

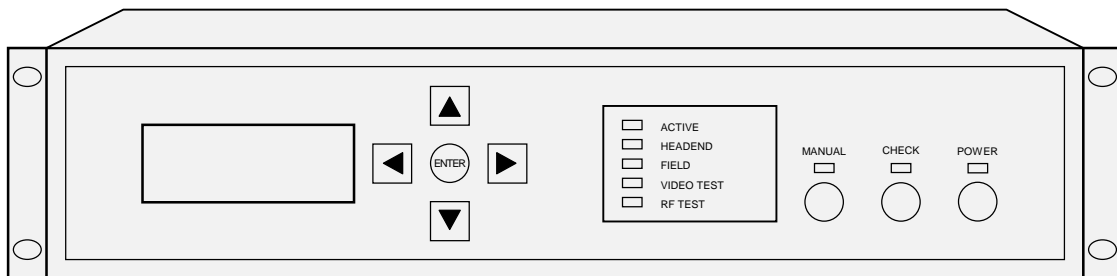
ComSonics, Inc.

*CyberTek*<sup>™</sup>

# EXAMINER

**Proof of Performance System**

**User's Guide**



***HP 8591C Edition***  
*for Examiner Companion*  
*Version 1.xx*

ComSonics, Inc. Doc No. 101158-001 Rev. A

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The Examiner software for the HP 8591C Cable TV Analyzer described in this document must be used in conjunction with the Hewlett-Packard 85721A *Cable TV Measurements & System Monitor Personality*. The 85721A Personality must be present in the HP 8591C Analyzer prior to installing the Examiner analyzer software.

85721A *Cable TV Measurements & System Monitor Personality* © Hewlett-Packard Co. 1993-1996.

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# Proof-of-Performance System

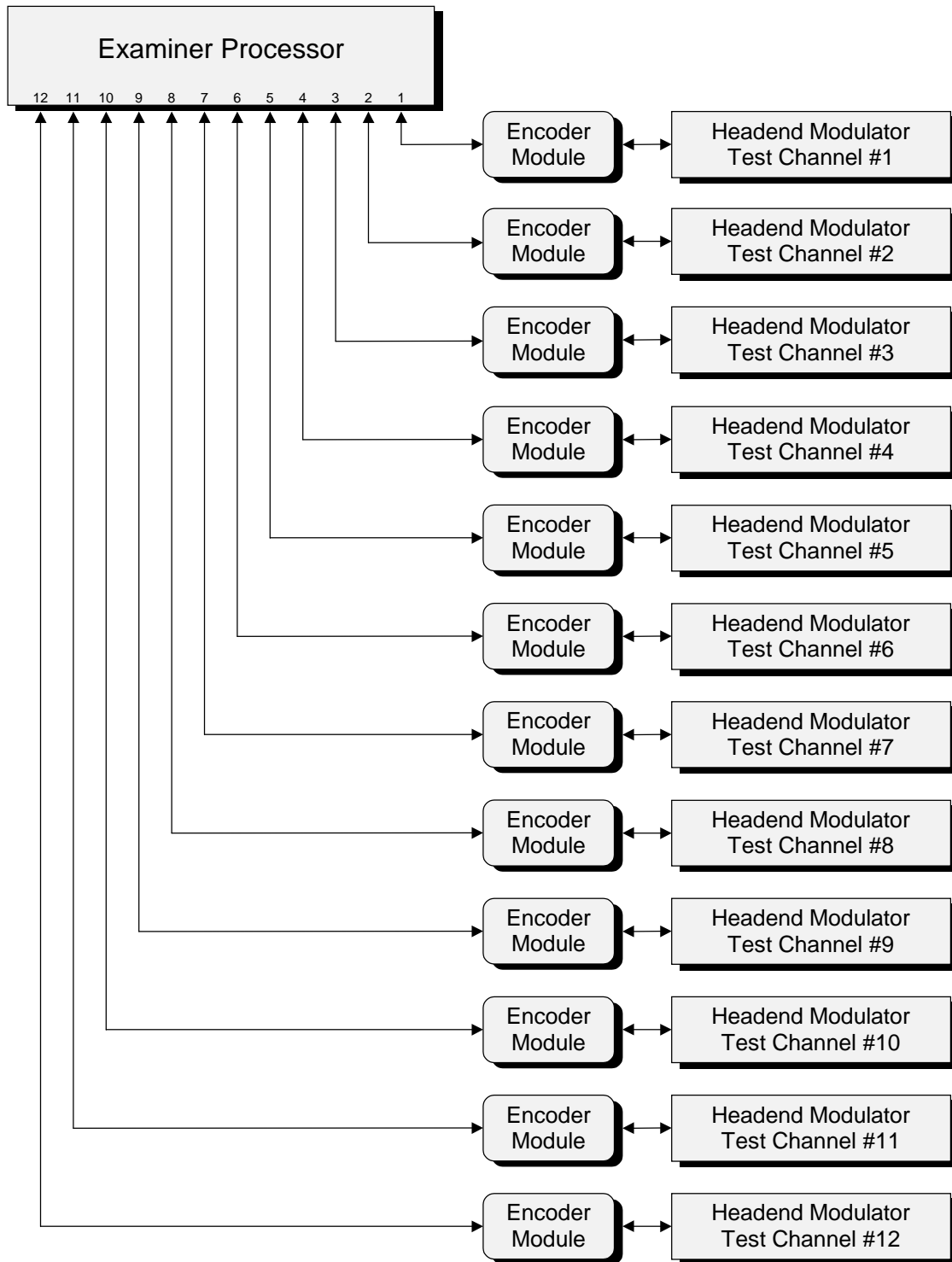
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## *Table of Contents*

Warranty, Support, and Copyright .....	ii
Headend System Overview .....	iv
<b>Section One - General Information</b>	
Introduction .....	1-1
Requirements .....	1-2
General Hardware Description.....	1-3
Accessories.....	1-3
System Installation .....	1-4
Typical Installation Diagram.....	1-5
Processor Front Panel Overview.....	1-6
Processor Rear Panel Overview.....	1-7
Encoder Module Overview .....	1-8
Processor Menu Introduction .....	1-9
Menu Overview.....	1-10
Menu Setup and Description.....	1-11
Examiner Processor Test Configurations.....	1-14
<b>Section Two - for HP 8591C Analyzer</b>	
HP 8591C Cable TV Analyzer Preparation .....	2-1
Check Analyzer's Installed Options and Memory.....	2-2
Examiner Companion Software Installation .....	2-3
HP 8591C Examiner Menu Navigator.....	2-5
Field Testing Overview.....	2-6
Application of Manual Field Test .....	2-6
Examiner Field Test Data Sheet - Example .....	2-9
Manual Field Test - Example.....	2-10
Application of Scheduled Field Test.....	2-12
Application of Field Check Test .....	2-13
Headend Testing Overview .....	2-14
Application of Manual Headend Test .....	2-15
Examiner Headend Test Data Sheet - Example .....	2-16
Manual Headend Test - Example.....	2-17
Save Measurements to RAM Card.....	2-19
Review RAM Card Contents .....	2-19
Transfer Saved Measurements from RAM Card to PC .....	2-20
Load Examiner Files to Spreadsheet Program .....	2-21
Sample Test Reports .....	2-22
Examiner Field Test Data Sheet - Blank form .....	2-23
Examiner Headend Test Data Sheet - Blank form .....	2-24
Examiner Supplies and Accessories .....	2-25

# Proof-of-Performance System

## *Headend System Overview*



# Proof-of-Performance System

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## *General Information*

### ***Introduction***

ComSonics' CyberTek Examiner creates a system environment that enables a single technician, using selected spectrum analyzers, to capture all popular performance parameters without channel interruption. No assistance is needed in the headend, thereby allowing any number of system technicians to simultaneously gather vital statistics from a fully operational plant. The lack of visible intrusion by the CyberTek Examiner encourages its use for normal preventive maintenance in addition to planned Proofs-of-Performance.

