSIS carrier when your limits are set to "Cable Modem" and you are using the DSAM factory default limits. The MER Headroom calculation results display a reading of 8 dB (36 dB - 28 dB = 8 dB).

EXAMPLE 2

An MER reading of 36 dB is obtained from a 256 QAM DOCSIS carrier when your limits are set to "Cable Modem" and you are using the DSAM factory default limits. The MER Headroom calculation results display a reading of 4 dB (36 dB - 32 dB = 4 dB).

Downstream/ Upstream Pass/Fail Results A column to the far left of the downstream and upstream sections indicates the pass/fail status for each item tested. When a measurement falls outside the selected limit set range, an up or down arrow head is displayed to the right of the measurement indicating that the value is too high or too low. Numeric values that are out-of-range appear in bold.

NOTE

No pass/fail information is available when limit check is disabled.

LEVEL Headroom LEVEL Headroom is the difference between the maximum output possible (58 dBmV for QPSK or 55 dBmV for 16 QAM) and the LEVEL transmitted. Upon successful ranging with the network CMTS, DSAM displays the resultant upstream transmit LEVEL required out of the DSAM. This LEVEL Headroom is tested against the "Min CM Headroom" limit value if limits is set to On.

NOTE

The factory default “Min CM Headroom” value is 5 dB.

EXAMPLE 3

You successfully range with the CMTS. Results show that the CMTS instructed the DSAM to transmit a QSPK carrier and the successful transmit level is 42 dBmV. The LEVEL Headroom shown is the maximum specified level for QSPK of 58 - 42 = 16 dB. Since 16 dB is greater than the 5 dB limit, the measurement passes.

Selecting a Different Channel Plan

To select a different channel plan

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Channel Plans**.

3 Press **ENTER**.

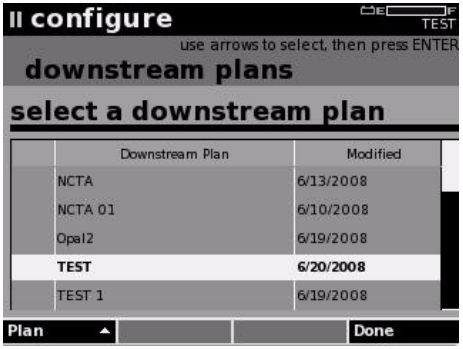

Figure 191 Measure Mode – Downstream Plans

4 Using the arrow keys, select a **channel plan**.

5 Press **ENTER**.

NOTE

See “Editing a Channel Plan” on page 79 for instructions on how to edit a channel plan.

6 Press the **Done** softkey.

Selecting a Different DOCSIS Channel

To select a different DOCSIS channel

1 Press the **Settings** softkey.

2 Using the arrow keys, select **DOCSIS Channels**.

3 Press **ENTER**.

4 Using the arrow keys, select an **option**.

5 Press **ENTER**.

6 Press the **OK** softkey.

The DOCSIS test automatically runs through the processing steps again.

Viewing Registration Results

During DOCSIS, the meter performs registration and displays the internet protocol (IP) addresses of the dynamic host configuration protocol (DHCP), trivial file transfer protocol (TFTP) and time of day (TOD) servers and gateway. The registration test also provides the modems internet protocol (IP) address, configuration file, and Service IDentifier (SID).

To view registration results

1 Press the **View** softkey.

2 Using the arrow keys, select **Register**.

3 Press **ENTER**.

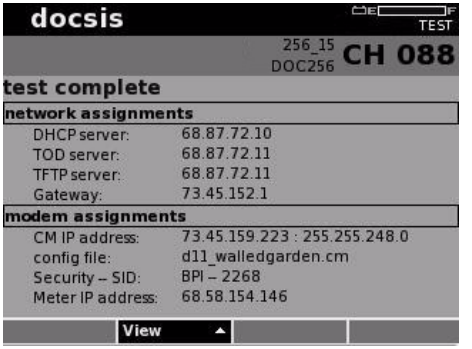

Figure 192 Measure Mode – DOCSIS Registration

NOTE

When using a customer's CM MAC address, the config file name may indicate the grade of service the customer gets. A file name containing “default” generally means that the CM MAC address used for the test is not provisioned.

Viewing Throughput Results

To view Throughput results

1 Press the **View** softkey.

2 Using the arrow keys, select **Throughput**.

3 Press **ENTER**.

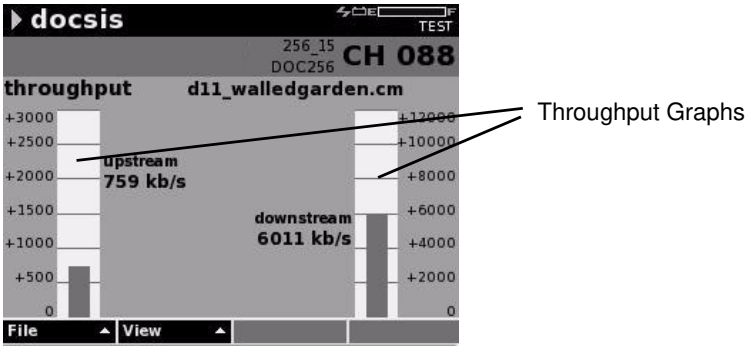

Figure 193 Measure Mode – DOCSIS Throughput

NOTE

Since Throughput can only be measured after the meter has successfully ranged and registered with the CMTS, Throughput results are not available if Ranging Only is set in the DOCSIS Configuration field (“Configuring DSAM for DOCSIS Tests” on page 205) or if registration with the CMTS failed.

Throughput Graphs

The DOCSIS Throughput screen displays an upstream graph and a downstream graph. The height of the gray bars represents the throughput number displayed in a numerical value beside each bar. Both the graphs and numerical values are continuously updated.

Viewing Packet Loss Results

The DOCSIS Packet Loss Test screen displays packet loss (round trip, upstream, and downstream) and upstream signal-to-noise ratio (SNR) results.

To view packet loss results

1 Press the **View** softkey.

2 Using the arrow keys, select **Packet Loss**.

3 Press **ENTER**.

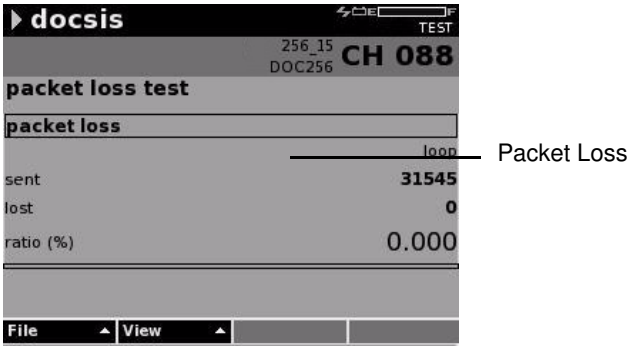

Figure 194 Measure Mode – DOCSIS Packet Loss Test

Packet Loss

The packets loss results statistics on how many packets were sent and lost. If SNMP is enabled, both sent and lost statistics appear.

If the read community string is provided the DSAM displays separate counts for the upstream and downstream paths as follows:

– Round trip or loop sent packets, lost packets, and lost ratio

– Upstream sent packets, lost packets, and lost ratio

– Downstream sent packets, lost packets, and lost ratio

Viewing Packet Loss Results with SNMP Community Strings

A DSAM can receive up to four SNMP read community strings through synchronization with JDS Uniphase Corporation Test Productivity Pack (TPP) software. For security purposes, these strings are locked and hidden on the meter.

NOTE

If your upstream and downstream packet loss and upstream SNR test results are consistently displayed as dashes (---), consult your JDS Uniphase Corporation Test Productivity Pack (TPP) administrator about the accuracy of the SNMP strings you have received. Your meter requires accurate SNMP read community strings to gain read-only access to the Management Information Base (MIB) of the Cable Modem Termination System (CMTS) and to perform these DOCSIS measurements.

To view register results

1 Press the **View** key.

2 Using the arrow keys, select **Packet Loss**.

3 Press **ENTER**.

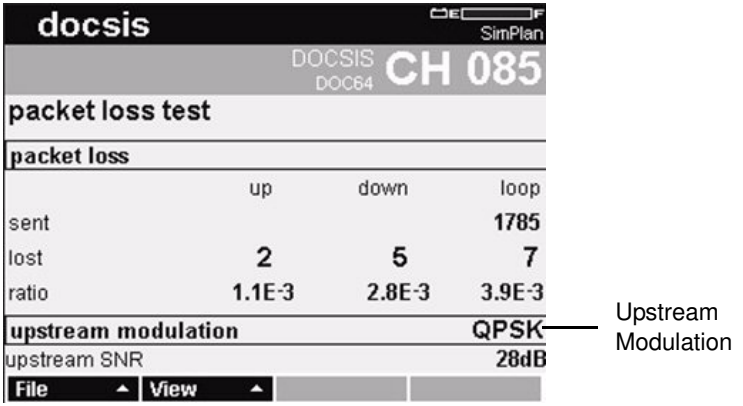

Figure 195 Measure Mode – Packet Loss Test

Upstream Modulation The upstream modulation portion of the screen displays the upstream SNR.

Running Ping Results

Ping results verify the overall downstream/upstream communication route and connectivity of a DSAM within the cable system. The Ping Test screen enables you to select the IP address, packet size, and time between pings. It also displays ping result data, including:

– Round trip time

– Time-to-live (TTL)

– Packets sent and lost
– Average round trip time
– Loss to sent ratio

To run a ping test

1 Press the **View** softkey.

2 Using the arrow keys, select **Ping**.

3 Press **ENTER**.

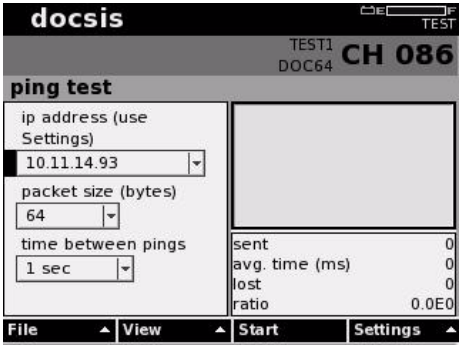

Figure 196 Measure Mode – DOCSIS Ping Test

4 Using the arrow keys, select the **IP Address** option.

5 Press **ENTER**.

6 Using the arrow keys, select the **IP address** you want to ping.

7 Press **ENTER**.

NOTE

To add, modify or delete an IP address, see “Adding Ping IP Addresses” on page 220, “Modifying Ping IP Addresses” on page 220, or “Deleting Ping IP Addresses” on page 221.

8 Using the arrow keys, select **Packet Size (bytes)**.

9 Press **ENTER**.

10 Using the arrow keys, select the **packet size** you want to send.

11 Press **ENTER**.

12 Using the arrow keys, select the **Time Between Pings** option.

13 Press **ENTER**.

NOTE

Since ping time can only be measured after the meter has successfully ranged and registered with the CMTS, ping results are not available if Ranging Only is set in the DOCSIS Configuration field ("Configuring DSAM for DOCSIS Tests" on page 205) or if the DSAM fails to register with the CMTS.

14 Using the arrow keys, select the **time span** between pings.

15 Press **ENTER**.

16 Press the **Start** softkey.

When a ping test starts, response results begin scrolling upward in the response box (upper right corner of the screen). The most recent ping result is displayed at the bottom of the list.

The status box (lower right corner of the screen) displays the reply statistics, including:

– Number of pings sent
– Average return time
– Number of pings lost
– Ratio of lost to sent pings

Ping data is continuously updated.

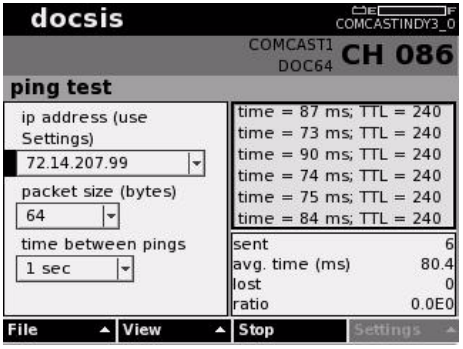

Figure 197 Measure Mode – DOCSIS Ping Test

Table 45 Ping Parameters

Name	Description
IP Address	Select from a list of up to ten of the most recently used IP addresses.
Packet Size (bytes)	Options are 64, 128, 256, 512, 1024, or 1518 (in bytes). The default value is 64 bytes.
Time Between Pings	Options are 0 ms, 10 ms, 25 ms, 50 ms, 100 ms, 1 sec, 2 sec, or 5 sec. The default value is 1 second.

Restoring Ping Test Defaults

To restore the default values for Packet Size and Time Between Pings.

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Restore Defaults**.

3 Press **ENTER**.

NOTE

The ten stored IP Addresses are not affected by the Restore Defaults menu item.

Adding Ping IP Addresses

To add an IP address

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Add IP**.

3 Press **ENTER**.

4 Using the arrow keys and the alphanumeric keypad, type an **IP address**.

5 Press the **OK** softkey.

NOTE

The last added IP address is placed on the top of the option list.

Modifying Ping IP Addresses

To modify an IP address

1 Using the arrow keys, select **IP Address**.

2 Press **ENTER**.

3 Using the arrow keys, select the **IP address** you want to edit.

4 Press **ENTER**.

5 Press the **Settings** softkey.

6 Using the arrow keys, select **Modify IP**.

7 Press **ENTER**.

8 Using the arrow keys and the alphanumeric keypad, edit the **IP address**.

9 Press the **OK** softkey.

NOTE

The last edited IP address is placed on the top of the option list.

Deleting Ping IP Addresses

To delete an IP address

1 Using the arrow keys, select **IP Address**.

2 Press **ENTER**.

3 Using the arrow keys, select the **IP address** you want to delete.

4 Press **ENTER**.

5 Press the **Settings** softkey.

6 Using the arrow keys, select **Delete IP**.

7 Press **ENTER**.

Viewing VoIPCheck Results

The VoIPCheck CMTS Loop test (additional purchase required) displays VoIP call statistics without MTA provisioning. The VoIPCheck CMTS Loop test is a continuous test. During a VoIPCheck, packet loss, jitter, delay, R-Value and MOS values are displayed in table format.

NOTE

Since you can only run VoIPCheck after the meter has successfully ranged and registered with the CMTS and the MTAs have successfully initialized, results are not available if Ranging Only is set in the DOCSIS Configuration field ("Configuring DSAM for DOCSIS Tests" on page 205) or if the DSAM failed to register with the CMTS.

To view VoIPCheck results

1 Press the **View** softkey.

2 Using the arrow keys, select **VoIPCheck**.

3 Press **ENTER**.

The CMTS Loop screen displays Packet and Quality measurement data. Packet loss, delay and jitter are factors that affect voice quality on a VoIP network. The data is captured and continuously updated.

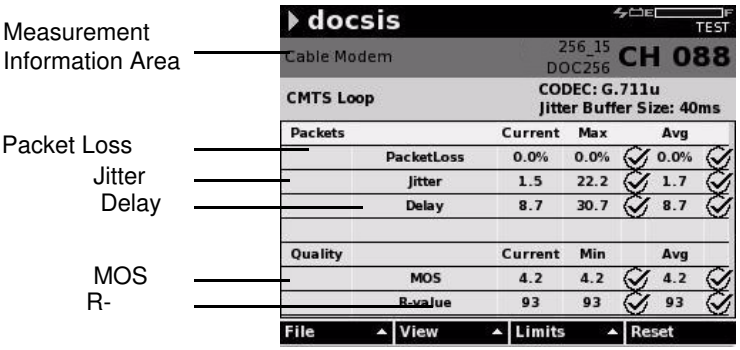

Figure 198 Measure Mode – DOCSIS CMTS Loop

Measurement Information Area The Measurement Information area (area above the graph) displays information about the limit plan, channel number, channel type, and channel label.

Packet Loss Significant packet loss degrades voice quality. Packet loss occurs when packets are lost on a network, when packets are delayed too long, or when packets arrive out of order. Packet loss can cause reconstructed speech to sound choppy and distorted.

Jitter Jitter occurs when packets are sent at equal intervals, but received at uneven time intervals, this can cause audible pops, clicks and a greater delay of audio communications. Gateways compensate for this by accumulating the received packets into an internal buffer and “playing them out” at the proper time intervals and in packet order. The more jitter buffer available, the more the network can reduce the effects of jitter.

Delay Total end-to-end packet delays severely degrade voice quality by causing long delays between callers and causing echo problems. Any packet delays less than 150 ms provide acceptable speech quality. Delays greater than 150 ms begin to interfere with conversations and cause noticeable degradation.

MOS The Mean Opinion Score (MOS) Listening value is a conversion of the Listening R-Value based on the ITU G.107 conversion formula. The Mean Opinion Score (MOS) for listening represents a quantitative value base solely on the local packet loss, jitter and delay measurements. The value range for MOS is 0.0 to 5.0. MOS is computed using the packet loss, jitter and delay results.

R-Value The R-Value number represents a quantitative measurement value based solely on the packet loss, jitter and delay measurements. The value range for R-Value is 0 to 93. R-Value is computed using the packet loss, jitter and delay results.

Viewing VoIPCheck Segmentation Results

The VoIPCheck Segmentation test is a continuous test and displays VoIP call statistics without MTA provisioning. During a VoIPCheck Segmentation test packet loss, jitter, and delay or R-Value and MOS values are displayed in a flow diagram graphic.