Test signals embedded in user selected test channels by CyberTek Examiner hardware permanently integrated into the headend permit quantification of the following operating parameters without manually removing the test channel's visual carrier:

- In-Band Flatness
- System Carrier-to-Noise Ratio (C/R)
- Composite Second Order-to-Carrier Ratio (CSO)
- Non-Synchronous Spurious Signal-to-Carrier Ratio
- Composite Triple Beat-to-Carrier Ratio (CTB)
- Differential Gain
- Differential Phase
- Chrominance-to-Luminance Delay Inequality

To satisfy the user's testing requirement, CyberTek Examiner's flexible programming capability controls all necessary functions including:

- Test Channel Selection
- Test Signal Selection
- Test Sequence Start Time
- Test Sequence Stop Time
- Test Sequence Interval

The system assures uninterrupted channel operation by automatically switching into by-pass mode in the event of a power supply failure.

# Proof-of-Performance System

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## *General Information*

### ***Requirements***

#### ***Test Channels***

In order to use the Examiner Encoder System, a number of cable channels must be selected for encoding. The selected channels must meet the following criteria:

- Non-scrambled.
- Standard NTSC analog.
- Processed by a modulator.
  - The modulator must use baseband video, not composite video.
  - The modulator must have separate external IF loops.
  - The video IF signal must be available separately.
- The channel can not contain must-carry data on the selected vertical interval line.
- The modulator's video input or IF feed should not be switched either by a timer or automatically during Examiner testing.

#### ***Equipment to Make the Test Measurements***

To make measurements utilizing the Examiner Encoding System a spectrum analyzer is needed. The Hewlett-Packard 8591C Cable TV Analyzer, with the installation of the Examiner Companion software, works with the system. The Analyzer must be equipped as follows:

- Option 107 installed.
- At least 200,000 bytes of total internal memory.
- HP 85721A Cable TV Measurements & System Monitor Personality installed, licensed Version A.01.04 or A.02.09.
- Serial interface port on rear panel. The serial interface is standard but may have been replaced by another option.
- HP 85702A 128K Byte RAM card (optional for saving and retrieving measurements).

#### ***Computer (PC) to Install Analyzer Software***

The software installation is a two step process. First, the *Examiner Companion* program is installed onto a PC. Then a communication cable (included) is connected between the PC and the analyzer (serial port). The Examiner software (DLP for downloadable program) is then installed onto the analyzer from the Examiner Companion.

#### ***PC Requirements***

- IBM or Compatible PC running Windows 95, 98, or NT 4.0.
- CD-ROM drive.
- RS-232 Serial port designated as COM 1, 2, 3, or 4 (9-pin communication cable supplied with software kit).

#### ***What the Analyzer Software Does***

The Examiner DLP application software creates a custom Examiner softkey menu in the HP Analyzer. It presets the parameters for Examiner measurements thereby requiring the user to press only a few buttons to complete a measurement.

# Proof-of-Performance System

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## *General Information*

### ***General Hardware Description***

The Examiner Encoding System consists of:

1. Rack mounted Processor (one Processor can service up to 12 test channels).
2. Encoder module (one Encoder required per test channel).

The Processor mounts in a standard 19" rack. It is 3 1/2" high and 18" deep. The front panel contains control buttons, indicator lights, and a display screen. The rear panel has two rows of BNC female fittings, one row of RJ-45 connectors, an AC power connector, and a DB-9 interface connector.

The Encoder module is an aluminum box approximately 4 13/16" x 3 13/16" x 1 7/16" high with mounting flanges on the ends. It is equipped with four 75 ohm BNC female fittings, two type "F" female fittings, and one female RJ-45 connector. One Encoder module is required of each test channel.

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**Note:** The Encoder module has "F" and RJ-45 fittings on one side while the BNC fittings are on the top cover. This configuration requires clearance above for the BNCs and mating connectors as well as the "F" connections on the side.

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### ***Accessories*** (Cables for installation steps 3, 4, 5 and 6)

Preassembled cables are available as an option (not included with the Examiner package). Cables are special ordered to customer specified lengths. In general, two lengths of cables are needed.

#### **For Installation Steps 3, 4, and 5.**

- Two (2) video cables, a BNC connector on each end (CS #101166-001).
- One (1) Category 5 type cable, RJ-45 connector on each end (CS #101168-001).
- Two (2) IF jumper cables, a "F" connector on each end (CS #101167-001).

#### **For Installation Step 6.** Only one of the following video cables is needed per installation.

- One (1) video jumper cable, a BNC connector on each end (CS #101170-001).
- One (1) video jumper cable, a BNC connector on one end and a "F" connector on the other end (CS #101169-001).

Be sure to accurately measure from the Examiner Processor location to the Encoder location and from the Encoder location to its modulator before ordering cables. One set of six (6) cables is required per test channel. Cables and part numbers are listed in the *Examiner Supplies and Accessories* chart on page 2-24 of this User's Guide.

Cables can be fabricated as outlined in the section *System Installation*.

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**Note:** Installation cables are options and are not included as standard Examiner items.

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# Proof-of-Performance System