To view VoIP segmentation results

1 Press the **View** softkey.

2 Using the arrow keys, select **Segmentation**.

3 Press **ENTER**.

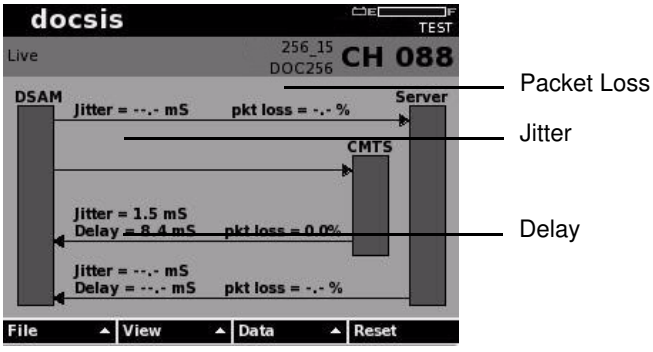

Figure 199 Measure Mode – VoIP Check Segmentation

4 See "Measurement Information Area" on page 222 for the following definitions: Packet Loss, Delay, Jitter, MOS, and R-Value.

Changing the Data Display

To change the data display

1 Press the **Data** softkey.

2 Using the arrow keys, select an option.

- **Live** – Displays continuous live values of VoIP segmentation
- **Average** – Displays the average value of continuous live VoIP segmentation
- **Extreme** – Displays the highest or lowest values detected during VoIP segmentation
- **Packet Stats** – Displays packet loss, delay and jitter values
- **Quality** – Displays continuous MOS and R-Value values

3 Press **ENTER**.

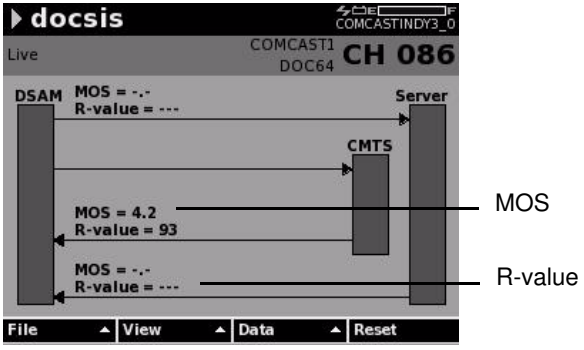

Figure 200 Measure Mode – DOCSIS (Quality view)

NOTE

If necessary, you user can troubleshoot an installation by performing these tests at various locations to determine which components require repair or replacement. You can save test results for later reference.

Ethernet

The Ethernet measurement mode (additional purchase required) enables you to analyze internet protocol (IP) performance through the Ethernet. To perform and display Ethernet measurement data, use the following tests:

Throughput Test

Displays throughput (upstream and downstream) test results. (See "Displaying Throughput Results" on page 227.)

Packet Loss Test

Displays packet loss (round trip) test results. (See "Displaying Packet Loss Results" on page 228.)

Ping Test

A ping test verifies the overall downstream/upstream communication route and connectivity of a DSAM within the Ethernet system. The ping test enables you to select the IP address, packet size, and time between pings and displays ping test result data that includes; round trip time, time-to-live (TTL), packets sent and lost, average round trip time, and loss to sent ratio. (See "Running Ping Results" on page 228.)

Configuring DSAM for Ethernet Tests

Typically, an Ethernet test is conducted using the DHCP server on the network to assign an IP address to DSAM. If the network is expecting a specific fixed IP address (no DHCP assignment available), you must configure the Ethernet network settings in the DSAM configuration. See "Configuring Ethernet Settings" on page 39 for detailed instructions.

IMPORTANT

Be sure to return the Obtain IP Address From setting to DHCP after your test to avoid any conflicts on a different network.

NOTE

It may be necessary to emulate a subscriber's CPE (customer premises equipment, such as the subscriber's PC or gaming device). If so, connect the DSAM in place of the device and inserting the MAC address of the device in the DSAM configuration. See "Other Settings" on page 65.

NOTE

To save the results to a file, refer to "Saving Results" on page 198.

You can terminate the Ethernet test process at any time by pressing the **Cancel** softkey.

Displaying IP Information

To display IP information

1 Press **Measure**.

2 Press the **Service** softkey.

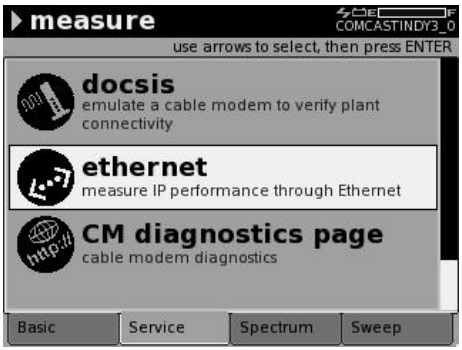

Figure 201 Measure Mode – Service Tab: Ethernet

3 Using the arrow keys, select **Ethernet**.

4 Press **ENTER**.

When the IP connection activity is complete, the Bind Results screen is displayed with detailed results.

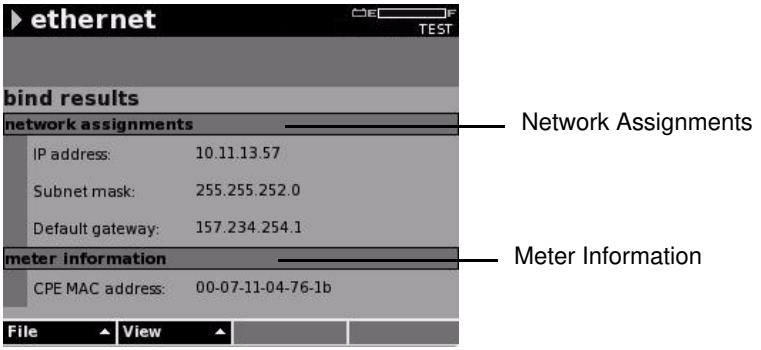

Figure 202 Measure – Bind Results

Network Assignments The Network Assignment area displays the IP Address, Subnet Mask and Default Gateway.

Meter Information The meter information area displays the CPE MAC Address.

Displaying Throughput Results

The Throughput view displays Ethernet throughput (upstream and downstream) test results.

To display the Throughput view

1. Press the **View** softkey.
2. Using the arrow keys, select **Throughput**.
3. Press **ENTER**.

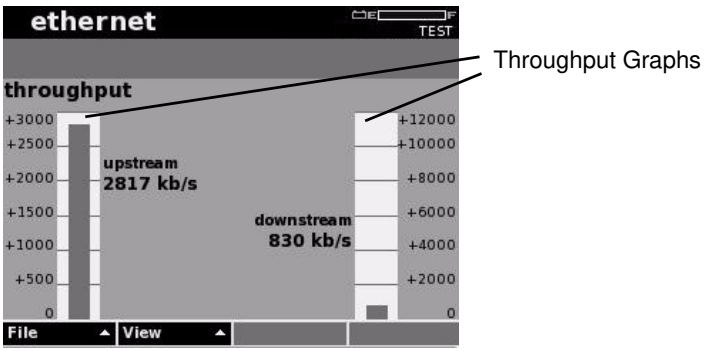

Figure 203 Measure Mode – Ethernet

Throughput Graphs

The DOCSIS Throughput screen displays an upstream graph and a downstream graph. The height of the gray bars represents the throughput number displayed in a numerical value beside each bar. Both the graphs and numerical values are continuously updated.

Displaying Packet Loss Results

The Packet Loss test displays round trip (upstream and downstream) packet loss test results. Data is captured and continuously updated.

To display Packet Loss results

1 Press the **View** softkey.

2 Using the arrow keys, select **Packet Loss**.

3 Press **ENTER**.

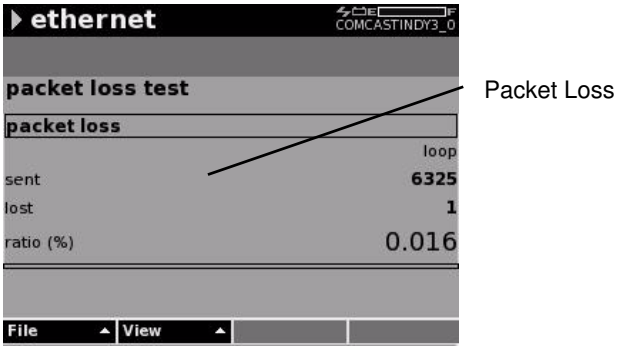

Figure 204 Measure Mode – Packet Loss Test

Running Ping Results

Ping results verify the overall downstream/upstream communication route and connectivity of a DSAM within the cable system. The Ping Test screen enables you to select the IP address, packet size, and time between pings. It also displays ping result data, including:

– Round trip time

– Time-to-live (TTL)

– Packets sent and lost

– Average round trip time

– Loss to sent ratio

To run a ping test

1 Press the **View** softkey.

2 Using the arrow keys, select **Ping**.

3 Press **ENTER**.

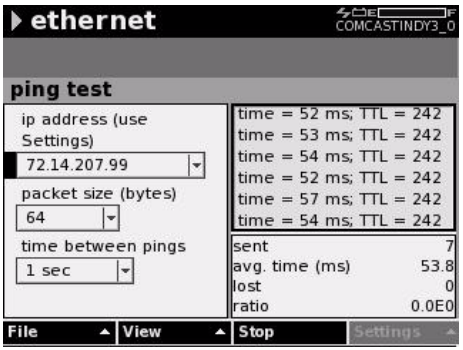

Figure 205 Measure Mode – Ethernet Ping Test

4 Using the arrow keys, select the **IP Address** option.

5 Press **ENTER**.

6 Using the arrow keys, select the **IP address** you want to ping.

7 Press **ENTER**.

NOTE

To add, modify or delete an IP address, see “Adding Ping IP Addresses” on page 231, “Modifying Ping IP Addresses” on page 231 or “Deleting Ping IP Addresses” on page 232.

8 Using the arrow keys, select **Packet Size (bytes)**.

9 Press **ENTER**.

10 Using the arrow keys, select the **packet size** you want to send.

11 Press **ENTER**.

12 Using the arrow keys, select the **Time Between Pings** option.

13 Press **ENTER**.

14 Using the arrow keys, select the **time span** between pings.

15 Press **ENTER**.

16 Press the **Start** softkey.

When a ping test starts, response results begin scrolling upward in the response box (upper right corner of the screen). The most recent ping result is displayed at the bottom of the list.

The status box (in the lower right corner of the screen) displays the reply statistics, including:

– Number of pings sent

– Average return time

– Number of pings lost

– Ratio of lost to sent pings

Ping data is continuously updated.

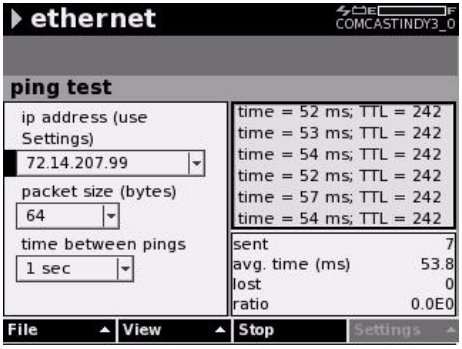

Figure 206 Measure Mode – Ethernet Ping Test

Table 46 Ping Test Parameters

Name	Description
IP Address	Select from a list of up to ten of the most recently used IP addresses.
Packet Size (bytes)	Options are 64, 128, 256, 512, 1024, or 1518 (in bytes). The default value is 64 bytes.
Time Between Pings	Options are 0 ms, 10 ms, 25 ms, 50 ms, 100 ms, 1 sec, 2 sec, or 5 sec. The default value is 1 second.

Restoring Ping Test Defaults

To restore the default values for Packet Size and Time Between Pings.

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Restore Defaults**.

3 Press **ENTER**.

NOTE

The ten stored IP Addresses are not affected by the Restore Defaults menu item.

Adding Ping IP Addresses

To add an IP address

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Add IP**.

3 Press **ENTER**.

4 Using the arrow keys and the alphanumeric keypad, type an **IP address**.

5 Press the **OK** softkey.

NOTE

The last added IP address is placed on the top of the option list.

Modifying Ping IP Addresses

To modify an IP address

1 Using the arrow keys, select the **IP Address** option.

2 Press **ENTER**.

3 Using the arrow keys, select the **IP address** you want to edit.

4 Press **ENTER**.

5 Press the **Settings** softkey.

6 Using the arrow keys, select **Modify IP**.

7 Press **ENTER**.

8 Using the arrow keys and the alphanumeric keypad, edit the **IP address**.

9 Press the **OK** softkey.

NOTE

The last edited IP address is placed on the top of the option list.

Deleting Ping IP Addresses

To delete an IP address

1. Using the arrow keys, select the **IP Address** option.
2. Press **ENTER**.
3. Using the arrow keys, select the **IP address** you want to delete.
4. Press **ENTER**.
5. Press the **Settings** softkey.
6. Using the arrow keys, select **Delete IP**.
7. Press **ENTER**.

CM Diagnostics Page

The CM Diagnostics mode (additional purchase required) is based on the Ethernet network configuration. The cable modem should be connected to the RF network. The DSAM must be connected to the cable modem through an Ethernet port.

The CM Diagnostics screen should display the cable modem's internal web page. This indicates that the cable modem is connected to your local CMTS and functioning properly.

Testing CM Diagnostics

To test CM Diagnostics

1. Press **Measure**.
2. Press the **Service** softkey.

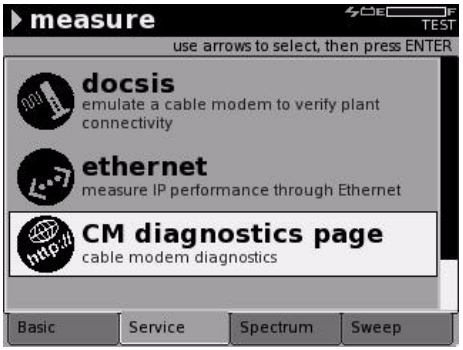

Figure 207 Measure Mode – Service Tab: CM Diagnostics

3 Using the arrow keys, select **CM Diagnostics Page**.

4 Press **ENTER**.

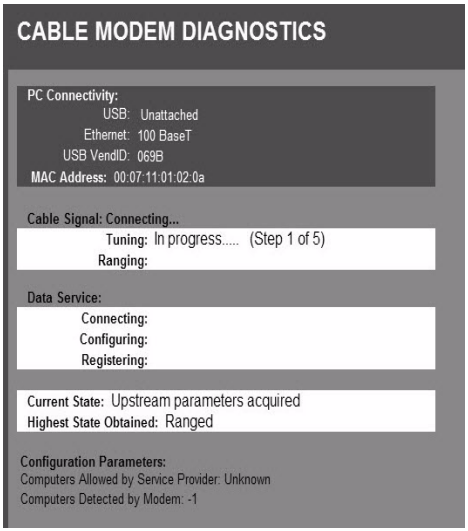

Figure 208 Measure Mode – Cable Modem Information System

Navigating the Cable Modem Information System Screen

To navigate the Cable Modem Information System screen

1 To scroll up, press the **Up** softkey.

OR

2 To scroll down, press the **Down** softkey.

OR

3 Press the **Nav** softkey.

4 If you pressed the Nav softkey, use the arrow keys to highlight one of the following options:

- **Back** – Displays the previous page
- **Forward** – Displays the next page
- **Home** – Displays the home page
- **Refresh** – Reloads the most recent version of the current page

5 Press **ENTER**.

VoIP

The VoIP (additional purchase required) tests the voice quality of your VoIP networks, gateway, internet protocol (IP) phones, and other end-point devices.

After the meter has successfully ranged and registered with the Cable Modem Termination System (CMTS), the PacketCable multimedia terminal interfaces, and the Multimedia Terminal Adapter (MTA) has been successfully initialized, you are provided the ability to place and receive a phone call with the meter. After a call is placed or received, test results are displayed.

NOTE

VoIP test can only be initiated after the DSAM has successfully registered with the CMTS, and the MTA has successfully initialized.

If “Ranging Only” is the selected configuration option, VoIP mode does not initiate.

A call cannot be placed or received if registration with the CMTS has failed.

NOTE

If more than one VoIP DOCSIS channel is discovered in a downstream channel plan, the meter prompts you to select a DOCSIS channel. Use the up and down arrow keys to highlight a DOCSIS channel then press the **ENTER** key or the **Start** softkey.

Configuring DSAM for VoIP Tests

To configure DSAM for VoIP tests

1 If necessary,

   a adjust the **Sounds parameters** ("Configuring Sounds" on page 30).

   b select a **channel plan** with at least one DOCSIS channel ("Choosing a Channel Plan" on page 78)

Running a VoIP Test

To run a VoIP test

NOTE

If no enabled downstream DOCSIS channels are available in the channel plan during a VoIP Test, a warning is displayed to indicate there is no DOCSIS channel enabled in the channel plan. Press the OK softkey then select a downstream plan with at least one enabled DOCSIS channel.

1 Press **Measure**.

2 Press the **Service** softkey.

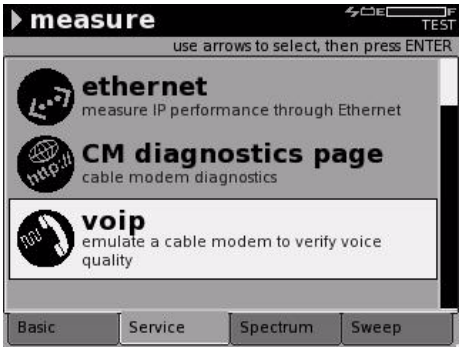

Figure 209 Measure Mode – Service Tab: VoIP

3 Using the arrow keys, select **VoIP**.

4 Press **ENTER**.

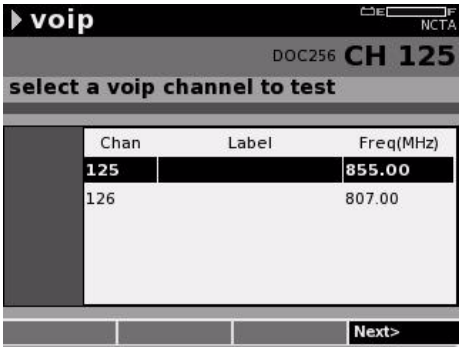

Figure 210 Measure Mode – VoIP Channel to Test

5 If more than one DOCSIS channel is found in the channel plan, use the arrow keys to highlight the **channel** you want to test.