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## *General Information*

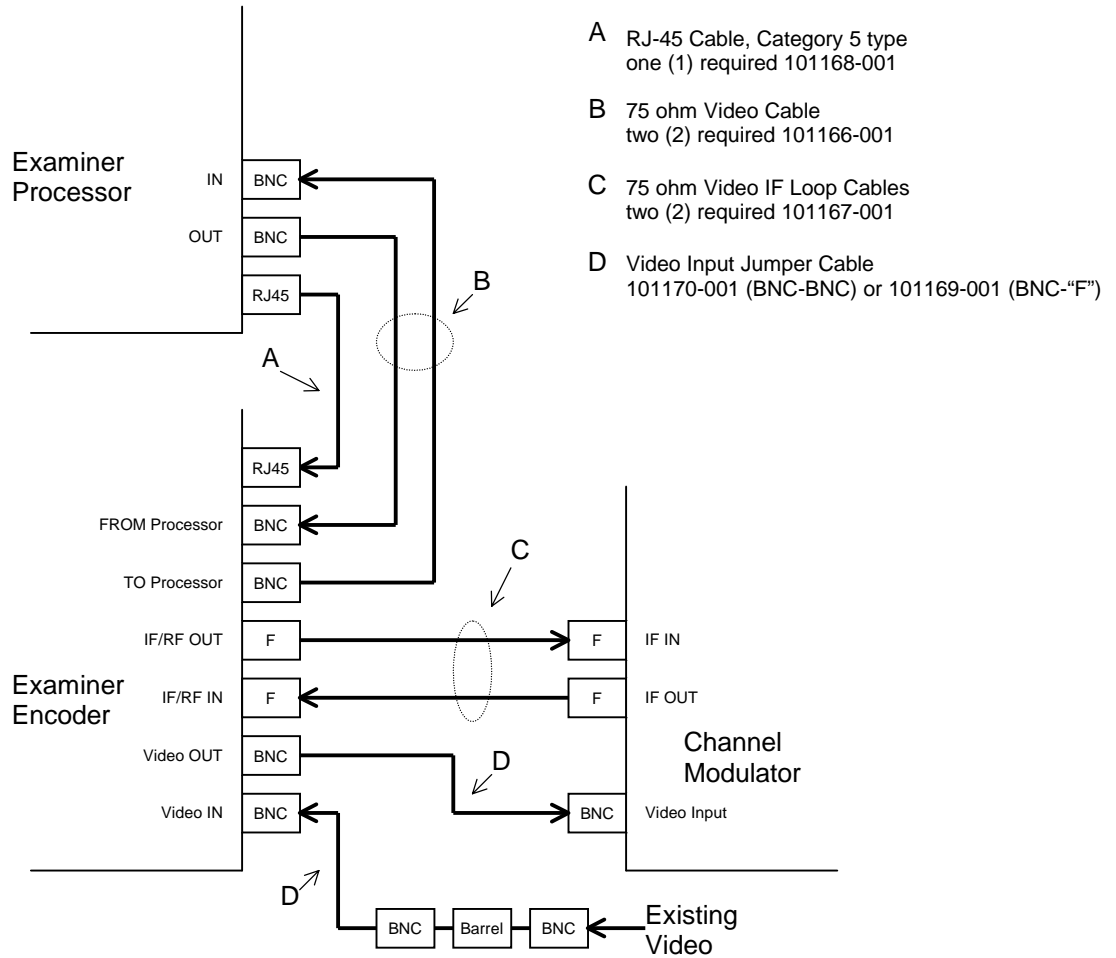
### *System Installation*

1. Install the Processor in a suitable location.
2. For each test channel, install an Encoder module close to its associated modulator. Cable the Encoders to the Processor in order of testing sequence. That is, the Encoder connected to Processor port #1 will be active first and the Encoder on port #2 will be activated next and so forth. Do not skip ports.
3. Fabricate and install two (2) 75 ohm video cables between each Encoder module and the Processor. These cables require a 75 ohm BNC male connector on each end. Connect one cable from *OUT* on the Processor to *FROM Processor* on the Encoder module. Connect the other cable from *TO Processor* on the Encoder module to *IN* on the Processor.
4. Fabricate and install one (1) Category 5, RJ-45 cable between each Encoder module and the Processor. Connect one end to the RJ-45 jack on the Encoder module and the other end to the appropriate jack on the Processor. The RJ-45 connectors must be assembled with the same color coding on each end (straight through).
5. Fabricate and install two (2) IF jumpers between each Encoder module and its associated modulator. These cables require a 75 ohm “F” fitting on each end. Connect one cable from *Video IF Out* on the modulator to *IF/RF IN* on the Encoder module. Connect the other cable from *IF/RF OUT* on the Encoder module to *Video IF In* on the modulator.
6. Fabricate and install one (1) 75 ohm video jumper cable between each Encoder module and its associated modulator. This cable requires a 75 ohm BNC male connector on one end and a connector to match the modulator on the other (usually the same 75 ohm BNC). Remove the existing video input connection from the modulator and connect it to *Video IN* on the Encoder module (adapters may be required). Connect the jumper cable from *Video OUT* on the Encoder module to the modulator’s video input.
7. Connect a power cord to the Processor and press the POWER switch on the rear panel. The display screen shows power up information.
8. With a signal level meter, measure each test channel at the headend test point. Minor adjustments to the video and audio carrier levels may be needed.

# Proof-of-Performance System

## General Information

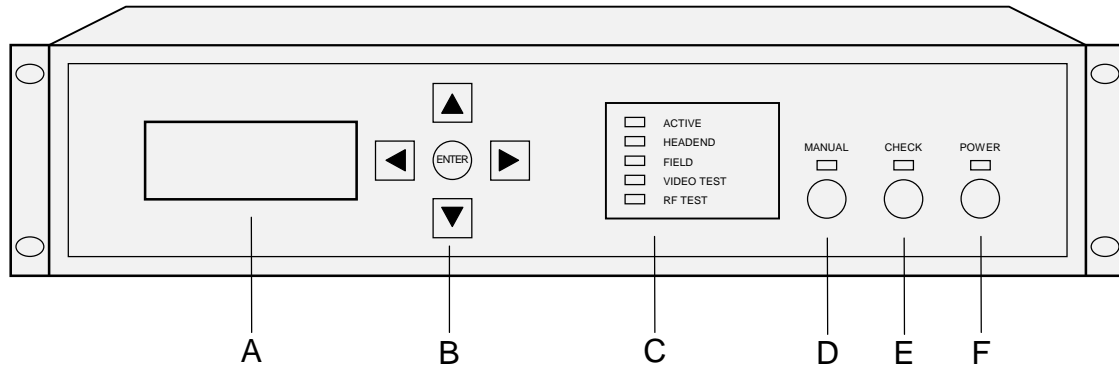
### Typical Installation Diagram (one test channel shown for example)



# Proof-of-Performance System

## General Information

### Processor Front Panel Overview

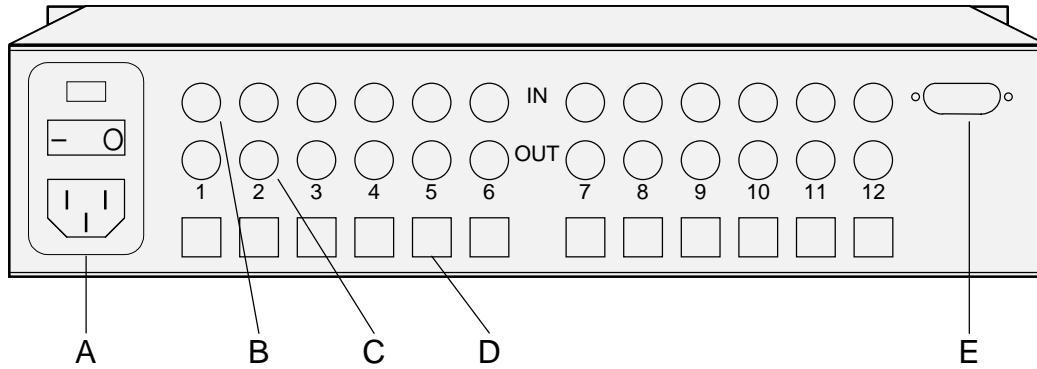


Key	Description
A	20 character by 2 line display screen - shows menu options and test messages.
B	5 push button keypad - controls menu selection.
C	Status indicators - indicates the FIELD or HEADEND mode and the test running.
D	MANUAL test start for field or headend.
E	CHECK test for field mode.
F	POWER soft switch and on indicator.