6 Press the **Next** softkey.

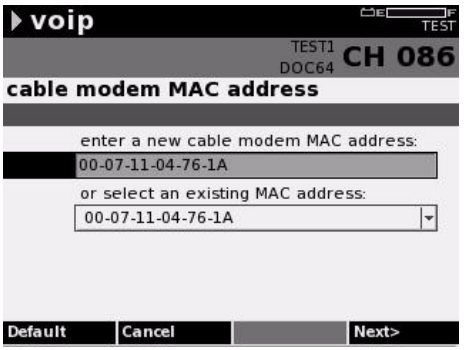

Figure 211 Measure Mode – Cable Modem MAC Address

7 Using the arrow keys and the alphanumeric keypad, enter or select the **roving MAC address**.

8 Press the **Next** softkey.

OR

9 To use the default roving MAC address, press the **Default** softkey

10 Press the **Next** softkey.

NOTE

The roving MAC address must be recognized by your CMTS to achieve VoIP ranging.

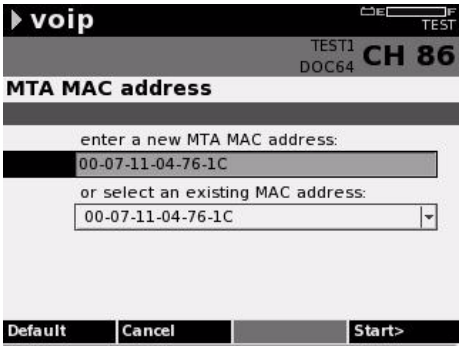

Figure 212 Measure Mode – MTA MAC Address

11 Using the arrow keys and the alphanumeric keypad, enter or select the **MTA MAC address**.

12 Press the **Start** softkey.

OR

13 To use the default MTA MAC address, press the **Default** softkey.

14 Press the **Start** softkey.

NOTE

This address must be recognized by your CMTS to achieve VoIP measurement.

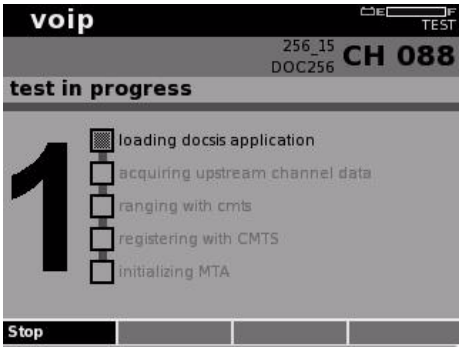

Figure 213 Measure Mode – Test in Progress

The VoIP Ready screen is displayed.

NOTE

For instructions on how to save measurement results, see "Saving Results" on page 198.

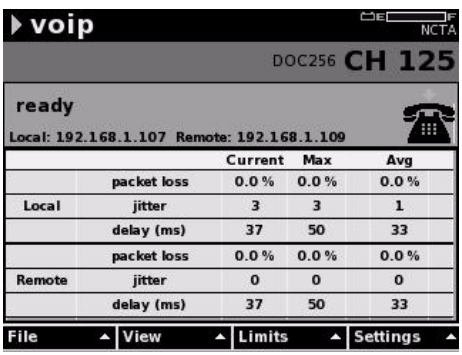

Figure 214 Measure Mode – VoIP Ready

15 Press the **View** softkey.

16 Using the arrow keys, select **Call**.

17 Press **ENTER**.

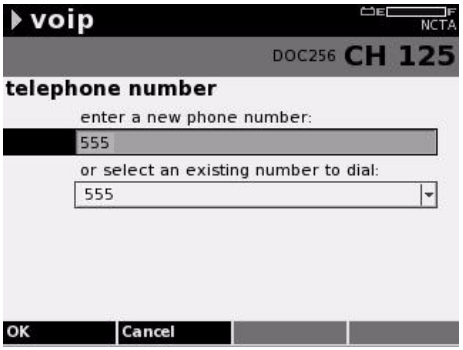

Figure 215 Measure Mode – VoIP Telephone Number

18 Using the arrow keys and the alphanumeric keypad, enter or select a **telephone number**.

19 Press the **OK** softkey.

NOTE

A list of the most recently used phone numbers is available from the drop-down list box.

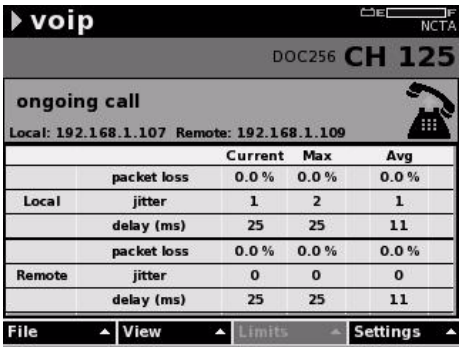

Figure 216 Measure Mode – VoIP Ongoing Call

If the other party accepts the call, DSAM establishes a conversation.

20 Press the **View** softkey.

21 Highlight one of the following options:

- **On Hook** - Terminates the call.
- **Off Hook** - Enables you to verify a dial tone.
- **Server Info** - Displays the Embedded Multimedia Terminal Adaptor (EMTA) network assignments.

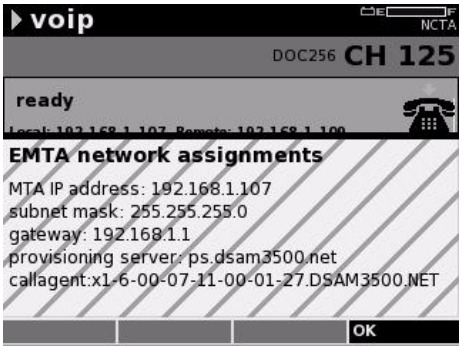

Figure 217 Measure Mode – VoIP EMTA Network Assignments

- **View MOS** - Displays the Current, Maximum, and Average results of the R-Value Listening, R-Value Conversational, MOS Listening, and MOS Conversational values.
- **View Data** - Displays the Current, Maximum, and Average results of the Local and Remote packet loss, jitter (ms), and Delay (ms) values.
- **Restart** - Restarts the VoIP initialization process.

22 Press **ENTER**.

Accepting a Call

When there is an incoming call, the DSAM displays “Incoming Call” with Accept and Ignore softkeys.

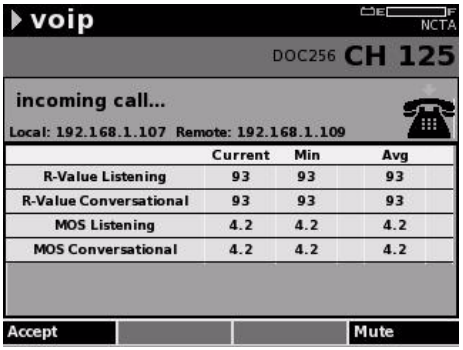

Figure 218 Measure Mode – VoIP Incoming Call

To accept a call

1 Press the **Accept** softkey.

Declining a Call

To decline a call

1 Press the **Ignore** softkey. (“Incoming call… ” continues to display until the other party hangs up.)

NOTE

After you press the Accept or Ignore softkey, the original softkeys reappear.

Selecting the Limit Sets

To select the limits sets

1 Using the arrow keys, select a set of measurement limits – **Tap**, **Ground Block**, **TV**, **Cable Modem**, **Proof**, or **custom limits 1-3**.

OR

2 To access the Limit Sets screen, select **Edit**.

This allows you to edit limit set parameters to meet your needs.

3 Using the arrow keys, select a **menu option**.

4 Press **ENTER**.

NOTE

The limit set parameters you define remain constant for all channel plans and measurement modes.

Selecting the Settings Softkey Options

To select the Settings softkey options

1. To display the Downstream Plans screen, use the arrow keys and select **Channel Plans**.
2. Press **ENTER**.

   OR

3. To display the Adjust Sounds screen, use the arrow keys and select **Audio**.
4. Press **ENTER**.

Viewing VoIP MOS Results

R-Value Listening, R-Value Conversational, MOS Listening, and MOS Conversational values are computed using the packet loss, jitter and delay results. These values are intended to give a quantitative assessment of the call quality. The VoIP MOS screen enables you to place and receive calls and measure these values.

To view VoIP MOS results

1. Press the **View** softkey.
2. Using the arrow keys, select **Call**.
3. Press **ENTER**.

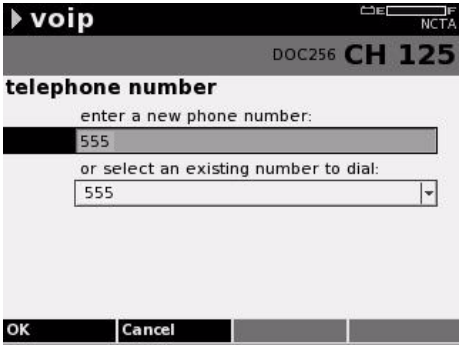

Figure 219 Measure Mode – VoIP Telephone Number

4 Using the arrow keys and the alphanumeric keypad, enter or select a **telephone number**.

5 Press the **OK** softkey.

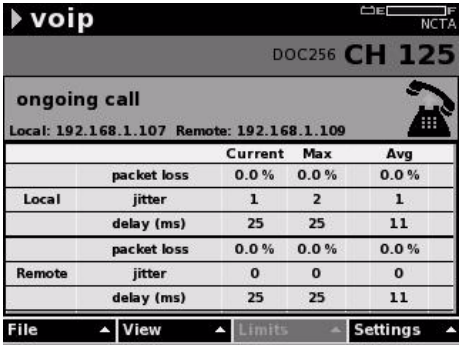

Figure 220 Measure Mode – VoIP Ongoing Call

If the other party accepts the call, DSAM establishes a conversation.

6 Press the **View** softkey.

7 Using the arrow keys, select **View MOS**.

8 Press **ENTER**.

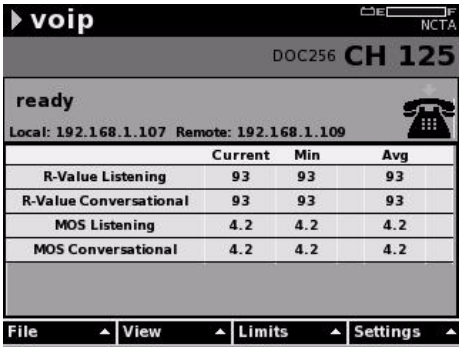

Figure 221 Measure Mode – VoIP Ready

VoIP MOS Definitions See "Measurement Information Area" on page 222 for the following definitions: Packet Loss, Delay, Jitter, MOS, and R-Value.

Viewing VoIP Data Results

Packet loss, delay and jitter are factors that affect voice quality on a VoIP network. The VoIP Data screen enables you to place and receive calls and measure packet loss, delay, and jitter.

To view VoIP data results

1 Press the **View** softkey.

2 Using the arrow keys, select **Call**.

3 Press **ENTER**.

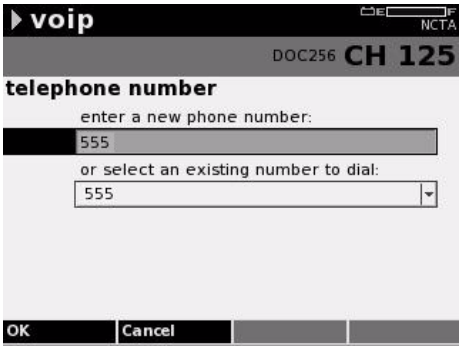

Figure 222 Measure Mode – VoIP Telephone Number

4 Using the arrow keys and the alphanumeric keypad, enter or select a **telephone number**.

5 Press the **OK** softkey.

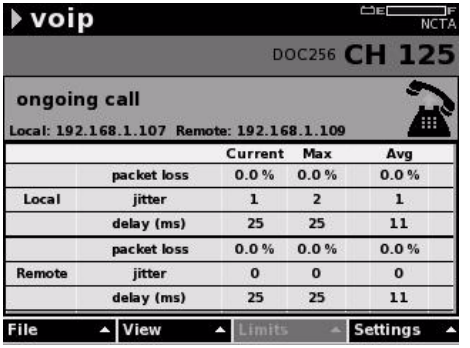

Figure 223 Measure Mode – VoIP Ongoing Call

If the other party accepts the call, DSAM establishes a conversation.

6 Press the **View** softkey.

7 Using the arrow keys, select **View Data**.

8 Press **ENTER**.

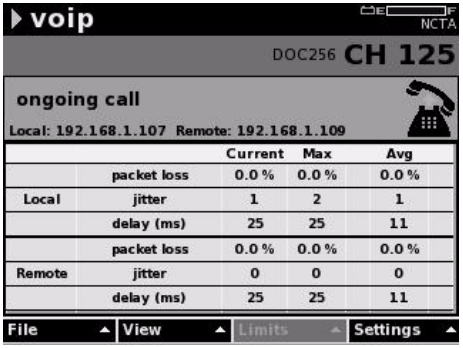

Figure 224 Measure Mode – VoIP Ongoing Call

View Data Definitions See “Measurement Information Area” on page 222 for the following definitions: Packet Loss, Delay, Jitter, MOS, and R-Value.

Measure Mode – Spectrum Tab

10

This chapter describes the Measure Mode – Spectrum tab functionality. Topics discussed in this chapter are as follows:

Spectrum Measurement Modes

High levels of ingress noise enter a CATV system through damaged or otherwise improperly shielded coaxial cable or related components. Ingress can reduce signal quality and prevent an effective installation.

The Spectrum tab provides Upstream Spectrum, Downstream Spectrum, Field View, and Ingress Resistance measurement modes that analyze CATV channels.

Upstream Spectrum Surveys and analyzes ingress and distortion on the upstream path (return path). It can be used to identify the frequency at which ingress occurs and displays the level value. This level measurement can be checked in relation to a user-configured limit to determine a pass or fail status.

Downstream Spectrum (additional purchase required) Surveys the entire CATV downstream spectrum frequency range (4 MHz to 1 GHz) in 50 MHz frequency spans with a dynamic range of 60 dB.

Field View (additional purchase required) Analyzes and displays ingress and distortion on the upstream path (return path) as viewed by PathTrak or Phasor system at the node and the headend. It identifies the frequency at which ingress occurs and displays the level value.

Ingress Resistance Allows for a 20 MHz fixed span. Within each frequency span, the DSAM forms and continuously updates a graph with 201 frequency points. The total Downstream Spectrum frequency range extends from 88 MHz to 108 MHz.

Upstream Spectrum

The Upstream Spectrum measurement mode surveys and analyzes ingress and distortion on the upstream path (return path). It can be used to identify the frequency at which ingress occurs and displays the level value. This level measurement can be checked in relation to a user-configured limit to determine a pass or fail status. You can save test results for later reference.

Initial measurements typically occur at the ground block with the home disconnected from the network. Prior to an installation, use upstream spectrum measurements to verify that the system does not exceed the maximum acceptable level for ingress noise. After an installation, check the noise level again to compare the previous reading and confirm that install procedures or components did not create new sources of ingress noise.

Running an Upstream Spectrum

To run an upstream spectrum

1. Press **Measure**.
2. Press the **Spectrum** softkey.

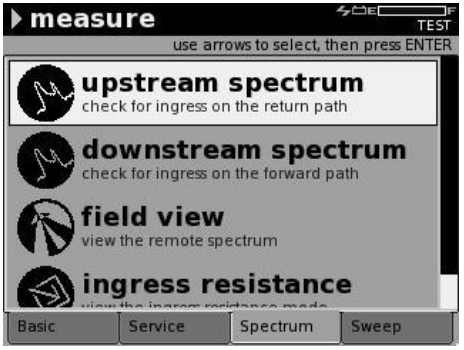

Figure 225 Spectrum – Upstream Spectrum

3. Using the arrow keys, select **Upstream Spectrum**.
4. Press **ENTER**.

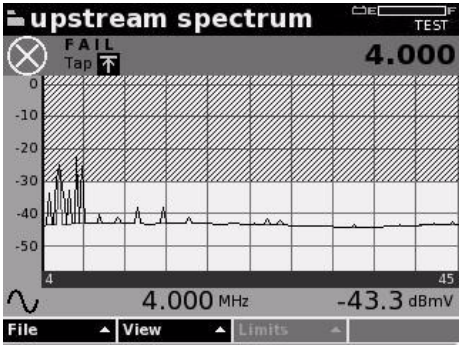

Figure 226 Spectrum – Upstream Spectrum

5 Press the **Limits** softkey.

6 Using the arrow keys, select **Off** or a limit set (**Tap**, **Ground Block**, **TV**, **Cable Modem**, **Proof**, or **custom limits 1-3**).

7 Press **ENTER**.

8 To edit the limit value, press the **Limits** softkey.

NOTE

When you select Edit, the limit-set parameters you define remain constant for all channel plans and measurement modes.

9 Using the arrow keys, select the **Edit** option.

10 Press **ENTER**.

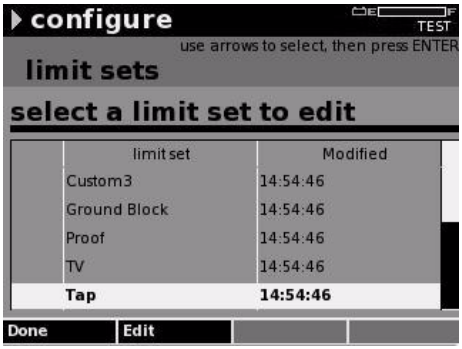

Figure 227 Configure – Select a Limit Set to Edit

NOTE

See "Limit Sets" on page 58 for instructions on editing limit sets.

If you chose the wrong limit set before conducting the test, press the **Limits** softkey and select a different limit set to view your test results in relation to a different limit set without rerunning the test.

Understanding Upstream Spectrum Results

The graph continuously updates as each frequency is measured. This forms a graph across the entire frequency range. When excessive ingress noise occurs at a specific frequency, the measurement line develops a peak on the graph.