# Proof-of-Performance System

## General Information

### Processor Rear Panel Overview

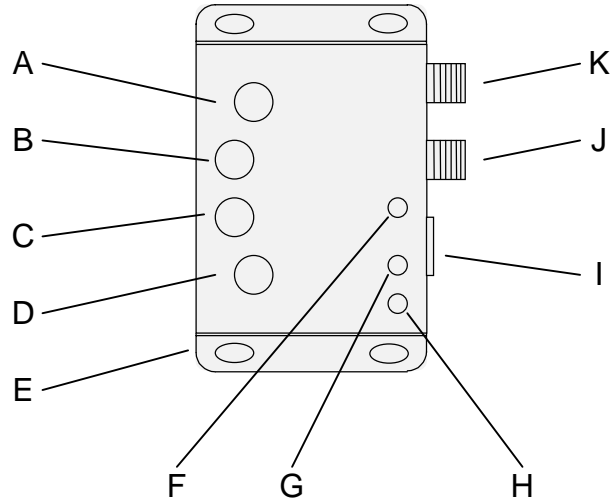


Key	Description
A	AC line in, AC fuse, master power ON/OFF switch.
B	BNC connector for Video input of test channel (from Encoder module).
C	BNC connector for Video output of test channel (to Encoder module).
D	RJ-45 jack for power and control lines to the Encoder module.
E	RS-232 receptacle, DB-9 connector (factory programming).

# Proof-of-Performance System

## General Information

### Encoder Module Overview



Key	Description
A	BNC female connector - TO Processor (to Processor IN).
B	BNC female connector - Video IN (input of existing video source signal).
C	BNC female connector - Video OUT (to test channel modulator).
D	BNC female connector - FROM Processor (from Processor OUT).
E	Mounting flange.
F	GATE active indicator (green).
G	VITS active indicator (yellow).
H	POWER on indicator (red).
I	RJ-45 jack (from Processor).
J	"F" female connector - IF OUT (to Video IF in of test channel modulator).
K	"F" female connector - IF IN (from Video IF out of test channel modulator).

# Proof-of-Performance System

## General Information

### Menu Introduction

The Processor has two modes of testing operation:

1. **Field Test:** This is the default mode. It produces test signals meaningful for measurements made at trunk and distribution locations. Measurements of In-Band Flatness, CNR, CSO, and CTB can be made without system interruption. The Field Test mode can be set to run continuously or on a schedule.
2. **Headend Test:** This test mode is activated through the setup menu, as explained below. It produces test signals meaningful for flatness and color distortion testing in the headend. At the completion of this test, the Processor reverts to the default Field Test mode.

The Processor must be programmed before testing can start. The front panel ENTER and ARROW keys are used to program the Processor.

### Field Test

On initial power up, the FIELD mode is active and the FIELD indicator is on. Press the ENTER button to access the setup menu. The FIELD setup menu consists of the following items:

# of Test Channel	Signal 2 Line	Set Start Time
In-Band Flatness	Signal 1 Field	Set Stop Date
CTB, CSO, C/N	Signal 2 Field	Set Stop Time
Sequence Time	Test Type	Set Date
Signal 1 Line	Set Start Date	Set Time

The menu items are displayed on the screen one item at a time. Press the UP or DOWN button to scroll through the menu items. When a particular item is displayed, press the ENTER button to access the setup for that item. (Menu items are covered in more detail in the following sections.)

### Headend Test

When *Test Type* is displayed, press the ENTER button. Press the DOWN button to display *Headend Test*. Press the ENTER button to activate Headend Test. The FIELD indicator turns off and the HEADEND indicator turns on.

In the HEADEND mode, the setup menu consists of the following items:

# of Test Channel	Signal 2 Line	Signal 2 Field
Signal 1 Line	Signal 1 Field	Test Type

Signal settings for the Headend Test menu are separate from the Field Test menu settings. That is, changing a line or field in the Headend Test menu does not affect the line or field settings in the Field Test menu.

# Proof-of-Performance System

## General Information

### Menu Overview

All items appear in the field menu. Only those items marked with <sup>H</sup> appear in the headend menu.

Press UP/DOWN Buttons to Access Menu Item	Press ENTER Button To Setup	To Navigate Setup Use ARROW Buttons Then Press ENTER
<b># of Test Channels<sup>H</sup></b>	Number of channels to test: 1 to 12	UP/DOWN
<b>In-Band Flatness</b>	Time for test to be on: 5 sec to 255 sec	
<b>CTB, CSO, C/N</b>	Time for test to be on: 5 sec to 255 sec	
<b>Sequence Time</b>	Time before the next testing session begins: 1 min to 255 min	
<b>Signal 1 Line<sup>H</sup></b>	Line number for field or headend test: 10 to 19	
<b>Signal 2 Line<sup>H</sup></b>	Line number for field or headend test: 10 to 19	
<b>Signal 1 Field<sup>H</sup></b>	Line field for field or headend test: even or odd	
<b>Signal 2 Field<sup>H</sup></b>	Line field for field or headend test: even or odd	
<b>Test Type<sup>H</sup></b>	Select test type: Field Test or Headend Test	
<b>Set Start Date</b>	For scheduled field tests:	RIGHT/LEFT to select entry field, then UP/DOWN to select number.
<b>Set Start Time</b>	Date format - 01/01/00	
<b>Set Stop Date</b>	Time format - 14:10:00 (24 hr format)	
<b>Set Stop Time</b>		
<b>Set Date</b>	Set real date in unit	
<b>Set Time</b>	Set real time in unit (24 hr format)	

**Note:** Press UP/DOWN button to select a menu item.  
 Press ENTER button for setup changes.  
 Press arrow keys to make selections.  
 Press ENTER button to save selections and return to the Main Menu.  
 Press UP/DOWN button to select another menu item.

# Proof-of-Performance System

## *General Information*

### ***Menu Setup and Description***

After power up, press the ENTER button to access the Main menu. The first menu item appears on the display screen. Use the UP and DOWN buttons to move through the menu items. Settings apply to all Examiner encoded test channels. All menu items appear in the FIELD menu. Only those items marked with <sup>H</sup> appear in the HEADEND menu.

1. **# of Test Channels<sup>H</sup>**: Sets the number of channels to be tested during field and headend tests. This is normally the number of Encoders connected to the Processor. Testing starts with the test channel on port #1 and stops after completing the specified number.
  - a) Press ENTER.
  - b) Choose the number of test channels (1 to 12) by using the UP / DOWN buttons.
  - c) Press ENTER to set the number of test channels and return to the main menu.

---

**Note:** A test cycle consists of the following steps: Port #1; In-Band Flatness test then CTB, CSO, C/N test. Switches to Port #2; In-Band Flatness test then CTB, CSO, C/N test. Switches to Port #3; In-Band Flatness test then CTB, CSO, C/N test. The test cycle continues for the number of test channels. In Manual or Scheduled Field Test mode, the cycle will automatically restart according to the sequence setting. See below for sequence setting. In the Check Field Test mode, the cycle ends and defaults to the Field mode.

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2. **In-Band Flatness**: Sets the time in seconds for the video flatness test signal to be ON.
  - a) Press ENTER.
  - b) Choose a time (5 sec to 255 sec) by using the UP / DOWN buttons.
  - c) Press ENTER to set the time and return to the main menu.
3. **CTB, CSO, C/N**: Sets the time in seconds for the RF test signal to be ON.
  - a) Press ENTER.
  - b) Choose a time (5 sec to 255 sec) by using the UP / DOWN buttons.
  - c) Press ENTER to set the time and return to the main menu.
4. **Sequence Time**: Sets the time to complete one session of testing and then to begin testing again. Minimum sequence time = (# of test channels times In-Band Flatness ON time) + (# of test channels times CTB, CSO, C/N ON time). The sequence timer starts when a Manual Field or a Scheduled Field Test is initiated.
  - a) Press ENTER.
  - b) Choose a time (1 min to 255 min) by using the UP / DOWN buttons.
  - c) Press ENTER to set the time and return to the main menu.

---

**Example:** The number of test channels is set at seven (7), the In-Band Flatness test is set for two (2) minutes, and the CTB test is set for three (3) minutes. The time to run through the tests for all seven channels is 35 minutes. The sequence time is set for 60 minutes. The Processor waits for 25 minutes and starts the testing cycle again. The sequence setting must be greater than the total test time. A setting of less than the total test time has no effect.

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# Proof-of-Performance System

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## *General Information*

5. **Signal 1 Line<sup>H</sup>**: Sets the line number for signal 1 of the field test or the headend composite video test signal.
    - a) Press ENTER.
    - b) Choose a line (10 to 19) by using the UP / DOWN buttons.
    - c) Press ENTER to set the line number and return to the main menu.
  
  6. **Signal 2 Line<sup>H</sup>**: Sets the line number for signal 2 of the field test or the headend multiburst video test signal.
    - a) Press ENTER.
    - b) Choose a line (10 to 19) by using the UP / DOWN buttons.
    - c) Press ENTER to set the line number and return to the main menu.
  
  7. **Signal 1 Field<sup>H</sup>**: Sets the signal 1 field to odd or even for the field test or headend composite video test signal.
    - a) Press ENTER.
    - b) Choose even or odd by using the UP / DOWN buttons.
    - c) Press ENTER to set the field and return to the main menu.
  
  8. **Signal 2 Field<sup>H</sup>**: Sets the signal 2 field to odd or even for the field test or headend multiburst video test signal.
    - a) Press ENTER.
    - b) Choose even or odd by using the UP / DOWN buttons.
    - c) Press ENTER to set the field and return to the main menu.
- 
- Note:** Signal 1 and Signal 2 select any two allowable line / field combinations, such as, same line with odd and even fields, or different lines with same or different field. Signal settings made when the FIELD light is on do not change headend signal settings. Signal settings made when the HEADEND light is on do not change field signal settings.
- 
9. **Test Type<sup>H</sup>**: Selects between headend setup and/or testing and field setup and/or testing. The SIGNAL setup menu is individual for the test type selected. The test type menu is used when actually running a field or headend test. For example, to run a field test, FIELD TEST must be the selected test mode.
    - a) Press ENTER.
    - b) Choose field test or headend test by using the UP / DOWN buttons.
    - c) Press ENTER to set the test type and return to the main menu for the test type selected.
  
  10. **Set Start Date**: Sets the start date for a scheduled field test.
    - a) Press ENTER.
    - b) Select the month, date, or year field by using the LEFT / RIGHT buttons.
    - c) Once a field is selected, use the UP / DOWN buttons to set the month, date, or year.
    - d) Press ENTER to set the date and return to the main menu.

# Proof-of-Performance System

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## *General Information*

11. **Set Start Time:** Sets the start time for a scheduled field test.
  - a) Press ENTER.
  - b) Select the hours, minutes, or seconds field by using the LEFT / RIGHT buttons.
  - c) Once a field is selected, use the UP / DOWN buttons to set the hours, minutes or seconds.
  - d) Press ENTER to set the start time and return to the main menu.
  
12. **Set Stop Date:** Sets the stop date for a scheduled field test.
  - a) Press ENTER.
  - b) Select the month, date, or year field by using the LEFT / RIGHT buttons.
  - c) Once a field is selected, use the UP / DOWN buttons to set the month, date, or year.
  - d) Press ENTER to set the stop date and return to the main menu.
  
13. **Set Stop Time:** Sets the stop time for a scheduled field test.
  - a) Press ENTER.
  - b) Select the hours, minutes, or seconds field by using the LEFT / RIGHT buttons.
  - c) Once a field is selected, use the UP / DOWN buttons to set the hours, minutes, or seconds.
  - d) Press ENTER to set the stop time and return to the main menu.
  
14. **Set Date:** Sets the Processor real date.
  - a) Press ENTER.
  - b) Select the month, date, or year field by using the LEFT / RIGHT buttons.
  - c) Once a field is selected use the UP / DOWN buttons to set the month, date, or year.
  - d) Press ENTER to set the real date and return to the main menu.
  
15. **Set Time:** Sets the Processor real time.
  - a) Press ENTER.
  - b) Select the hours, minutes, or seconds field by using the LEFT / RIGHT buttons.
  - c) Once a field is selected use the UP / DOWN buttons to set the hours, minutes or seconds.
  - d) Press ENTER to set the real time and return to the main menu.

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**Note:** If the Processor is powered on during the period of a Scheduled Test, the test will be active. The test can be disabled from the Main Menu by doing one of the following:

- Set the Stop Date to a past time, or
  - Set the Start Date to a future time
-

# Proof-of-Performance System

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## *General Information*

### ***Examiner Processor Test Configurations***

There are four (4) test types:

1. **Manual field test** (sequentially cycles through *In-Band Flatness* and *CTB, CSO, C/N* tests for the number of test channels, and then waits the remainder of the *sequence time* before starting another test cycle).

The basic configuration for the Manual Field Test is:

- Number of Test Channels
- In-Band Flatness time
- CTB, CSO, C/N time
- Sequence time
- Signal 1 & Signal 2 lines
- Signal 1 & Signal 2 fields

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**Warning:**

The sequence timer starts at the same time the test session starts. The user programmed sequence time must be set greater than the total of the test times for all channels for one test cycle to allow for a wait period. If this is not done, then each testing cycle will be delayed by an additional five (5) seconds.

Example: After six sequential testing cycles, tests start thirty seconds later than expected.

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**Hint:**

The first test channel's In-Band Flatness test signal starts five (5) seconds after a Manual or Scheduled field test is initiated. This delays the actual start time of all test signals by a constant five (5) seconds. To adjust for the delay, set the test cycle start time to five (5) seconds before the desired test signal start time. Example: Start the test cycle at 8:59:55 instead of 9:00. Only the first test channel (port #1) has the five (5) second delay.

---

2. **Scheduled field test** (similar to manual field test but starts and stops at date / time setup in main menu).
3. **Check field test** (manually steps through *In-Band Flatness* and *CTB, CSO, C/N* tests for the number of test channels).
4. **Headend test** (manually steps through *Video Captures* of FCC Composite and Multiburst signals for color distortion testing, such as differential phase, differential gain, and chrominance-to-luminance delay inequality for the number of test channels).