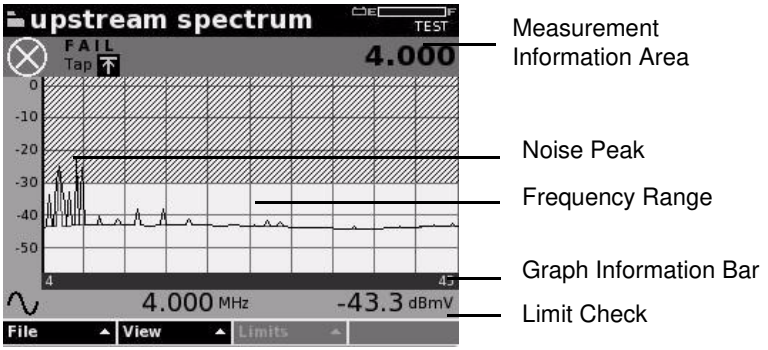

Figure 228 Measure – Upstream Spectrum

Measurement Information Area The Measurement Information Area displays the overall pass/fail indicator and information about the frequency currently selected by the active marker. If Peak Hold is active, a Peak Hold icon is displayed. If zoom is active, a zoom icon is also displayed. The right side of the Measurement Information area displays the marker frequency.

Noise Peak The Noise Peak is the highest point in the trace over the duration of the measurement. If measurements (including peaks) at all frequencies appear below the hash lines, a Pass icon is displayed at the top of the screen.

Frequency Range The Frequency Range in this mode is 4-45MHz (North America) or 4-65MHz (International), with the start and stop frequencies indicated on the horizontal bar at the bottom of the screen. As you move the marker across the frequency range with the left or right arrow key, the numeric frequency and level value is displayed below the graph. Use the up and down arrow keys to adjust the reference level from -70 to +65 dBmV in 1dB increments.

Graph Information Bar This bar displays the lowest and highest frequencies measured.

Limit Check When limit check is enabled, black/white diagonal hash lines indicate the configured limit boundary area.

Viewing Upstream Spectrum Results

To view upstream spectrum results

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

- **Auto Reference (Shift, 9)** – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

- **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.
- **Zoom** – Turns Zoom on and off. When zoom is on, it displays a 10MHz span centered around the current position of the active marker.
- **Peak Hold** – Turns Peak Hold on and off. When Peak Hold is turned on, it displays the highest level trace at each frequency for an extended view of the noise isolation.
- **Reset** – Manually resets the Peak Hold function.
- **Field View** – Displays results in Field View measurement mode.
- **Downstream Spectrum** – Displays the Downstream Spectrum screen.
- **Pause (Shift, 8)** – Suspends measurement updates.

3 Press **ENTER**.

Downstream Spectrum

The Downstream Spectrum measurement mode (additional purchase required, depending on the model type) enables you to view the entire CATV downstream spectrum frequency range (4 MHz to 1 GHz) in 50 MHz span, and can zoom to a 10 MHz span. The frequency span is determined by the center frequency you select. Within each frequency span, the DSAM forms and continually updates a graph with 201 frequency points.

Downstream Spectrum provides a view over six (6) vertical subdivisions that contain a dynamic range of 60 dB and the ability to view the entire CATV downstream spectrum frequency range in 10 or 50 MHz

frequency spans. The Downstream Spectrum measurement mode allows for a very comprehensive troubleshooting utility that reveals ingress spikes on the forward path as brief as 1 ms.

Running a Downstream Spectrum

To run a downstream spectrum

1 Press **Measure**.

2 Press the **Spectrum** softkey.

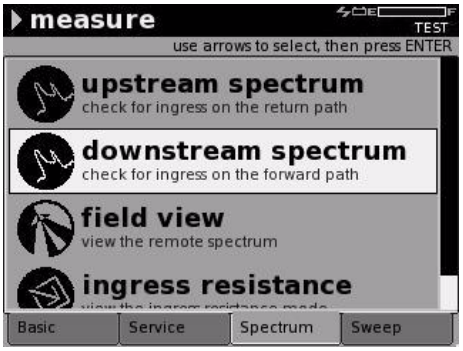

Figure 229 Spectrum – Downstream Spectrum

3 Using the arrow keys, select **Downstream Spectrum**.

4 Press **ENTER**.

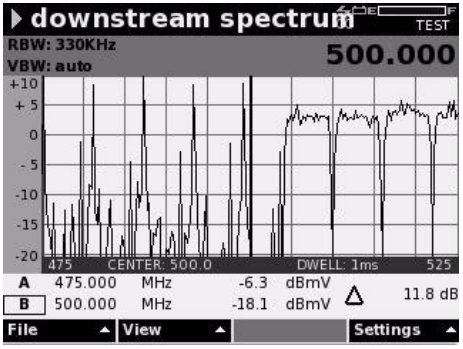

Figure 230 Spectrum – Downstream Spectrum

5 Press the **Settings** softkey.

6 Using the arrow keys, select **Center Frequency**.

7 Press **ENTER**.

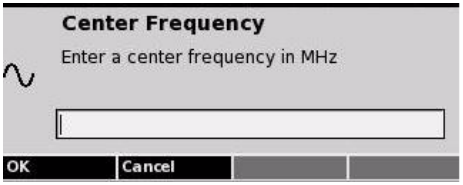

Figure 231 Spectrum – Center Frequency

8 Using the arrow keys and alphanumeric keypad, enter a **telemetry frequency (between 4 MHz and 1000 MHz)**.

9 Press **ENTER**.

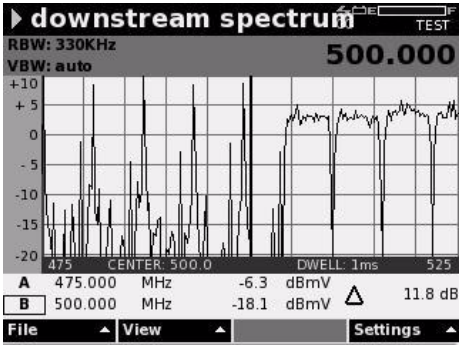

Figure 232 Spectrum – Downstream Spectrum

10 To move the marker, use the left and right arrow keys.

With each non-continuous key press, the marker increments or decrements to the next or previous frequency point in the span.

NOTE

When in “zoomed out,” the arrow keys move in increments of.25 MHz per key press. When in “zoomed in,” the arrow keys move in increments of.05 MHz per key press.

11 To adjust the graph for best viewing of the signal level measurements, use the **up and down arrow keys**.

NOTE

Each arrow key press changes the reference setting by a single dB. The reference level range is -100 to +60 dBmV.

Understanding Downstream Spectrum Results

The Downstream Spectrum screen displays a 50 MHz or 10 MHz (zoom) frequency span. Each frequency span is determined by the center frequency. Within each frequency span, the DSAM forms and continuously updates a graph with 201 frequency points. The total Downstream spectrum frequency range extends from 4 MHz to 1 GHz.

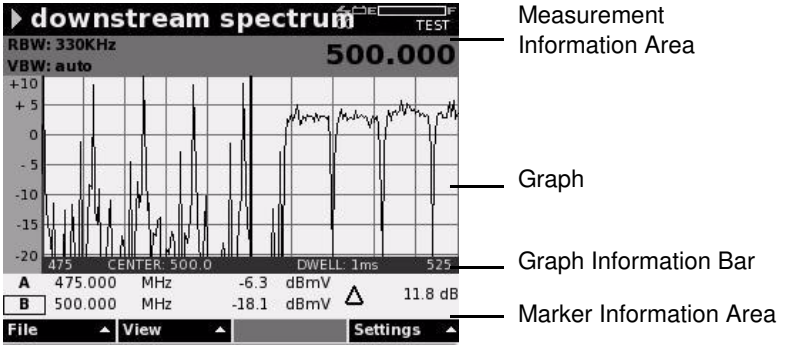

Figure 233 Spectrum – Downstream Spectrum

Measurement Information Area

The Measurement Information area (area above the graph) displays information about the frequency currently selected by the active marker. The left side of the Measurement Information Area displays the RBW and VBW values. If Peak Hold is active, a Peak Hold icon is displayed. If zoom is active, a zoom icon is also displayed. The right side of the Measurement Information area displays the active marker frequency.

Graph

As multiple updates occur, the maximum level trace changes only if new levels exceed the levels of the current trace. A gray trace shows you the current data when Peak Hold is on. If Peak Hold is turned on, it ensures that the highest amplitude at each frequency point over multiple sweeps is captured. The thick black vertical line is the active marker; the gray vertical line is the inactive marker and does not move.

Graph Information Bar

This bar displays the start and stop frequencies as well as the center frequency and duration of the dwell.

Marker Information Area

The Downstream Spectrum measurement mode also contains an area referred to as the Marker Information Area (area below the graph). This area consists of the marker name, carrier frequency (in MHz), and measured signal level for the frequencies which the markers are on. The black square around the letter A or B below the graph displays the active marker. The Peak Hold levels and the delta value (in dB) between the peak hold levels are also displayed. If Peak Hold is disabled, the live levels and the delta value (in dB) between the live levels are displayed.

Setting the Center Frequency

To set the center frequency

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Center Frequency**.

3 Press **ENTER**.

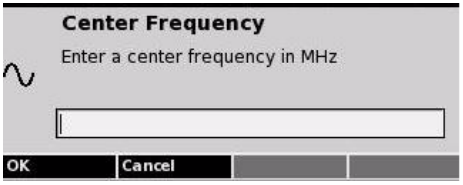

Figure 234 Downstream Spectrum – Center Frequency

4 Using the arrow keys and the alphanumeric keypad, enter the **center frequency in MHz**.

5 Press the OK softkey.

Using the Low Pass Filter

The Low Pass Filter produces more accurate readings in the upstream path when it is turned on. When the Low Pass Filter is on, it filters out all of the downstream channels. JDSU does not recommend using the Low Pass Filter for the downstream frequencies.

To use the Low Pass Filter

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Low Pass Filter**.

3 Press **ENTER**.

The Low Pass Filter toggles on.

Setting the Dwell Time

Increasing the Dwell Time increases the chance of capturing more transient noise.

To set the Dwell Time

1 Press the **Settings** softkey.

2 Using the arrow keys, select **Dwell Time**.

3 Press **ENTER**.

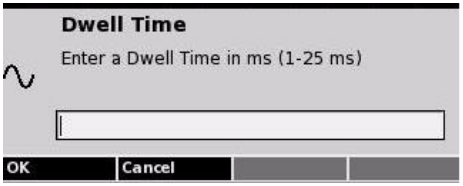

Figure 235 Downstream Spectrum – Dwell Time

4 Using the arrow keys and the alphanumeric keypad, enter the **dwell time in milliseconds (ms)**.

5 Press the **OK** softkey.

Viewing Downstream Spectrum Results

To view Downstream Spectrum results

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following options:

– **Auto Reference (Shift, 9)** – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

- **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.
- **Zoom** – Turns Zoom on and off. When zoom is on, it displays a 10MHz span centered around the current position of the active marker.
- **Peak Hold** – Turns Peak Hold on and off. When Peak Hold is turned on, it displays the highest level trace at each frequency for an extended view of the noise isolation.
- **Reset** – Manually resets the Peak Hold function.
- **Upstream Spectrum** – Displays the Upstream Spectrum screen.
- **Pause (Shift, 8)** – Suspends measurement updates.
- **Marker A** – Sets Marker A as the active marker. (Use the left and right arrow keys to move the marker.)
- **Marker B** – Sets Marker B as the active marker. (Use the left and right arrow keys to move the marker.)

3 Press **ENTER**.

Field View

The Field View measurement mode (additional purchase required) is provided for use with PathTrack or Phasor monitoring systems. It yields:

- Remote spectrum display of the upstream (return) path as selected for broadcast
- Increased troubleshooting accuracy by allowing you to compare spectrum measurements at the node with the current conditions at the headend
- A Return Signal Generator (RSG) can be requested at time of purchase

The RSG provides a continuous wave (CW) signal on the upstream path that is frequency and level configurable. This signal enables you to verify the Field View two-way functionality and may be used to determine the return path viewed by PathTrak or Phasor monitoring system.

The DSAM displays the spectrum of any node that is currently monitored by the PathTrak or Phasor System and is selected for broadcast.

The PathTrak or Phasor user can select the frequency range in this mode with the start and stop frequencies indicated on the horizontal bar at the bottom of the screen. As you move the marker across the frequency range with the left or right arrow key, the numeric frequency and level value is displayed below the graph. Use the up and down arrow keys to adjust the reference level in 1 dB increments.

Running a Field View

To run a Field View

1 Press **Measure**.

2 Press the **Spectrum** softkey.

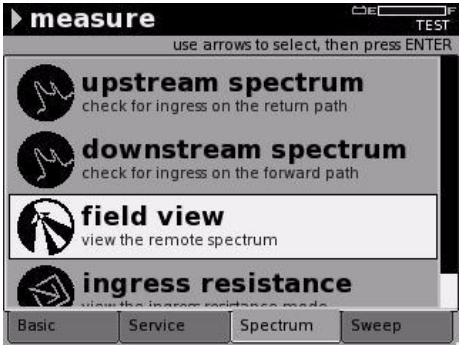

Figure 236 Measure Mode – Field View

3 Using the arrow keys, select **Field View**.

4 Press **ENTER**.

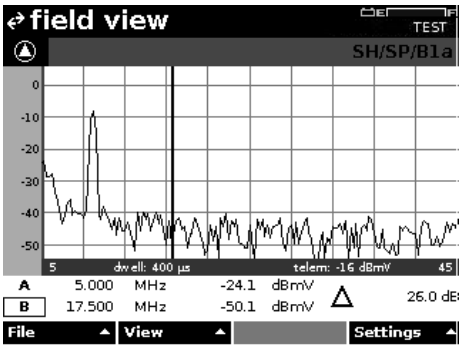

Figure 237 Measure Mode – Field View

5 Press the **Settings** softkey.

6 Using the arrow keys, select **Telemetry Frequency**.

7 Press **ENTER**.

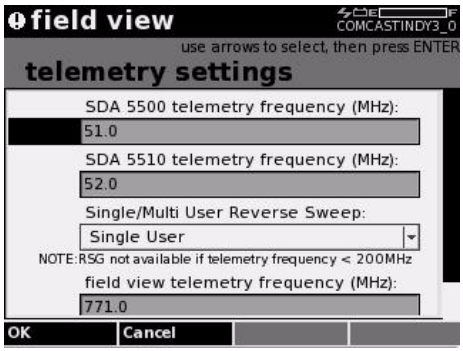

Figure 238 Measure Mode – Field View Telemetry

8 To set the telemetry frequency between 50 MHz and 1000 MHz, use the **alphanumeric keypad**.

9 Press **ENTER**.

NOTE

You must set the telemetry frequency to match the frequency at which the headend modem is broadcasting data.

NOTE

The RSG is not operational if Telemetry Frequency is set below 200 MHz.

10 Press **ENTER**.

11 Press the **OK** softkey.

12 Press the **Settings** softkey.

13 Using the arrow keys highlight **Broadcast Nodes** to view only the broadcast nodes in the PathTrak or Phasor system.

14 Press **ENTER**.

OR

15 Using the arrow keys highlight **All Nodes** to view all nodes in the PathTrak or Phasor system that you have access.

16 Press **ENTER**.

NOTE

If the node you want to view is not being broadcast, contact the PathTrak or Phasor system administrator to request activation. You must provide the PathTrak or Phasor system administrator with the unique identifier (UID) of the requested node. The UID number is located on the bottom of the screen.

17 To select a node to view, use the arrow keys to highlight the **broadcast node** you wish to view.

NOTE

Node measurement parameters are established by the PathTrak or Phasor System Administrator and cannot be changed locally.

NOTE

You can only work with one node at a time.

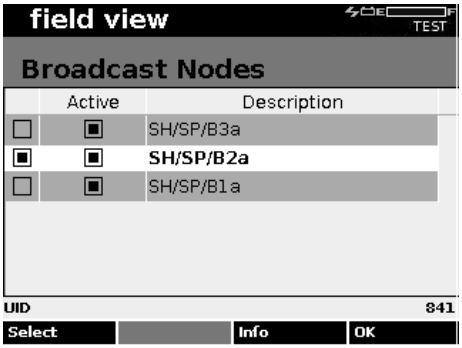

Figure 239 Measure Mode – Broadcast Nodes

18 Press the **Select** softkey.

19 Press the **Info** softkey.

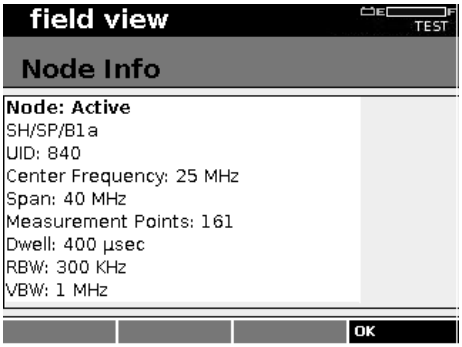

Figure 240 Measure Mode – Node Info

20 Press the **OK** softkey.

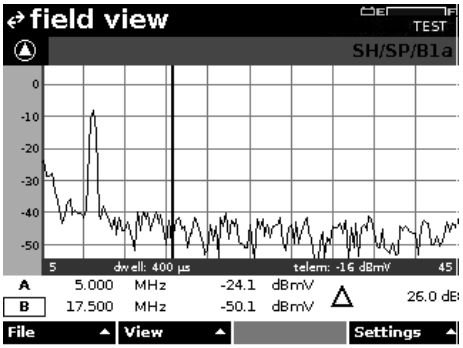

Figure 241 Measure Mode – Field View

21 Press the **Settings** softkey.

22 Using the arrow keys, select **RSG Setup**.

23 Press **ENTER**.

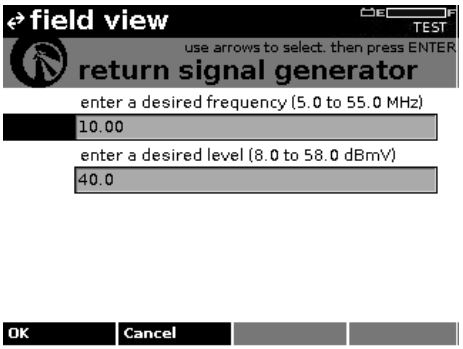

Figure 242 Measure Mode – Return Signal Generator

24 To set the Return Signal Generator Frequency between 5 and 55 MHz (Annex B) or 5 and 65 MHz (Annex A and Annex C), use the arrow keys to highlight the **Enter Desired Frequency** field and press **ENTER**. Using the arrow keys, step the **frequency** up or down, or use the alphanumeric keypad to enter the **frequency**, then press **ENTER**.

OR

25 To set the Return Signal Generator Level to between 8 and 58 dBmV (68 to 118 dBµV) (-40.8 to 9.2 dBm), use the arrow keys to highlight the **Enter Desired Level** field and press **ENTER**. Using the arrow keys, step the **level** up or down, or use the alphanumeric keypad to enter the **level**, then press **ENTER**.

26 Press the **OK** softkey.

27 To enable or disable RGS Setup, press the **Settings** softkey.

NOTE

To enable the Return Signal Generator the setting for the receiving telemetry frequency must be 200 MHz or higher. The Return Signal Generator CW output is a pulsing signal if a telemetry carrier is not present.

28 Using the arrow keys, select **RSG On/Off**.

29 Press **ENTER**.

Understanding Field View Results

Field View measurement mode views and analyzes ingress and distortion on the upstream path (return path) as captured at a node return at the headend or hub. It identifies the frequency at which ingress occurs and displays the level value.

The Field View measurement mode graph continuously updates the spectrum from the PathTrak or Phasor System as each frequency is measured. This forms a graph across the entire frequency range. When excessive ingress noise occurs at a specific frequency, the measurement line develops a peak on the graph.

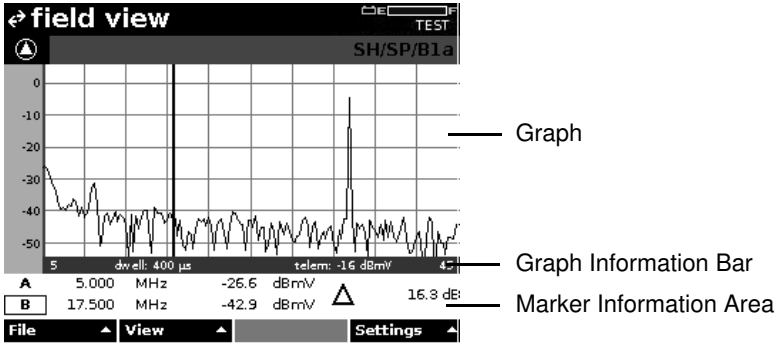

Figure 243 Measure Mode – Field View

Field View measurement mode provides increased troubleshooting accuracy by allowing you to compare spectrum measurements at the test point with the current conditions at the headend. In the Field View measurement mode, the DSAM displays all or part of the return path spectrum which can be in the 40, 50, or 60MHz range.

Graph As multiple updates occur, the maximum level trace changes only if new levels exceed the levels of the current trace. A gray trace shows you the current data when Peak Hold is on. If Peak Hold is turned on, it ensures that the highest amplitude at each frequency point over multiple sweeps is captured. The thick black vertical line is the active marker; the gray vertical line is the inactive marker and does not move.

Graph Information Bar This bar displays the start and stop frequencies as well as the dwell time and telemetry level.

Marker Information Area The Downstream Spectrum measurement mode also contains an area referred to as the Marker Information Area (area below the graph). This area consists of the marker name, carrier frequency (in MHz), and measured signal level for the frequencies which the markers are on. The black square around the letter A or B below the graph displays the active marker. The Peak Hold levels and the delta value (in dB) between the peak.

Viewing Field View Results

To view Field View results

1 Press the **View** softkey.

2 Highlight one of the following:

– **Auto Reference (Shift, 9)** to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

– **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.

– **Peak Hold** – Turns Peak Hold on and off. When Peak Hold is turned on, it displays the highest level trace at each frequency for an extended view of the noise isolation.

NOTE

JDSU recommends using the Peak Hold option to verify the Return Signal Generator Field View gain/loss.

- **Reset** – Manually resets the Peak Hold function.
- **Spectrum** – Displays the local Upstream Spectrum measurement mode.
- **Pause (Shift, 8)** – Suspends measurement updates.
- **Marker A** – Sets Marker A as the active marker. (Use the left and right arrow keys to move the marker.)
- **Marker B** – Sets Marker B as the active marker. (Use the left and right arrow keys to move the marker.)

3 Press **ENTER**.

Ingress Resistance

The Ingress Resistance measurement mode displays a 20 MHz fixed span. Within each frequency, the DSAM forms and continuously updates a graph with 201 frequency points. The total ingress resistance frequency range extends from 88 MHz to 108 MHz.

Initial measurements typically occur at the ground block with the home disconnected from the network. Prior to an installation, use upstream spectrum measurements to verify that the system does not exceed the maximum acceptable level for ingress noise. After an installation, check the noise level again to compare the previous reading and confirm that install procedures or components did not create new sources of ingress noise.

Measuring Ingress Resistance

To run Ingress Resistance

1 Press **Measure**.

2 Press the **Spectrum** softkey.

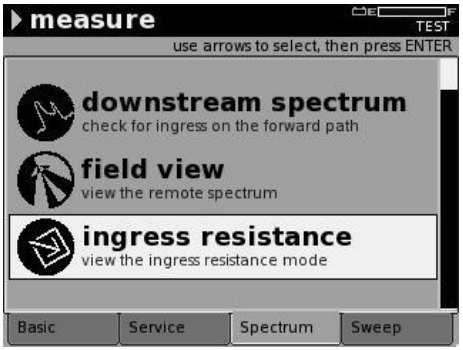

Figure 244 Spectrum – Ingress Resistance

3 Using the arrow keys, select **Ingress Resistance**.

4 Press **ENTER**.

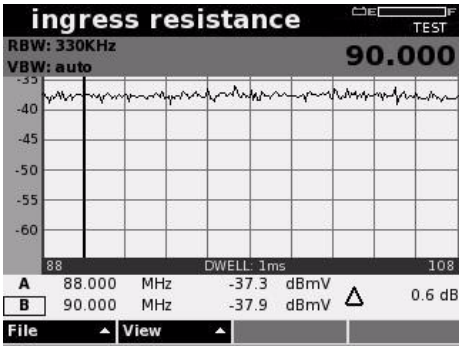

Figure 245 Spectrum – Ingress Resistance

5 Use the left and right arrow keys to move the **marker** in 0.1 MHz increments.

NOTE

With each non-continuous key press, the marker moves to the next or previous frequency point in the span. A continual press moves the marker faster.

6 Use the up and down arrows to adjust the **graph** for best viewing of the signal level measurements.

NOTE

Each press changes the reference setting by a single dB. The reference level range is -100 to +60 dBmV.

Understanding Ingress Resistance Results

The Ingress Resistance measurement mode allows for a 20 MHz frequency span. Within each frequency, the DSAM forms and continuously updates a graph with 201 frequency points. The total Ingress Resistance frequency range extends from 88 MHz to 108 MHz.

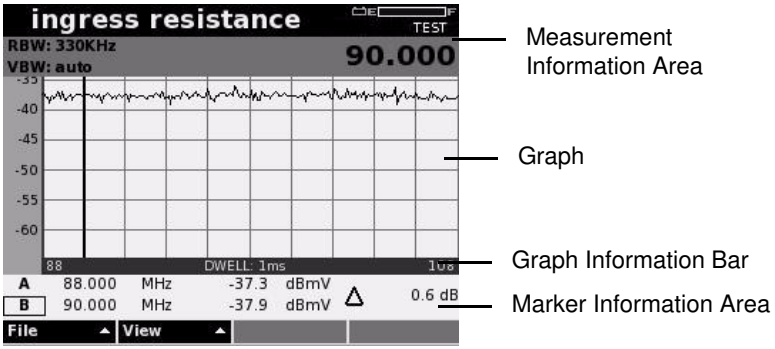

Figure 246 Spectrum – Ingress Resistance

Measurement Information Area

The Measurement Information Area displays the current frequency (defined by the active marker). The left side of the Measurement Information area displays the RBW and VBW values. If Peak Hold is active, a Peak Hold icon is displayed. The right side of the Measurement Information area displays the active marker frequency.

Graph

As multiple updates occur, the maximum level trace changes only if new levels exceed the levels of the current trace. A gray trace shows you the current data when Peak Hold is on. If Peak Hold is turned on, it ensures that the highest amplitude at each frequency point over multiple sweeps is captured. The thick black vertical line is the active marker; the gray vertical line is the inactive marker and does not move.

Graph Information Bar

This bar displays the start and stop frequencies as well as dwell time.

Marker Information Area

The Ingress Resistance measurement mode also contains an area referred to as the Marker Information Area (area below the graph). This area consists of the marker name, carrier frequency (in MHz), and

measured signal level for the frequencies which the markers are on. The black square around the letter A or B below the graph displays the active marker. The peak hold levels and the delta value (in dB) between the peak hold levels are also displayed. If Peak Hold is disabled, the live levels and the delta value (in dB) between the live levels are displayed.

Viewing Ingress Resistance Results

To view Ingress Resistance results

1 Press the **View** softkey.

2 Highlight one of the following:

- **Auto Reference (Shift, 9)** to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may have to select the Auto Reference button more than once (up to three times).

- **5 dB**/**div** or **10 dB**/**div** – Enables you to adjust the vertical resolution of the graph for the best viewing.
- **Peak Hold** – Turns Peak Hold on and off. When Peak Hold is turned on, it displays the highest level trace at each frequency for an extended view of the noise isolation.
- **Reset** – Manually resets the Peak Hold function.
- **Pause (Shift, 8)** – Suspends measurement updates.
- **Marker A** – Sets Marker A as the active marker. (Use the left and right arrow keys to move the marker.)
- **Marker B** – Sets Marker B as the active marker. (Use the left and right arrow keys to move the marker.)

3 Press **ENTER**.

Measure Mode – Sweep Tab

11

This chapter describes the Measure Mode – Sweep tab functionality. Topics discussed in this chapter are as follows:

Sweep Measurement Modes

The DSAM Sweep measurement displays the difference (delta) in level from the headend to the field DSAM or vice versa. The main goal is to measure the frequency response of the cable system distribution network. This is done by injecting active sweep points (momentary narrow test carriers) over a range of frequencies at the input of the system. The level of each sweep point is measured at both the input and the output of the system. At the receiving end (output) the two values are compared and the difference is displayed on the DSAM, thereby emphasizing any deviation caused by the network.

As an alternative to active test sweep points injected around a channel, the actual broadcast video carrier can be used as a reference carrier for that frequency. An optimized sweep plan includes both active sweep points (representing unused frequency bands within the network's spectrum), as well as reference carriers. This exclusive Stealth Sweep™ technology is patented by JDSU and minimizes any possibility of service interference.

Both directions of the network can be swept. A forward sweep is performed with a transceiver and measurement system in the headend or hub site, such as the SDA-5500 Stealth Sweep Transceiver. It transmits and measures active sweep points as well as measures reference carriers.

Forward Sweep

You can use multiple field DSAMs at the same time with a common SDA-5500. Typically, the Headend Technician or Network Engineer is responsible for an accurate forward sweep plan within the SDA-5500 transceiver.

Reverse Sweep

Reverse sweep is similar to forward sweep except that only active sweep points are transmitted and measured by the DSAM field meter and the SDA-5500 receives and measures the sweep points at the headend or hub site. Only one field user at a time can perform reverse sweep with the SDA-5500. Larger networks typically use a SDA-5510 Stealth Reverse Sweep Manager to handle only reverse sweep for multiple field users and configure the SDA-5500 for only forward sweep requirements.

Sweepless Sweep

Sweepless Sweep (additional purchase required) enables you to retrieve sweep information without a transmitter. Carrier levels derived from the channel plan are measured and recorded to compare with the levels of the same carriers at a different point in the network.

Reverse Alignment

Reverse Alignment (available only on DSAM-6000) enables signals to be transmitted in the upstream spectrum and the levels to be read when received at the SDA sweep transceiver in the headend. It is especially useful for measuring the tilt in the spectrum.

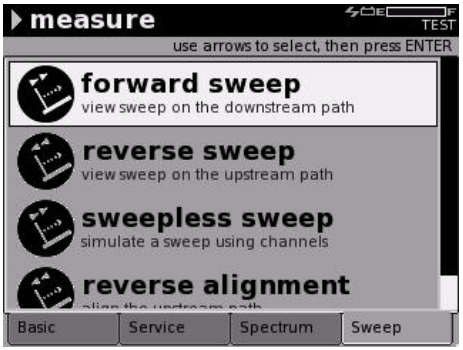

Figure 247 Measure Mode – Sweep Tab

Forward Sweep

Forward Sweep (additional purchase required and only applicable for DSAM-6000) uses a headend transceiver to measure carrier levels and, when necessary, to inject short sweep pulses. When stable carriers are present, they can be referenced to create a sweep response without injecting any sweep pulses. This minimizes any subscriber interference as a result of sweep testing.

In Forward Sweep, the headend transceiver communicates with the field DSAM by telemetry transmitted on a forward frequency. The telemetry provides the sweep level results, as measured in the headend, downstream to the DSAM which compares the results to the local sweep results. The final display is the difference between the two measurements resulting in a delta graph. A reference file is captured, typically at the node amp output, before moving to the next amp. The DSAM compares the delta between the reference file and the current sweep measurement and displays the difference.

The ideal sweep results at the output of each amp is a flat response graph centered at 0 dB delta reference, assuming the goal is zero gain across the entire distribution network.

With Forward Sweep, the DSAM performs as a passive analysis receiver. It does not transmit any sweep pulses or telemetry. The headend transceiver does all the active work and communicates the headend measurement results over telemetry to the field DSAM for comparison to the local measurements on DSAM.

Forward Sweep is accomplished with a transceiver and measurement system in the headend or hub site, such as the SDA-5500 Stealth Sweep Transceiver. It transmits and measures active sweep points as well as measures reference carriers. Multiple field DSAMs can be used at the same time with a common SDA-5500. Typically, the headend technician or network engineer is responsible for an accurate forward sweep plan within the SDA-5500 transceiver.

Running a Forward Sweep

To run a forward sweep

1 Press **Measure**.

2 Press the **Sweep** softkey.

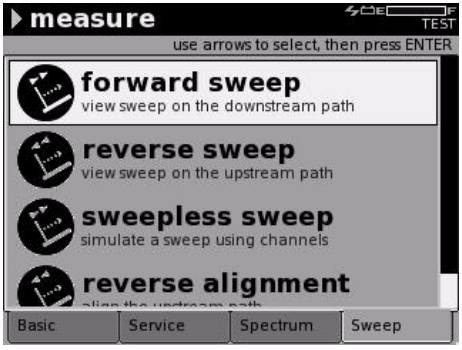

Figure 248 Measure Mode – Sweep Tab

3 Using the arrow keys, select **Forward Sweep**.

4 Press **ENTER**.

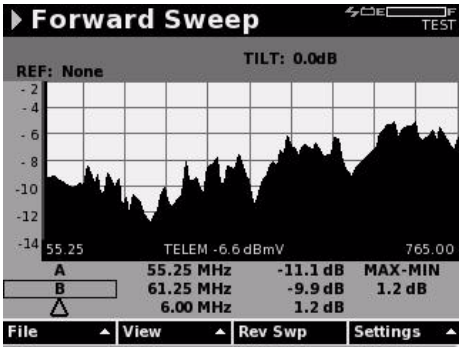

Figure 249 Measure Mode – Forward Sweep

5 Press the **Settings** softkey.

6 Using the arrow keys, select one of the following options:

- **Test Point Comp** – Displays the Test Point Compensation screen ("Test Point Compensation" on page 71).
- **Telemetry Frequency…** – Displays the Telemetry Settings screen ("Configuring Telemetry Frequency" on page 86).
- **Sweep Tilt and Limit…** – Displays the Sweep Settings screen ("Sweep Settings" on page 55).

7 Using the arrow keys and the alphanumeric keypad, highlight and edit the **parameters** as needed.

8 Press the **OK** softkey.

NOTE

All settings made in the Telemetry Settings screen are saved in the active channel plan identified in the upper right-hand corner of the screen. Be sure to select the appropriate channel plan for the network you are working with.

Understanding Forward Sweep Results

The Forward Sweep measurement mode provides signal levels of all frequency points which are then displayed on a graph.

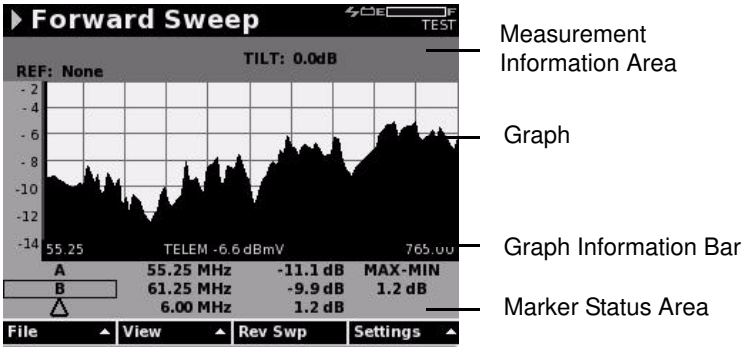

Figure 250 Measure Mode – Forward Sweep

Measurement Information Area The reference filename, test point compensation icon/value, and the tilt compensation value appear in this area above the graph.