The configuration for the Headend Test is:

- Number of Test Channels
- Signal 1 & Signal 2 lines
- Signal 1 & Signal 2 fields

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**Note:**

1. Before setting the signal menus for the **Field Tests**, the FIELD indicator must be on. If it is not, use the Test Type setup menu to select type Field Test. Also, when the Processor is powered on the default test mode is Field Test.
  2. Before setting the signal menus for the **Headend Tests**, the HEADEND indicator must be on. If it is not, use the Test Type setup menu to select type Headend Test.
-

# Proof-of-Performance System

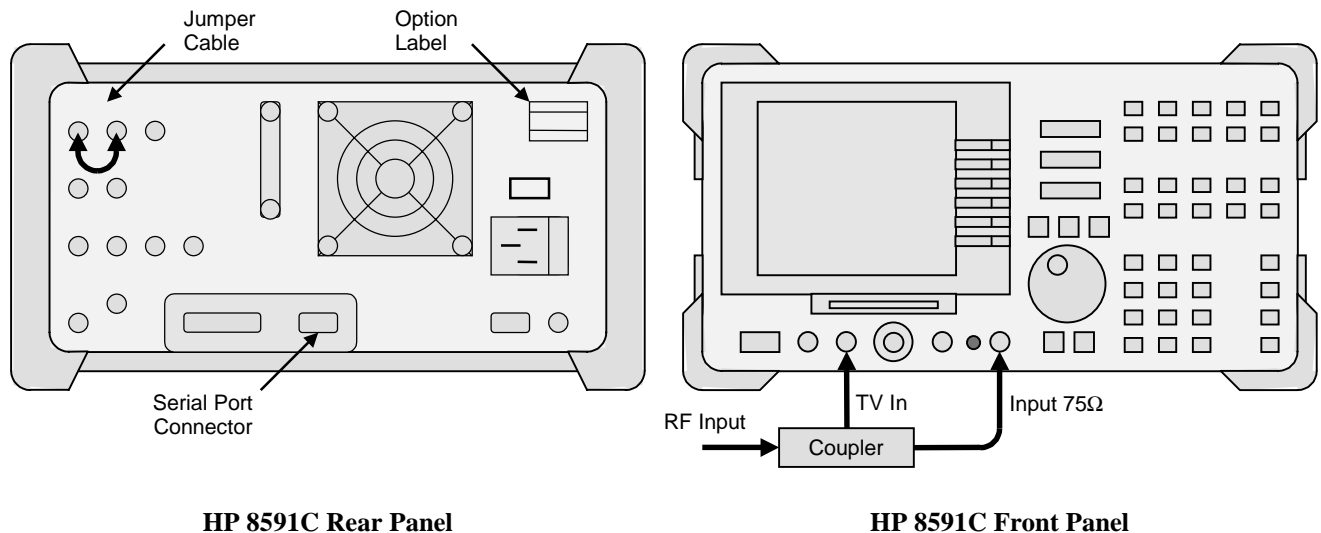
## for HP 8591C Analyzer

### ***HP 8591C Cable TV Analyzer Preparation***

Before the analyzer can be used with the Examiner System, it must be configured as follows:

1. Check the analyzer's installed options and total internal memory. *See procedures on next page.*
2. On the rear of the HP 8591C Analyzer:
  - Check the options label for Option 107.
  - Check for a serial port. This is usually a 9-pin connector.
  - Install a BNC jumper cable between TV TRIGGER OUTPUT (TTL) and GATE TRIGGER INPUT (TTL). Follow the instructions in Section 1 of the HP 85721A User's Guide on connecting the jumper.
3. Install the HP 85721A *Cable TV Measurements & System Monitor Personality*. Follow the instructions in Section 1 of the HP 85721A User's Guide on erasing and loading DLP memory.
4. When making measurements:
  - Connect the input signal, through a coupler, to the Analyzer INPUT and to the TV IN connectors on the front panel of the HP 8591C Analyzer. Follow the instructions in Section 2 of the HP 85721A User's Guide on connecting the input signal for non-interfering measurements.
  - Observe the *total power at the input mixer* recommendations to prevent overloading the mixer. The total power at the analyzer input mixer must be less than +37 dBmV except for CSO and CTB which is +27 dBmV. Follow the instructions in Section 2 of the HP 85721A User's Guide on total power to the input mixer and optimizing the analyzer's noise floor and dynamic range.

**Continue with *Examiner Companion Installation*.**



# Proof-of-Performance System

## *for HP 8591C Analyzer*

### ***Important:***

The HP 8591C Analyzer must have the proper options and the required internal memory installed to be used with the Examiner system.

### ***Check Installed Options***

- Press the **CONFIG** button, located on the front panel in the INSTRUMENT STATE group.
- Press the **More 1 of 3** softkey.
- Press the **SHOW OPTIONS** softkey.

The following options must appear in the list:

102: DEMOD/TV  
105: GATE Rev B  
107: TVTUN  
043: RS232 + Parallel or 023: RS232

### ***Check Installed Memory***

- Press the **RECALL** button, located on the front panel in the INSTRUMENT STATE group.
- Press the **INTERNAL CARD** softkey until INTERNAL is underlined.
- Press the **Catalog Internal** softkey.
- Press the **CATALOG ALL** softkey.

Example of memory display:

INTERNAL :	154886	<b>238070</b>
_BYE		158
_BYESM		73
_EOSCNG		668

The example shows a total internal memory of 238,070 bytes.

The HP 8591C Analyzer must have more than 200,000 bytes of internal memory for installation of the HP 85721A Personality and the Examiner Companion DLP software.

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

### ***Examiner Companion Software Installation for HP 8591C Analyzer***

#### ***Contents of Software Kit***

Examiner Companion Installation Software on CD-ROM. (CD-ROM also includes this User's Guide in .PDF format and a reader installation program.)

Communication Cable (9-pin to 9-pin, special configuration cable).

#### ***Requirements***

PC running under Microsoft Windows 95, 98, or NT 4.0 with CD-ROM drive and available RS-232 serial port, configured as COM 1, COM 2, COM 3, or COM 4.

HP 8591C Cable TV Analyzer with Option 107, Cable TV Measurements & System Monitor Personality 85721A, and a serial port.

#### ***Connect PC to HP 8591C***

If the PC is running, follow normal shutdown procedures before connecting the communication cable.

If the HP 8591C is on, press the LINE button to turn it off.

With the PC off, connect one end of the communication cable to a serial port on the PC. An adapter (not supplied) may be needed.

Connect other end of the communication cable to the SERIAL port on the HP 8591C.

Turn power on for both the PC and the HP 8591C.

After the PC has booted and the desktop is displayed, continue with the software installation.

#### ***Install Examiner Companion Software***

Place the CD-ROM into the drive. The installation program should auto-start, follow instructions to install. If the PC auto-start function is turned off, follow the instructions below to manually install the program.

Manual Install:

Click Start, then click Run. Type D:\PROGRAM\SETUP (If your CD-ROM drive is not D, substitute with your drive letter) or choose Browse and select your drive, then select the PROGRAM folder, then SETUP.EXE. Click OK and follow on-screen instructions. The program is installed by default to C:\ComSonic\Examiner Companion.

#### ***Run Examiner Companion Software***

Click Start, then move the mouse pointer to Programs.

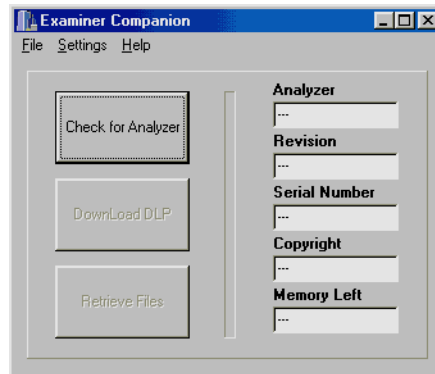
From the Program list, move the mouse pointer to EXAMINER COMPANION.

From Examiner Companion, click on EXAMINER.

# Proof-of-Performance System

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## *for HP 8591C Analyzer*



### ***Install HP 8591C Examiner Software (DLP)***

On the Examiner Companion screen, click **SETTINGS>PORT** and make the appropriate selections for your PC. Click **OK**. Click **CHECK FOR ANALYZER** to establish communications. If the **ANALYZER NOT FOUND** message appears, recheck the cable connections and port settings.

After the analyzer information is displayed, click **DOWNLOAD DLP**. The status line indicates progress.

---

**Note:** The HP 8591C must have the Cable TV Personality installed prior to downloading the Examiner software.

---

### ***Start Examiner Menu in HP 8591C***

Press **PRESET** or **MODE** on the HP 8591C to start the Examiner menu.

#### **What the Examiner Software Does**

The Examiner DLP application software creates a custom Examiner softkey menu in the HP Analyzer. It presets the parameters for Examiner measurements thereby requiring the user to press only a few buttons to complete a measurement.

---

#### **Important:**

The DLP (downloadable program) installed into the HP 8591C by Examiner Companion Version 1.xx measures the CTB, CSO, and C/N tests, by default, on vertical interval line 19. The Examiner Processor can be set to encode on a line between 10 and 19. To make measurements on a line other than 19, the analyzer must be setup for the proper encoded line at the beginning of each field testing session.

Recommended test line settings for the Examiner Processor Field Test are:

- Signal 1 for line 19; odd field
- Signal 2 for line 19; even field

The Signal settings must be on the same line with different fields.

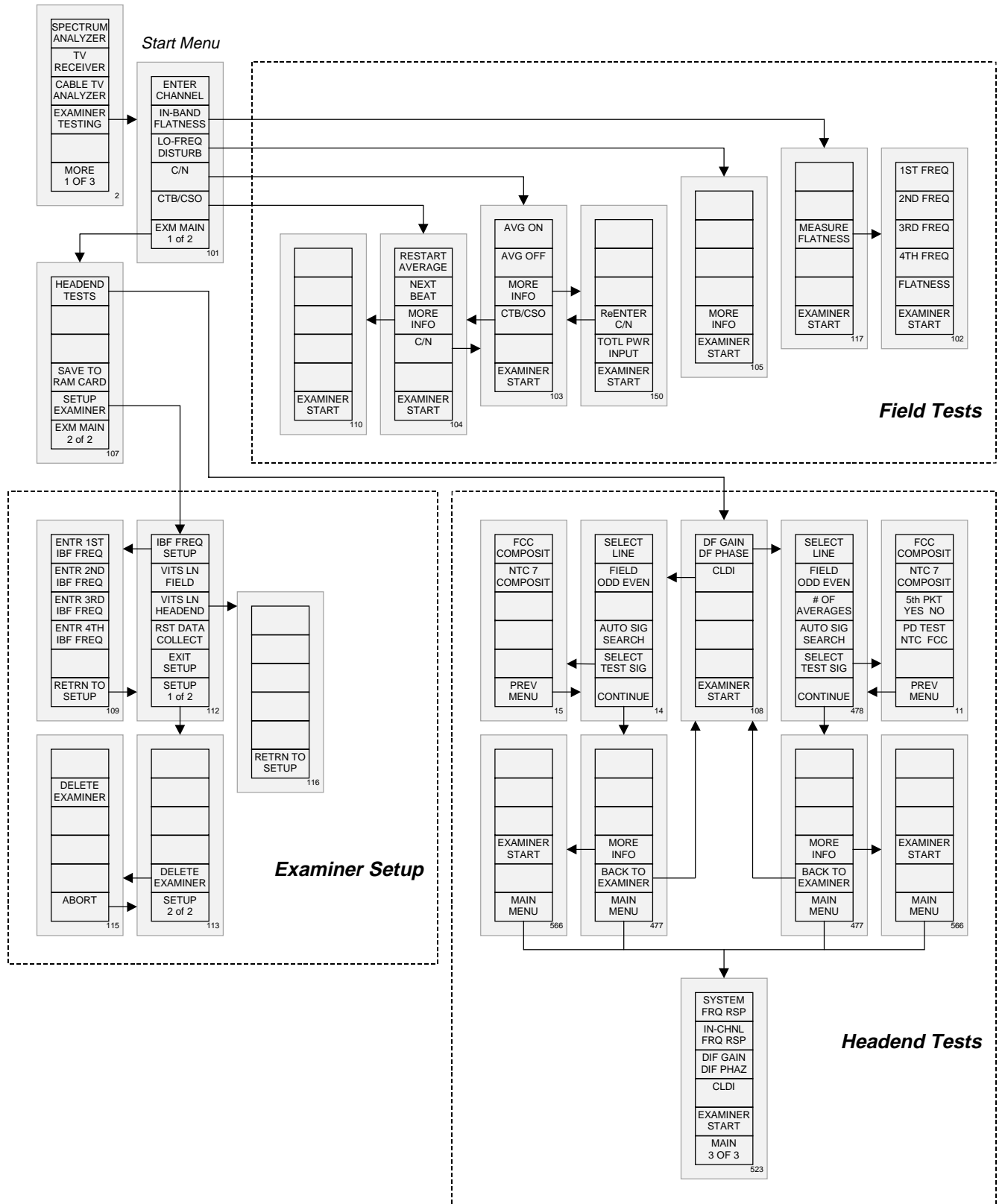
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# Proof-of-Performance System

## for HP 8591C Analyzer

### HP 8591C Examiner Menu Navigator

Preset Menu



# Proof-of-Performance System

## *for HP 8591C Analyzer*

### ***Field Testing Overview***

The EXAMINER TESTING menu on the HP Analyzer is used in conjunction with the Examiner Processor and headend encoder system to perform four sets of measurements per test channel in the field. Measurements are made at timed intervals concurrent with the programming of the Examiner Processor.

The analyzer's menu structure is designed for the field tests to be performed in a specific order, thereby, utilizing the encoded test signals produced by the headend system. Measurement results can be saved to the analyzer's RAM Card or hand-written on a field test data sheet. The testing operation of the analyzer is the same whether the measurements are saved to the card or recorded by hand. Measurements saved to RAM Card are later transferred to a PC using the Examiner Companion program. Where a spreadsheet program is then used to process the measurement data.

### ***Basic Steps of Field Testing***

1. In the Headend:
  - a) Set up Examiner Processor for field testing cycles.
  - b) Start field testing cycle.
2. In the Field:
  - a) Set up analyzer for EXAMINER TESTING.
  - b) Enter test channel to measure.
  - c) During the Examiner Processor IN-BAND FLATNESS on time:
    - i) Measure IN-BAND FLATNESS.
    - ii) Measure LO-FREQ DISTURB.
  - d) During the Examiner Processor CTB, CSO, C/N on time:
    - i) Measure C/N.
    - ii) Measure CTB/CSO.
  - e) Repeat steps 2b through 2d for the remainder of test channels.
  - f) If RAM Card used, save measurements.