NOTE

The sweep attempts to use the last used reference file. If the last reference file is incompatible with the current sweep plan, or if there is no reference file, the entry REF field displays “NONE.”

When a sweep limit value is entered, a pass/fail indicator also is displayed on the far left side of the subtile bar above the graph.

Graph The graph updates with each new set of sweep data received by the meter. If Sweep Limit is turned ON, a pair of horizontal markers appear on the screen to indicate the limit boundaries based on the limit value entered. These appear only when sweep limit value is ON within Sweep Settings. An error message automatically is displayed if the sweep telemetry level is too low.

Graph Information Bar This area consists of the start and stop frequencies (as provided by the sweep plan transmitted from the headend transceiver) and the sweep telemetry level. The sweep telemetry level can be converted to dBmV, dBm, etc., from the configuration settings of the DSAM. If zoom is active, a zoom icon also is displayed and the start and stop frequencies are updated to match the zoom view.

Marker Status Area The Forward Sweep measurement mode also contains an area referred to as the Marker Status area (below the Graph Information bar). This area consists of the marker name (A or B), marker frequency (in MHz), and measured signal level for the frequencies which the

markers are on. The black square around the letter A or B indicates the active marker. The delta label (in dB) and the delta frequency (in MHz) between the markers is also displayed. The sweep maximum-minimum dB level (difference between the highest and lowest points in the sweep graph) is displayed next to the marker status.

Toggling Between Forward and Reverse Sweep

To toggle between Forward Sweep and Reverse Sweep

1 To sweep in the opposite direction, press the **Rev Swp** softkey. (See "Running a Reverse Sweep" on page 280 for more information.)

NOTE

If you are testing on directional test points in the system, you must have both ports 1 and 2 on the DSAM connected to the test points to toggle between the Forward Sweep and Reverse Sweep.

Viewing Forward Sweep Results

To view Forward Sweep results in different ways

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following:

- **Auto Reference (Shift, 9)** – Enables you to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may need to press the Auto Reference button up to three times.

- **1 dB/div**, **2 dB/div**, **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.
- **Zoom** – Turns graph magnification on and off. The Zoom feature produces a display that has a frequency span defined by the position of the markers in the original non-zoomed view.
- **Pause (Shift, 8)** – Suspends measurement updates.

3 Press **ENTER**.

Saving and Loading Reference and Measurement Files

When you save a reference, it is automatically appended to the measurement.

To save and load reference and measurement files

1 Press the **File** softkey.

2 Using the arrow keys, select one of the following options:

– **Save Reference** – Saves the current measurement as a reference file for use as a reference against live measurements.

NOTE

Since a reference file is essentially an average of the data obtained from four sequential traces, at least four sequential traces must occur before you can save a file to be used as a reference file. If you attempt to save a reference file before enough data has been collected, the Not Enough Data error message is displayed.

NOTE

The maximum file name length is twelve (12) characters.

– **Save File** – Saves the current measurement as a static measurement file.

NOTE

To assure exact measurement recording of current display, always pause (**Shift, 8**) measurement updates before saving.

– **Load Reference** – Proceeds to a work folder associated with sweep reference files. Select a reference file from the work folder. If the selected file is not compatible with the current received sweep plan, a message is displayed. This feature enables you to view the difference between the live data and the data stored in the file. When you select a reference file, the file name is displayed in the subtitle bar in place of 'REF: NONE'.

NOTE

When you save an additional file, the file name field in the “save a file” display contains the last label saved, which you can append, alter, clear, or simply save unchanged. If you do not change the label for a file of the same mode type, an “overwrite?” warning is displayed.

- **Open File** – Enables you to select and open a saved Forward Sweep measurement file.
- **Clear Reference** – Removes the reference file from measurement and returns the subtitle bar to “REF: NONE.”

3 Press **ENTER**.

Reverse Sweep

For a Reverse Sweep (additional purchase required and only applicable for DSAM-6000), the DSAM transmits a range of sweep points upstream to the headend and communicates with the headend transceiver over a reverse telemetry frequency. The headend transceiver controls the sweep points transmitted from the DSAM with a reverse sweep plan configured in the transceiver and transmitted by telemetry on a forward frequency.

Reverse sweep uses sweep carriers transmitted from DSAM to the headend transceiver. The transceiver measures the sweep carriers and transmits the results over forward telemetry back to DSAM which calculates return path frequency response by comparing the results to the local measurement of the same carriers.

With Reverse Sweep, DSAM performs both as an active transceiver and as an analysis receiver. Active sweep points are transmitted and measured by the DSAM field meter and the SDA-5500 or SDA-5510 receives and measures the sweep points at the headend or hub site. The measured results are returned to the field DSAM over forward telemetry for comparison with the local DSAM measurements. Only a single field user at a time can perform Reverse Sweep with the SDA-5500. Larger networks typically use a SDA-5510 Stealth Reverse Sweep Manager to handle only Reverse Sweep for multiple field users and configure the SDA-5500 for only forward sweep requirements.

The Reverse Sweep plan, like the forward sweep plan, is configured in the SDA headend/hub units and communicated to the DSAM field unit over forward telemetry.

Sweeping the reverse path is a little different from sweeping the forward path. The lower reverse frequencies are not attenuated in cable as much as the higher forward frequencies. In sweeping the forward path, the amplifier is aligned so the amplifier compensates for the cable before it, i.e. the cable segment between test point (the output of the amp) and the next amp down the network. Sweeping the reverse path, the amplifier is aligned so the response at the headend is within certain limits set by engineering. The amplifier is aligned to compensate for loss characteristics in the cable between the test point (input to amp) and the next amp closest to the headend.

NOTE

There are two sweep configuration possibilities to consider:

Bi-directional – If Reverse Sweep is configured to use one port, be sure to connect the cable to Port 1.

Reverse Port – If Reverse Sweep is configured to use both ports, be sure to connect both cables to the test points.

See "Sweep Settings" on page 55 for more information.

Running a Reverse Sweep

To run a Reverse Sweep

1 Press **Measure**.

2 Press the **Sweep** softkey.

Figure 251 Measure Mode – Sweep Tab

3 Using the arrow keys, select **Reverse Sweep**.

4 Press **ENTER**.

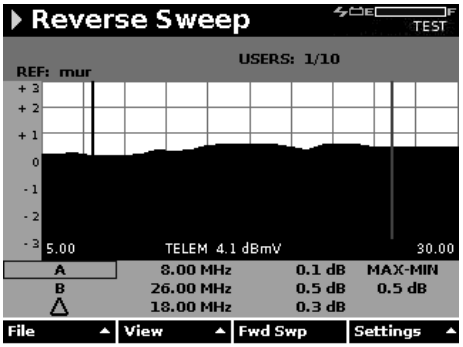

Figure 252 Measure Mode – Reverse Sweep

5 Press the **Settings** softkey.

6 Using the arrow keys, select one of the following options:

- **Test Point Comp** – Displays the Test Point Compensation screen ("Test Point Compensation" on page 71).
- **Telemetry Frequency…** – Displays the Telemetry Settings screen ("Configuring Telemetry Frequency" on page 86).
- **Sweep Tilt and Limit…** – Displays the Sweep Settings screen ("Sweep Settings" on page 55).

7 Using the arrow keys and the alphanumeric keypad, highlight and edit the **parameters** as needed.

8 Press the **OK** softkey.

NOTE

All settings made in the Telemetry Settings screen are saved in the active channel plan identified in the upper right-hand corner of the screen. Be sure to select the appropriate channel plan for the network you are working with.

Understanding Reverse Sweep Results

The Reverse Sweep measurement mode provides signal levels of all frequency points which are then displayed on a graph.

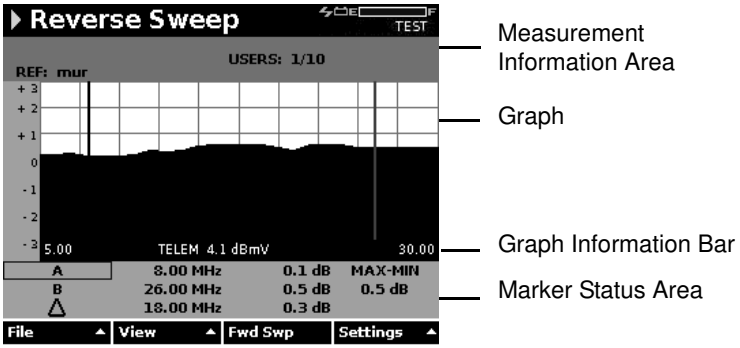

Figure 253 Measure Mode – Reverse Sweep

Measurement Information Area The reference filename, test point compensation icon/value, and the number of users using (if reverse sweep) appear in this area above the graph.

NOTE

The sweep attempts to use the last used reference file. If the last reference file is incompatible with the current sweep plan, or if there is no reference file, the entry REF field displays “NONE.”

When a sweep limit value is entered, a pass/fail indicator also is displayed on the far left side of the subtile bar above the graph.

Graph The graph updates with each new set of sweep data received by the meter. If Sweep Limit is turned ON, a pair of horizontal markers appear on the screen to indicate the limit boundaries based on the limit value entered. These appear only when sweep limit value is ON within Sweep Settings. An error message automatically is displayed if the sweep telemetry level is too low.

Graph Information Bar This area consists of the start and stop frequencies (as provided by the sweep plan transmitted from the headend transceiver) and the sweep telemetry level. The sweep telemetry level can be converted to dBmV, dBm, etc., from the configuration settings of the DSAM. If zoom is active, a zoom icon also is displayed and the start and stop frequencies are updated to match the zoom view

Marker Status Area The Reverse Sweep measurement mode also contains an area referred to as the Marker Status area (below the Graph Information bar). This area consists of the marker name (A or B), marker frequency

(in MHz), and measured signal level for the frequencies which the markers are on. The black square around the letter A or B indicates the active marker. The delta label (in dB) and the delta frequency (in MHz) between the markers is also displayed. The sweep maximum-minimum dB level (difference between the highest and lowest points in the sweep graph) is displayed next to the marker status.

Toggling Between Reverse and Forward Sweep

To toggle between Reverse Sweep and Forward Sweep

1 To sweep in the opposite direction, press the **Fwd Swp** softkey. (See "Forward Sweep" on page 273 for more information.)

Viewing Reverse Sweep Results

To view reverse sweep results in different ways

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following:

- **Auto Reference (Shift, 9)** to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may have to select the Auto Reference button more than once (up to three times).

- **1 dB/div**, **2 dB/div**, **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.
- **Zoom** – Turns Zoom on and off.
- **Pause (Shift, 8)** – Suspends measurement updates.
- **Marker A** – Sets Marker A as the active marker. (Use the left and right arrow keys to move the marker.)
- **Marker B** – Sets Marker B as the active marker. (Use the left and right arrow keys to move the marker.)

3 Press **ENTER**.

Saving and Loading Reference and Measurement Files

When you save a reference, it is automatically appended to the measurement.

To save and load reference and measurement files

1 Press the **File** softkey.

2 Using the arrow keys, select one of the following options:

– **Save Reference** – Saves the current measurement as a reference file for use as a reference against live measurements.

NOTE

Since a reference file is essentially an average of the data obtained from four sequential traces, at least four sequential traces must occur before you can save a file to be used as a reference file. If you attempt to save a reference file before enough data has been collected, the Not Enough Data error message is displayed.

NOTE

The maximum file name length is twelve (12) characters.

– **Save File** – Saves the current measurement as a static measurement file.

NOTE

To assure exact measurement recording of current display, always pause (**Shift, 8**) measurement updates before saving a measurement file.

– **Load Reference** – Proceeds to a work folder associated with sweep reference files. Select a reference file from the work folder. If the selected file is not compatible with the current received sweep plan, a message is displayed. This feature enables you to view the difference between the live data and the data stored in the file. When you select a reference file, the file name is displayed in the subtitle bar in place of 'REF: NONE'.

NOTE

When you save an additional file, the file name field in the “save a file” display contains the last label saved, which you can append, alter, clear, or simply save unchanged. If you do not change the label for a file of the same mode type, an “overwrite?” warning is displayed.

– **Open File** – Enables you to select and open a saved reverse sweep measurement file.

– **Clear Reference** – Removes the reference file from measurement and returns the subtitle bar to “REF: NONE.”

3 Press **ENTER**.

Sweepless Sweep

Sweepless Sweep (additional purchase may be required) enables you to retrieve sweep information without a transmitter. Carrier levels derived from the channel plan are measured and recorded to compare with the levels of the same carriers at a different point in the network.

Figure 254 Measure Mode – Sweepless Sweep

Running a Sweepless Sweep

To run a sweepless sweep

1 Press **Measure**.

2 Press the **Sweep** softkey.

Figure 255 Measure Mode – Sweep Tab

3 Using the arrow keys, select **Sweepless Sweep**.

4 Press **ENTER**.

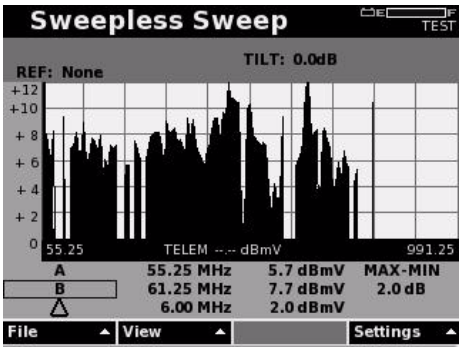

Figure 256 Measure Mode – Sweepless Sweep

5 Press the **Settings** softkey.

6 Using the arrow keys, select one of the following options:

- **Show Audio** – Shows/hides audio points.
- **Test Point Comp** – Displays the Test Point Compensation screen ("Test Point Compensation" on page 71).
- **Sweep Tilt and Limit…** – Displays the Sweep Settings screen ("Sweep Settings" on page 55).

7 Using the arrow keys and the alphanumeric keypad, highlight and edit the **parameters** as needed.

8 Press the **OK** softkey.

Understanding Sweepless Sweep Results

The Sweepless Sweep measurement mode provides signal levels of all frequency points which are then displayed on a graph.

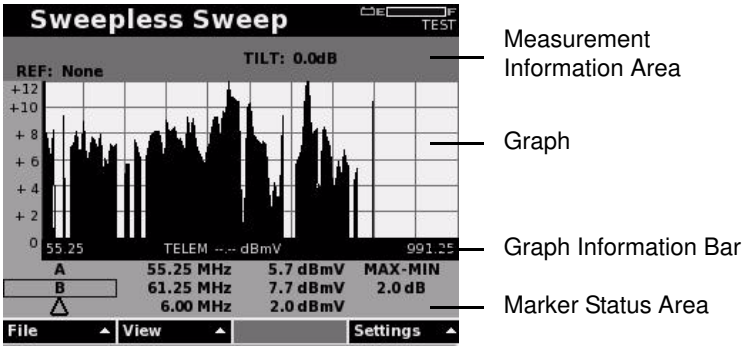

Figure 257 Measure Mode – Sweepless Sweep

Measurement Information Area

The reference filename, test point compensation icon/value, and the tilt compensation value appear in this area above the graph.

NOTE

The sweep attempts to use the last used reference file. If the last reference file is incompatible with the current sweep plan, or if there is no reference file, the entry REF field displays “NONE.”

When a sweep limit value is entered, a pass/fail indicator also is displayed on the far left side of the subtile bar above the graph.

Graph

The graph updates with each new set of sweep data received by the meter. If Sweep Limit is turned ON, a pair of horizontal markers appear on the screen to indicate the limit boundaries based on the limit value entered. These appear only when sweep limit value is ON within Sweep Settings. An error message automatically is displayed if the sweep telemetry level is too low.

Graph Information Bar

This area consists of the start and stop frequencies (as provided by the sweep plan transmitted from the headend transceiver and telemetry level). If zoom is active, a zoom icon also is displayed and the start and stop frequencies are updated to match the zoom view.

Marker Status Area

The Sweepless Sweep measurement mode also contains an area referred to as the Marker Status area (below the Graph Information bar). This area consists of the marker name (A or B), marker frequency (in MHz), and measured signal level for the frequencies which the markers are on. The black square around the letter A or B indicates the active marker. The delta label (in dB) and the delta frequency (in MHz) between the markers is also displayed. The sweep maximum-minimum dB level (difference between the highest and lowest points in the sweep graph) is displayed next to the marker status.

Viewing Sweepless Sweep Results

To view sweepless sweep results in different ways

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following:

– **Auto Reference (Shift, 9)** to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may have to select the Auto Reference button more than once (up to three times).

– **1 dB/div**, **2 dB/div**, **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.

– **Zoom** – Turns Zoom on and off.

– **Pause (Shift, 8)** – Suspends measurement updates.

– **Marker A** – Sets Marker A as the active marker. (Use the left and right arrow keys to move the marker.)

– **Marker B** – Sets Marker B as the active marker. (Use the left and right arrow keys to move the marker.)

3 Press **ENTER**.

Saving and Loading Reference and Measurement Files

When you save a reference, it is automatically appended to the measurement.

To save and load reference and measurement files

1 Press the **File** softkey.

2 Using the arrow keys, select one of the following options:

– **Save Reference** – Saves the current measurement as a reference file for use as a reference against live measurements.

NOTE

Since a reference file is essentially an average of the data obtained from four sequential traces, at least four sequential traces must occur before you can save a file to be used as a reference file. If you attempt to save a reference file before enough data has been collected, the Not Enough Data error message is displayed.

NOTE

The maximum file name length is twelve (12) characters.

– **Save File** – Saves the current measurement as a static measurement file.

NOTE

To assure exact measurement recording of current display, always pause (**Shift, 8**) measurement updates before saving a measurement file.

– **Load Reference** – Proceeds to a work folder associated with sweep reference files. Select a reference file from the work folder. If the selected file is not compatible with the current received sweep plan, a message is displayed. This feature enables you to view the difference between the live data and the data stored in the file. When you select a reference file, the file name is displayed in the subtitle bar in place of 'REF: NONE'.

NOTE

When you save an additional file, the file name field in the “save a file” display contains the last label saved, which you can append, alter, clear, or simply save unchanged. If you do not change the label for a file of the same mode type, an “overwrite?” warning is displayed.

– **Open File** – Enables you to select and open a saved sweepless sweep measurement file.

– **Clear Reference** – Removes the reference file from measurement and returns the subtitle bar to “REF: NONE.”

3 Press **ENTER**.

Reverse Alignment

Using constant inputs, Reverse Alignment mode enables you to correctly align the amplifiers to maintain unity gain. This mode also minimizes noise and ingress so the digital signals are not clipped or compressed.

Running a Reverse Alignment

To run a reverse alignment

1 Press **Measure**.

2 Press the **Sweep** softkey.

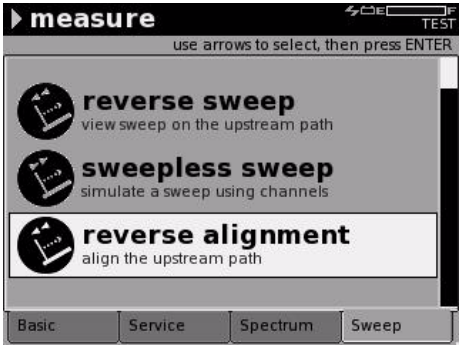

Figure 258 Measure Mode – Sweep Tab

3 Using the arrow keys, select **Reverse Alignment**.

4 Press **ENTER**.

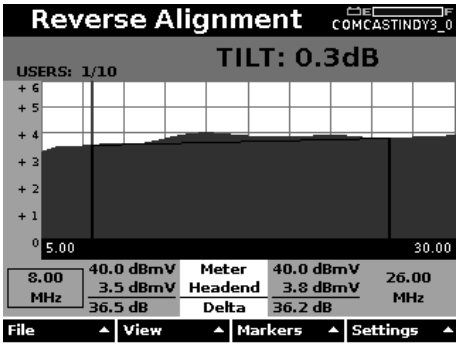

Figure 259 Measure Mode – Reverse Alignment

5 Press the **Settings** softkey.

6 Using the arrow keys, select one of the following options:

- **Test Point Comp** – Displays the Test Point Compensation screen ("Test Point Compensation" on page 71).
- **Telemetry Frequency…** – Displays the Telemetry Settings screen ("Configuring Telemetry Frequency" on page 86).
- **Sweep Settings…** – Displays the Sweep Settings screen ("Sweep Settings" on page 55).

7 Using the arrow keys and the alphanumeric keypad, highlight and edit the **parameters** as needed.

8 Press the **OK** softkey.

Understanding the Reverse Alignment Graph

The Reverse Alignment measurement mode provides signal levels of all frequency points which are then displayed on a graph.

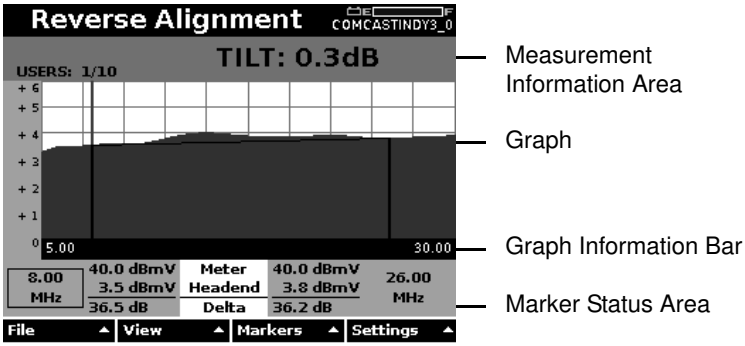

Figure 260 Measure Mode – Reverse Alignment

Measurement Information Area This area includes the test point compensation icon/value, the tilt value, and the number of users (if using multi-user reverse alignment).

Graph The graph updates with each new set of sweep data received by the meter. A tilt line is displayed between the levels at each marker. An error message automatically is displayed if the sweep telemetry level is too low.

Graph Information Bar This area consists of the start and stop frequencies (as provided by the sweep plan transmitted from the headend transceiver). If zoom is active, a zoom icon also is displayed and the start and stop frequencies are updated to match the zoom view.

Marker Status Area The Marker Status area displays the marker frequency in MHz, the meter-generated signal level, and the headend measured signal level frequencies for which the markers are on. The black square around the frequency indicates the active marker. The delta label between the level at the meter and the headend is also displayed.

Viewing Reverse Alignment Results

To view reverse alignment results in different ways

1 Press the **View** softkey.

2 Using the arrow keys, select one of the following:

– **Auto Reference (Shift, 9)** to automatically view measurement results in the best reference setting on the graph.

NOTE

For best reference setting results you may have to select the Auto Reference button more than once (up to three times).

- **1 dB/div**, **2 dB/div**, **5 dB/div** or **10 dB/div** – Enables you to adjust the vertical resolution of the graph for the best viewing.
- **Zoom** – Turns Zoom on and off.
- **Pause (Shift, 8)** – Suspends measurement updates.
- **Marker A** – Sets Marker A as the active marker. (Use the left and right arrow keys to move the marker.)
- **Marker B** – Sets Marker B as the active marker. (Use the left and right arrow keys to move the marker.)

3 Press **ENTER**.

Saving and Opening Measurement Files

To save and load reference and measurement files

1 Press the **File** softkey.

2 Using the arrow keys, select one of the following options:

- **Save File** – Saves the current measurement as a static measurement file.

NOTE

To assure exact measurement recording of current display, always pause (**Shift, 8**) measurement updates before saving a measurement file.

NOTE

When you save an additional file, the file name field in the “save a file” display contains the last label saved, which you can append, alter, clear, or simply save unchanged. If you do not change the label for a file of the same mode type, an “overwrite?” warning is displayed.

- **Open File** – Enables you to select and open a saved reverse alignment measurement file.

3 Press **ENTER**.

Specifications

A

This appendix describes the DSAM Product Family Series specifications. Topics discussed in this appendix are as follows:

DSAM Product Family Series-1500, -2500, -2600, -3500, -3600, -6000 Specifications

Table 47 Product Specifications

Item	Description
Frequency	
Range	4 to 1,000 MHz
Accuracy	±10 ppm at 25° C (77° F)
Tuning Resolution	Analog 10 kHz Digital 50 kHz
Channel Bandwidth	Models ending in A, 8 MHz Models ending in B, 6 MHz
Analog Level Measurement	
Signal Types	CW, video and audio (NTSC, PAL, and SECAM)
Range[a]	-40 to +60 dBmV (typical)
Resolution	0.1 dB
Resolution Bandwidth	280 kHz
Accuracy[b]	± 1.5 dB typical at 25° C (77° F)
Digital Level Measurement	
Modulation Types	QPR, QPSK, QAM (DVB/ACTS)
Range[a]	-40 to +50 dBmV (typical)
Resolution	0.1 dB
Resolution Bandwidth	280 kHz
Accuracy[b]	± 2.0 dB typical at 25° C (77° F)

Table 47 Product Specifications (Continued)

Item	Description
Upstream Spectrum (Ingress Scan)	
Spans	Models ending in A, 4 to 65 MHz Models ending in B, 4 to 45 MHz
Sweep Rate	Less than 2 seconds
Display Scaling and Range	5 and 10 dB/division; 6 vertical divisions
Resolution Bandwidth	280 kHz
Sensitivity[a]	-40 to +60 dBmV (typical)
Two-way Ranging Test	
DOCISIS® Based	DOCSIS® 1.0, 1.1, and 2.0
Upstream Transmit Range and Diplexer Crossover (DOCSIS® modes only)	Models ending in A, 5 to 65 MHz 65/ 96 MHz (min. downstream DOCSIS® center freq. 100 MHz) Models ending in B, 5 to 42 MHz 42/ 88 MHz (min. downstream DOCSIS® center freq. 91 MHz)
Upstream Modulation	QPSK, 16 QAM, and 64 QAM as instructed by CMTS
Transmitter Output	At 25° C (77° F) maximum, +52 dBmV with 64 QAM, +55 dBmV with 16 QAM, and +58 dBmV with QPSK (typical)
Downstream QAM Demodulation	
Modulation Type	64, 128[c], and 256 QAM, ITU-T J.83 Annex A, B, or C (selectable)
Input Range (Lock Range)[d]	-15 to +50 dBmV total integrated power from 55 to 1000 MHz
BER (Bit Error Rate)[e]	Pre and Post FEC: 10^{-4} to 10^{-9}

Table 47 Product Specifications (Continued)

Item	Description
MER (Modulation Error Ratio)[f]	Range 64 QAM: 21 to 35 dB
	Accuracy: ± 2 dB (typical)
	Range 128 QAM: 25 to 35 dB
	Accuracy: ± 2 dB (typical)
	Range 256 QAM: 28 to 35 dB
	Accuracy: ± 2 dB (typical)
EVM (Error Vector Magnitude)[g]	Range 64 QAM: 1.2% to 5.8%
	Accuracy: ± 0.5% (1.2% to 2.0%)
	± 1.0% (2.1% to 4.0%)
	± 1.4% (4.1% to 5.8%)
	Range 128/256 QAM: 1.1% to 2.4%
	Accuracy: ± 0.6%
Symbol Rate	Annex A, 5.057 to 6.952 MSPS for 64, 128, and 256 QAM
	Annex B, 5.057 MSPS for 64 QAM and 5.361 MSPS for 256 QAM
	Annex C, 5.274 MSPS for 64 QAM, and 5.361 MSPS for 256 QAM
Interfaces	
RF	75 ohm, F81 or BNC option
Maximum Sustained Voltage	100V AC and 140V DC
RS232	Standard via DB9 on charger module or optional direct cable
Printer Compatibility	Epson and Citizen
Ethernet	RJ45, 10/100 base T, TCP/IP, and UDP supported
USB	v1.1 host mode, 150 mA maximum slave (future firmware release)

Table 47 Product Specifications (Continued)

Item	Description
Standards Compliance	
Shock and vibration	IEC 60068
Drop	EC 61010
Handle Stress	IEC 61010
Water Resistance	MIL-STD-810E
Safety - emissions	EN 55022, CE, FCC
Safety - immunity	EN 61000, CE, FCC
General	
Display	320 x 240 pixels, gray scale or TFT color display
Language Support (User interface and Help System)	English in all models. No-charge second language option of Chinese, French, German, Hungarian, Japanese, Korean, Polish, or Spanish.
Dimensions (Models 1500, 2500, and 3500)	12 cm (W) 25 cm (H) 7 cm (D) 4.75" (W) 9.75" (H) 2.75" (D)
Dimensions (Model 2600, 3600 and 6000)	12 cm (W) 25 cm (H) 8.25 cm (D) 4.75" (W) 9.75" (H) 3.25" (D)
Weight (Models 1500, 2500, and 3500)	2 pounds, 12 ounces (1.3kg)
Weight (Model 2600, 3600 and 6000)	3 pounds, 4 ounces (1.5kg)
Storage and Operating Temperature Range	-20° to +50° C (-4° to +122° F)

Table 47 Product Specifications (Continued)

Item	Description
DSAM-3500, - 3600, and -6000 Additional Specifications	
Downstream Spectrum (forward scan)	
Frequency range	4 to 1000 MHz
Sweep rate	Less than 2.5 seconds (display)
Display scaling and range	5 and 10 dB/division; 6 vertical divisions
Resolution bandwidth	30 or 330 kHz
Span	10 MHz or 50 MHz
Sensitivity[a]	-35 to 60 dBmV (typical)
Constellation (optional)	
Modulation type	64, 128, and 256 QAM
Constellation points	2000, 4000, 8000, 16000, 32000, or 64000
Zoom	up to 4 levels
Cable Modem Diagnostic Page	
IP address[g]	192.168.100.1
Return QAM Generator	
Signal Modulations	CW, 16 QAM, 64 QAM
Symbol Rates (MSPS)	1.28, 2.56, 3.84, 5.12
Frequency Range	5-55 MHz US, 5-65 MHz EURO
Supported Levels	8.0 - 58.0 dBmV
DSAM-6000 Sweep Specifications	
Forward Sweep	Requires SDA-5500 (SDA compatible mode)
Reverse Sweep and Reverse Alignment	Requires SDA-5500 (Single Reverse) or SDA-5510 (Multiple Reverse) (SDA compatible mode)

Table 47 Product Specifications (Continued)

Item	Description
Sweep Modes	
Frequency Range	5 to 1000 MHz
Display Span	User definable
Display Scale/Range	6 vertical divisions 1, 2, 5, or 10 dB/division
Sweep Pulse Occupied Bandwidth	30 kHz
Stability	± 0.5 dB, normalized (dependent on stability of referenced carriers)
Sweep Rate	~1 second (78 channels, including scrambled and digital signal types)
Channel Plan Templates (user editable on SDA Head-end gear)	China-1; China-2; France; HDTP-NL; Ireland; Japan; Jerold; Jerold-HRC; Jerold-IRC; NCTA; NCTA-HRC; NCTA-SUB; NCTA-IRC; NTSC-Broadcast; OIRT-D/K; PL-B/G; PAL-UK
Return Loopback	
Frequency Range	5-55MHz US, 5-65 MHz EURO
Transmit Level	8-58 dBmV

a. Total integrated power, detectable range.
b. Accuracy for analog levels between -20 to +55 dBmV.
Accuracy for digital levels between -20 to +50 dBmV.
Additional uncertainty of ± 1.0 dB from 4 MHz to 15 MHz.
Additional uncertainty of ± 0.5 dB across -20°C to +50°C.
c. 128 QAM not defined for Annex B ITU-T J83.
d. Total integrated power, At 64 QAM.
e. DSAM1500, 2500 and 3500 can support up to (I,J) = (128,1) interleave for ITU-T J.83 Annex B DSAM 2600 and 3600 can support up to (I,J) = (128, 4) interleave for ITU-T J.83 Annex B.
f. Accuracy and behavior from 100 MHz to 1000 MHz for levels between –5 to +50 dBmV (typical).
g. IP address is specified in the DOCSIS® 1.1 and 2.0 operations support system interface (OSSI) specifications.

Power Component Specifications

Table 48 Power Component Specifications

Item	Description
Environmental	
Operational temperature range	-20° to +50° C (-4° to +122° F)
Storage temperature range Short Term (30 days or less)	-20° to +60° C (-4° to +140° F)
High fast-charge inhibit range	55° C (± 5° C) (140° F)
Low fast charge inhibit range	0° C (± 5° C) (+32° F)
Humidity range	0 to 95% RH (non-condensing)
Output - Li-Ion Battery	
Battery life	5 Hours typical* (standard capacity) 8 Hours typical* (high capacity) * actual life may vary with usage
Fast charge rate	1250mA ± 10%
Maximum charge time	Up to 7 hours (standard capacity) Up to 12 hours (high capacity)
Power Supply Module	
Input	
AC Input Voltage Range	90 - 264 VAC
AC Input Frequency	47 - 63 Hz
Output	
Output Power	36 Watt
Output Voltage	+12VDC
Maximum Load Current	3.0A

NOTE
These specifications also apply to other models.

Safety Instructions

B

This appendix describes battery safety instructions for your DSAM. The topics discussed in this appendix are as follows:

Important Safety Instructions

Follow these safety precautions to reduce the risk of fire, shock, or personal injury and to avoid damage to the DSAM Product Family Series meter and its power components.

1. Read all instructions in this section regarding the meter, battery and universal power supply.
2. Keep these instructions for future reference.
3. Pay attention to all warnings and safety precautions.

Meter Safety

Follow these safety precautions to reduce the risk of fire, shock, or personal injury and to avoid damage to the DSAM Product Family Series meter:

1. Use the meter and its power components only as directed by the instructions in this guide or as directed by other resources provided by JDS Uniphase Corporation.
2. When powering the meter, maintain the secure connection of each power component.
3. Use only JDS Uniphase Corporation-specified components to power and conduct measurements with this meter.
4. Keep the meter cavity that holds the battery and its battery contacts clean.
5. Use only a dry cloth to clean the meter.
6. Avoid using the meter or its power components during an electrical storm.

WARNING

- Do not disassemble the meter.
- Do not attempt to service this product yourself. There are no user-serviceable parts inside. Contact the appropriate JDS Uniphase Corporation representative for meter repair or calibration.

Battery Safety

Follow these safety precautions to reduce the risk of fire, shock, or personal injury and to avoid damage to the DSAM Product Family Series battery:

These safety precautions apply to the use of the Li-Ion battery supporting the DSAM Product Family Series meter.

1 Power the meter only with battery types approved for use by JDS Uniphase Corporation.

2 Do not disassemble or attempt to service the battery.

3 Do not place the battery on a conductive surface.

4 Do not allow metal objects to touch the battery contacts.

5 Charge the battery only with the specified charger.

6 Keep the battery away from heat sources near or above 60° C (140° F).

7 Operate and store the battery only within the following ranges:

Li-Ion

– Charging
0 to +45° C
(+32° to +113° F)

– Discharge
-20° to +60° C
(-4° to +140° F)

– Short term storage (30 days or less)
-20° to +60° C
(-4° to +140° F)

– Long term storage (90 days or less)
-20° to +45° C
(-4 to +113° F)

– Long term storage (1 year +)
-20° to +20° C
(-4° to +68° F)

WARNING

Do not crush, penetrate, mutilate, or dismember the battery in any way.

WARNING

Handle damaged or leaking batteries with extreme caution. Avoid contact with the electrolyte.

WARNING

Do not dispose of the battery in fire or in water. Follow all local restrictions regarding the proper disposal or recycling of the battery.

Battery Power Supply Module Safety

Follow these safety precautions to reduce the risk of fire, shock, or personal injury and to avoid damage to the DSAM Product Family Series power supply module:

1. When powering the meter, maintain the secure connection of each power component.
2. Use only JDS Uniphase Corporation-specified components to power and conduct measurements with this meter.
3. Do not damage the power cords.
4. Avoid using the meter or its power components during an electrical storm.
5. Follow all basic safety practices associated with the use of electrical equipment.

WARNING

Do not use this product in the vicinity of a gas leak or in any other explosive environment.

Customer Services

C

This chapter describes the customer services available through JDS Uniphase Corporation. Topics discussed in this chapter include the following:

About Our Services

JDS Uniphase Corporation offers an unmatched portfolio of services to deploy, support and innovate purchased equipment through its Customer Care and Global Services and Solutions organizations. Customer Care is standard with every product sale and consists of business hour technical assistance, in-warranty repair, calibration, and upgrade services. Global Services and Solutions provides professional services to optimize product capabilities and maximize efficiencies, including field engineering and deployment, technical training, product support, consulting and custom software development. Together these organizations supply the services necessary successfully utilize purchased equipment.

Customer Care

Customer Care is accompanied with the sale of every JDS Uniphase Corporation product. Customer Care services include:

- Needs Analysis on Products and Services
- Comprehensive Product and Service Literature
- Pre-Sales Consulting
- Technical Assistance (Business Hour)
- Instrument Repair (Under Warranty Repair and Calibration Services)
- Immediate Return Authorizations

Contact a Customer Care representative through your local distributor or by accessing www.jdsu.com for information on upgrades, calibration, warranty policies or any of Global Services and Solutions offerings. Representatives also provide assistance with product repairs and returns.

Technical Assistance (Business Hour)

Expert business hour technical support, including help with product configuration, circuit qualification, and complete network trouble sectionalization is provided with your product (see"Technical Assistance" on page xxxii).

Instrument Repair

Our service centers provide repair, calibration and upgrade services for under warranty equipment. JDS Uniphase Corporation understands the impact of equipment down time on operations and is staffed to ensure a quick turnaround. Available services include the following:

Product Repair

All equipment returned for service is tested to the same rigorous standards as newly manufactured equipment. This ensures products meet all published specifications, including any applicable product updates.

Calibration

JDS Uniphase Corporation's calibration methods are ISO 9001 approved and based on NIST standards.

Factory Upgrades

Any unit returned for a hardware feature enhancement will also receive applicable product updates and will be thoroughly tested, ensuring peak performance of the complete feature set.

Additional repair, calibration and upgrade services are available for purchase through Global Services and Solutions ("Product Support" on page 315).

Equipment Return Instructions

Please contact your local Customer Care location via telephone or web site for Return or Reference Authorization to accompany your equipment. For each piece of equipment returned for repair, attach a tag that includes the following information:

- Owner's name, address, and telephone number
- The serial number, product type, and model
- Warranty status (If you are unsure of the warranty status of your instrument, contact JDS Uniphase Corporation Customer Care.)
- A detailed description of the problem or service requested
- The name and telephone number of the person to contact regarding questions about the repair
- The return authorization (RA) number (US customers), or reference number (European Customers)

If possible, return the equipment using the original shipping container and material. If the original container is not available, the unit should be carefully packed so that it will not be damaged in transit; when needed, appropriate packing materials can be obtained by contacting JDS Uniphase Corporation Customer Care. JDS Uniphase Corporation is not liable for any damage that may occur during shipping. The customer should clearly mark the JDS Uniphase Corporation-issued RA or reference number on the outside of the package and ship it prepaid and insured to JDS Uniphase Corporation.

Warranty information

The warranties described herein shall apply to all commercially available JDSU Communications Test and Measurement products. Any additional or different warranties shall apply only if agreed to by JDS Uniphase Corporation in writing. These warranties are not transferable without the express written consent of JDS Uniphase Corporation.

Hardware Warranty — JDS Uniphase Corporation warrants that Hardware Product sold to customer shall, under normal use and service, be free from defects in materials and workmanship. Information regarding the specific warranty period for this product can be obtained by contacting your local JDS Uniphase Corporation Customer Service Representative, or at our web site www.jdsu.com. If installation services have been ordered, the warranty period shall begin on the earlier of (1) completion of installation, or (2) thirty (30) days after shipment to Customer. If Installation Services have not been ordered, the warranty period shall begin upon shipment to Customer. Hereafter these periods of time shall be collectively referred to as the “Initial Warranty Period.”

JDS Uniphase Corporation’s obligation and customer’s sole remedy under this Hardware Warranty is limited to the repair or replacement, at JDS Uniphase Corporation’s option, of the defective product. JDS Uniphase Corporation shall have no obligation to remedy any such defect if it can be shown: (a) that the Product was altered, repaired, or reworked by any party other than JDS Uniphase Corporation without JDS Uniphase Corporation’s written consent; (b) that such defects were the result of customer’s improper storage, mishandling, abuse, or misuse of Product; (c) that such defects were the result of customer’s use of Product in conjunction with equipment electronically or mechanically incompatible or of an inferior quality; or (d) that the defect was the result of damage by fire, explosion, power failure, or any act of nature.

JDS Uniphase Corporation performed repairs shall be warranted from defective material and workmanship for a period of one-hundred-eighty (180) days, or until the end of the Initial Warranty Period, whichever is longer. Risk of loss or damage to Product returned to JDS Uniphase Corporation for repair or replacement shall be borne by customer until delivery to JDS Uniphase Corporation. Upon delivery of such product, JDS Uniphase Corporation shall assume the risk of loss or damage until that time that the product being repaired or replaced is returned and delivered to customer. Customer shall pay all transportation costs for equipment or software shipped to JDS Uniphase Corporation for repair or replacement. JDS Uniphase Corporation shall pay all transportation costs associated with returning repaired or replaced product to customer.

Software Warranty — JDS Uniphase Corporation warrants that Software Products licensed to Customer shall, under normal use and service, and for a period of ninety (90) days from the date of shipment of the Software to Licensee (the “Warranty Period”), perform in all material respects in accordance with the published specifications for such Software as established by JDS Uniphase Corporation. However, JDS Uniphase Corporation does not warrant that the Software will operate uninterrupted or error free, operate in the combination with other software, meet Customer’s requirements, or that its use will be uninterrupted.

JDS Uniphase Corporation’s obligation and Customer’s sole and exclusive remedy under this Software Warranty is limited to, at JDS Uniphase Corporation’s option, either (i) correcting the material errors reported to JDS Uniphase Corporation in writing by Customer during the Warranty Period and which JDS Uniphase Corporation is able to reproduce, (ii) replacing such defective Software, provided that JDS Uniphase Corporation received written notice of such defect within the Warranty Period, or (iii) provided that JDS Uniphase Corporation received written notice of such defect within the Warranty Period, terminating the License and, upon return to JDS Uniphase Corporation of the Software, Documentation and all other materials provided by JDS Uniphase Corporation under the applicable License, providing Customer with a refund of all charges paid with respect thereto. JDS Uniphase Corporation shall have no warranty obligations hereunder if (a) the Software is altered or modified or is merged with other software by Customer or any third party or (b) all or any part of the Software is installed on any computer equipment other than the Designated Server or used with any operating system for which the Software is not designed.

Services Warranty — JDS Uniphase Corporation warrants that the Services provided by JDS Uniphase Corporation, if any, shall be performed promptly, diligently and in a professional manner in accordance with the commercial standards of the industry. JDS Uniphase Corporation shall not, however, be responsible for any delays that are not due to JDS Uniphase Corporation's fault or negligence or that could not have reasonably been foreseen or provided against.

WARRANTY DISCLAIMER — FOR HARDWARE, SOFTWARE, AND/OR SERVICES FURNISHED BY JDS Uniphase Corporation, THE FOREGOING WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTEES AND CONDITIONS, EXPRESS OR IMPLIED. JDS Uniphase Corporation SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, ON ANY HARDWARE, SOFTWARE, DOCUMENTATION OR SERVICES INCLUDING BUT NOT LIMITED TO WARRANTIES RELATING TO QUALITY, PERFORMANCE, NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AS WELL AS THOSE ARISING FROM ANY COURSE OF DEALING, USAGE OR TRADE PRACTICE. UNDER NO CIRCUMSTANCES WILL JDS Uniphase Corporation BE LIABLE FOR ANY INDIRECT OR CONSEQUENTIAL DAMAGES RELATED TO BREACH OF THIS WARRANTY.

Global Services and Solutions

Global Services and Solutions markets a broad portfolio of services to enable customers to aggressively build their competitive advantage within the markets they serve. Global Services and Solutions innovative offerings respond to our customers' dynamic needs:

– System deployment and field engineering services

– Technical training

– Product support

– Consulting

– Custom software development

– Integrated service programs

Additional information can also be found on our web site under Services.

System Deployment and Field Engineering

JDS Uniphase Corporation offers a range of support services for our centralized test systems, designed around the needs of the customer's network. Field engineering and deployment services provide a variety of options for implementing the test system into the network.

Deployment

Thorough deployment process covers the initial site survey through hardware and software installation, allowing rapid integration of systems product into customers' environment without the use of their own resources. Deployment includes survey, configuration, installation of hardware and software, site planning, cabling, acceptance testing, staging, certification and system documentation.

Basic Service for Systems

In today's fast-paced world of communications, network operators are deploying increasingly complex communications test and management systems. JDS Uniphase Corporation's Basic Service for Systems is designed to provide the system experts, support and methodologies to facilitate the integration of systems products into customers' environments. Basic Service for Systems encompasses system deployment, training, software upgrades, technical assistance and repair. This service is subject to availability, please visit www.jdsu.com or contact Customer Care for additional information.

Training

JDS Uniphase Corporation delivers training in instructor-led or alternative learning formats that are flexible, convenient, and timely. Our training solutions portfolio consists of network-specific test and management tools for optical transport, cable, access, data, and wireless environments.

Instructor-led Training

Public Courses (JDS Uniphase Corporation Sites)

Public courses help participants quickly acquire fundamental skills or broaden their communications knowledge with advanced instruction. Our courses deliver the ideal mix of theory and practice.

On-site Training (Customer Site)

JDS Uniphase Corporation provides practical, customized instruction at the customer's designated site. Whether your goal is to shorten turn-up times or increase operation-wide efficiency, on-site training can be a cost-effective way to train from one to 10 participants. Prior

to training, the instructor contacts the customer to ensure the course content is aligned with the organization's training needs. We conduct step-by-step reviews of current technologies and products to help both new and experienced technicians translate theory into practical, hands-on expertise.

When scheduling an on-site course, please note that JDS Uniphase Corporation requires a minimum commitment of two consecutive days of training. Courses that are only one day in duration may either be paired with another course for a minimum total of two training days, or presented on two consecutive days to different groups of participants.

Alternative Learning

Courseware Licensing Program and Train-the-Trainer

Recommended for customers with internal training departments, JDS Uniphase Corporation's Courseware Licensing Program is a fast, affordable alternative that allows our customers to train their own staff using JDS Uniphase Corporation's courseware. Each course provides comprehensive instructor and participant materials to ensure consistent content delivery for the length of the agreement. A critical part of Courseware Licensing is the Train-the-Trainer program, which prepares the organization's own instructors to deliver JDS Uniphase Corporation training courses. Courseware Licensing is sold in increments of one, two, or three years.

Computer-Based Training (CBT)

By blending learning with technology, JDS Uniphase Corporation's CBT program provides our customers with a cost-effective way to learn technology fundamentals and product applications. Topics include ATM, Frame Relay, ISDN, LAN Basics, Fiber Optics, and more. CBTs are designed to complement both public and on-site training; they can serve to prepare students for classroom JDS Uniphase Corporation courses or be used after instructor-led training to reinforce learning. In addition to our pre-packaged CBTs, JDS Uniphase Corporation custom-develops CBTs to meet your organization's training needs.

To enroll in a course or for more information on the variety of JDS Uniphase Corporation training programs available, call 1-800-638-2049 or visit www.jdsu.com and complete the Training Requirement Form.

Product Support

To continue repair, maintenance and upgrades after a product's warranty expires, JDS Uniphase Corporation offers a variety of product support plans.

FleetCare

Designed for customers with ten or more JDS Uniphase Corporation products, FleetCare extends each product's initial factory warranty to include repair parts, labor and one-way shipping. FleetCare allows customers to upgrade the base package with a variety of options, including Calibration Plans, Calibration Plan with Manager, Loaners, 7x24 Technical Assistance and Software Enhancement Agreements.

Product Maintenance Agreements

Yearly repair and calibration maintenance agreements simplify billing and help ensure equipment is always operating at optimum levels. Product maintenance agreements can be used to extend a current warranty or provide protection for out-of-warranty units.

Consulting Services

To quickly improve our customer's efficiency and productivity, JDS Uniphase Corporation offers personalized consulting programs designed to meet specific client needs. Our consulting staff will work as part of your team, providing a valuable blend of subject matter proficiency, an in-depth test and measurement systems perspective, and trusted telecommunications industry vision.

Methods and Procedure Development

JDS Uniphase Corporation's Methods and Procedure Development services include consulting with your staff and assessing your network plant's current test and turn-up procedures. After evaluating the skill level of your workforce in specific technologies and procedures, an JDS Uniphase Corporation team of experts identifies potential areas of improvement and makes appropriate recommendations in a formal implementation plan. Depending on your staff 's level of expertise, test procedures can be written to any level of detail, from general methods and procedures to detailed "button-by-button" test and network equipment-specific procedures. In addition, JDS Uniphase Corporation's experts offer hands-on training for your field technicians and can resolve specific problems at the central office. JDS Uniphase Corporation develops test plans and procedures for Service Providers, End-users and Manufacturers of Network Equipment.

Test Automation

With JDS Uniphase Corporation's Test Automation Development, a team of experts can develop customized automated and remote testing solutions so that you can keep your network functioning at peak levels. After consulting with you, the JDS Uniphase Corporation team can determine which of JDS Uniphase Corporation's test and analysis equipment and automation platforms can best streamline your testing processes, data analysis, and test result storage methods. The consulting team can develop and integrate automated testing applications on customers' currently installed computer platforms that match existing methods and procedures. A JDS Uniphase Corporation team of consultants can assist customers throughout every stage of the development and implementation of automated and remote testing solutions. Services range from developing automated scripts to integrating customized software applications to developing drivers to automated manufacturing tests.

On-Site Test and Measurement Service

JDS Uniphase Corporation On-site Test and Measurement Service provides testing expertise to expedite the implementation, turn-up, and provisioning of network services. Applying their knowledge to your specific network requirements, JDS Uniphase Corporation's network consultants can quickly verify transmission systems' implementation, assess a fiber plant's suitability for advanced services, future-proof your system. Because incomplete testing often results in crippling losses of revenue, carriers and providers must operate their networks with a very low margin of error. Difficulties in ensuring network performance are further compounded when technicians must employ unfamiliar yet critical test and measurement processes. But with JDS Uniphase Corporation's dedicated, highly skilled team of professionals providing communications test and measurement solutions, your staff can concentrate on performing value-added services that will maximize your profitability.

Glossary

B

BCM — Broadcom

BER — Bit Error Rate

C

CATV — Community Antenna Television or Cable TV

CM — Cable Modem

CMTS — Cable Modem Termination System

C/N — Carrier-to-Noise ratio

CPE — Customer Premises Equipment

CW — Carrier Wave

D

dB — Debcibel

dBm — Decibels referenced to one milliwatt

dBmV — Decibels referenced to one millivolt

dBRL — Decibels of return loss

dBµV — Decibels referenced to one microvolt

Delta V/A — Delta Video to Audio -- Calculated by subtracting the (first if DUAL) audio carrier level from the video carrier level (for analog TV and DUAL type channels only)

DHCP — Dynamic Host Configuration Protocol

DOCSIS — Data Over Cable Service Interface Specification (DOCSIS is a trademark or regis-

tered trademark of CableLabs in the United States and/or other countries.)

DQI — Digital Quality Index

DSAM — Digital Service Activation Meter

DSP — Digital Signal Processing

E

EMTA — Embedded Multimedia Terminal Adaptor

EVM — Error Vector Magnitude

F

FEC — Forward Error Correction

G

GUI — Graphical User Interface. Layout of commands in a user-friendly environment. ***See also*** UI (user interface).

H

Headroom (also called Overhead or Margin) — The number of decibels (dB) by which a measurement exceeds the minimum defined requirements. The benefit of headroom is that it reduces the bit-error rate (BER), and provides a performance 'safety net' to help ensure that current and future high speed applications run at peak accuracy, efficiency and throughput regardless of seasonal temperature changes on the HFC distribution system.

HFC — Hybrid Fiber Coax

I

IP — Internet Protocol

K

kb/s — kilobytes per second

kHz — Kilohertz

M

MAC — Media Access Control

MER — Modulation Error Ratio

MHz — Megahertz

ms — millisecond

MSO — Multiple Systems Operator

MTA — Multimedia Terminal Adapter

P

Pre BER — Bit Error Rate before Forward Error Correction

Post BER — Bit Error Rate after Forward Error Correction

Q

QAM — Quadrature Amplitude Modulation

QPSK — Quadrature Phase Shift Keying

R

RBW — Resolution Bandwidth

S

SID — Service IDentifier

S/N — Signal to Noise Ratio

SNMP — Simple Network Management Protocol

SNR — Signal to Noise Ratio

T

TCP/IP — Transmission Control Protocol/Internet Protocol

TFTP — Trivial File Transfer Protocol

TOD — Time of Day

TTL — Time to Live

U

UI — User interface. Layout of commands in a user friendly environment. ***See also*** GUI (graphical user interface).

V

VBW — Video Bandwidth

VoIP — Voice over Internet Protocol

VOP — Velocity of Propagation

Test and Measurement Regional Sales

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