### ***Analyzer Timing Requirements for Field Measurements***

When establishing a testing schedule, time must be allowed for the HP Analyzer to perform the measurements. Typical measurement times are listed in the following table:

IN-BAND FLATNESS	20 seconds
LO-FREQ DISTURB	10 seconds
C/N	45 seconds
CTB/CSO	1 minute and 45 seconds

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

### ***Application of Manual Field Test***

The Manual Field Test requires only the basic configuration. To run the test, first make sure the FIELD indicator is on, and then press the MANUAL button. Press the MANUAL button again to stop the test.

Indications that the test has started are:

- MANUAL indicator is on,
- ACTIVE indicator is on, and
- *Test In Progress* is displayed.

After a five (5) second delay, the VIDEO TEST indicator turns on and *In Band Flat #01* is displayed. This is the test channel connected to port #1 on the Processor.

- Setup analyzer for EXAMINER TESTING.
- Enter test channel to measure.
- Measure IN-BAND FLATNESS.
- Measure LO-FREQ DISTURB.

After the user programmed time (entered during setup) has expired for the In-Band Flatness test, the VIDEO TEST indicator turns off, the RF TEST indicator turns on, and *CTB, CSO, C/N #01* is displayed. This test is on for the user programmed time entered during setup.

- Measure C/N.
- Measure CTB/CSO.

The testing cycles to port #2.

- Enter test channel to measure.
- Repeat measurements for test channel.

The testing cycle continues until the Processor has gone through the programmed number of test channels. After completing the number of test channels, the Processor waits until the programmed sequence time has expired then begins another test cycle.

The sequence wait period indications are:

- MANUAL indicator is on,
- ACTIVE indicator is on, and
- *Test In Progress* is displayed.

If a RAM Card is used, save the measurements at the end of the cycle during the wait period. See section *Save Measurements to RAM Card*.

---

#### **Important:**

The DLP (downloadable program) installed into the HP 8591C by Examiner Companion Version 1.xx measures the CTB, CSO, and C/N tests, by default, on vertical interval line 19. The Examiner Processor can be set to encode on a line between 10 and 19. To make measurements on a line other than 19, the analyzer must be set up for the proper encoded line at the beginning of each field testing session.

Recommended test line settings for the Examiner Processor Field Test are:

- Signal 1 for line 19; odd field
- Signal 2 for line 19; even field

The Signal settings must be on the same line with different fields.

---

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

### ***HP 8591C Cable TV Analyzer (in the field)***

In the field, the user must know the test cycle programming of the Examiner Processor.

The test cycle consists of the:

- Number of test channels in the cycle.
- Test channel order (channel on port #1, port #2, and so forth).
- The encoded vertical interval line for analyzer setup.
- On time for In-Band Flatness test.
- On time for CTB, CSO, C/N test.
- Sequence time.
- Time when the current session of testing was started.

Refer to *Processor Menu Setup and Description* and *Test Configurations* under the General Information Section.

### ***Practice First***

It is convenient to set the test on-times, sequence time, and test start time in increments that easily can be remembered. Set the test on-times a little longer at first and practice making measurements at the headend test point, if possible. With practice, the test times can be adjusted to match equipment and user performance. Consider any interruptions that may occur in the field that could cause missed measurements.

Use a chart to help organize the testing cycle and to record measurements. Prepare a chart, such as the example on the following page, before making measurements. Copies can be made from the blank chart located near the back of this User's Guide.

---

**Note:** The following considerations apply equally to all test channels.

- The time set for the In-Band Flatness test to be ON.
  - The time set for the CTB, CSO, C/N test to be ON.
  - The encoded vertical interval line for analyzer setup
  - Note: The sequence timer starts at the same time the test session starts. The sequence time must be set greater than the total of the test times for all channels for one test cycle.
- 

The first practice sessions may be easier if the Check Field Test function is used. This allows the user to manually step through the test cycle. See *Application of Check Field Test* section.

---

**Note:**

The video frequencies measured for the In-Band Flatness Test can be adjusted through the softkey menu. Press the PRESET or the MODE button, then press the EXAMINER TESTING softkey. Press EXM MAIN 1 of 2, SETUP EXAMINER, and then IBF FREQ SETUP. The frequencies can be configured from this menu. When configured, press RETRN TO SETUP and then EXIT SETUP to return to the Examiner Start Menu.

---

# Proof-of-Performance System

## for HP 8591C Analyzer

### Examiner Field Test Data Sheet - Example

Test Start Time 8:59:55

Date \_\_\_\_\_

Sequence Time 60 min

Location \_\_\_\_\_

Examiner Processor Port #	System Channel	System Frequency MHz	Examiner Processor Test	Test On-Time Minutes	Minutes after Start	Test Measurement	
1	4	67.2500	In-band flat	2	0	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
2	16	133.2625	In-band flat	2	05	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
3	10	193.2500	In-band flat	2	10	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
4	25	229.2625	In-band flat	2	15	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
5	30	259.2625	In-band flat	2	20	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
6	36	295.2625	In-band flat	2	25	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
7	45	349.2625	In-band flat	2	30	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
8	60	439.2500	In-band flat	2	35	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
9	70	499.2500	In-band flat	2	40	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
10	84	583.2500	In-band flat	2	45	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
11	100	649.2500	In-band flat	2	50	IBF	LFD
			CTB, CSO	3		C/N	CTB/CSO
12	not used	in this example	In-band flat	-----	-----	IBF -----	LFD -----
			CTB, CSO	-----		C/N -----	CTB/CSO -----

Signal 1

Signal 2

Line 19

Line 19

Total Test Time 55 min

(# of test channels times In-Band Flatness ON time plus # of test channels times CTB, CSO ON time)

Field odd

Field even

Wait Time 5 min

(Sequence Time minus Total Test Time)

# Proof-of-Performance System

## *for HP 8591C Analyzer*

### ***Manual Field Test - Example***

The Manual Field Test example uses the channels and settings from the Example Test Data Sheet on the previous page. Note the following Examiner Processor settings:

- Number of test channels eleven (11).
- Signal 1 line 19 and field odd.
- Signal 2 line 19 and field even.
- Test start time at 9:00 am (08:59:55 to adjust for the five second delay).
- Sequence time of 60 minutes.
- In-Band Flatness test ON time of 2 minutes.
- CTB, CSO, C/N test ON time of 3 minutes.
- Total test time of 55 minutes.
- Wait time of 5 minutes.

### ***Practice Testing and Measurement Session***

1. Connect the 8591C Analyzer to a system test point, press the green PRESET button, and then press softkey EXAMINER TESTING.
2. If using a RAM Card (HP #82215A), insert the card into front panel slot. Make sure it is fully seated. See the sections *Save Measurements to RAM Card* and *Review RAM Card Contents* to determine available numbers for saving the measurements.
3. The test cycle starts when the MANUAL button is pressed on the Examiner Processor at 8:59:55 am. The *Scheduled Field Test* function may be used also. At 9:00, after a five (5) second delay, the Processor encodes the In-Band Flatness test signal onto line 19 (both fields) of Channel 4. Any signals already on these lines are removed and replaced by the test signals.
  - a) On the analyzer, select channel 4 by pressing 4 and then ENTER on the numeric keypad.
  - b) Press IN-BAND FLATNESS. A fast sweeping reference screen is displayed. If the flatness test signal is present, the display is relatively flat. Press MEASURE FLATNESS. Record the measurement on the data sheet, if needed. Press EXAMINER START. The measurement is then saved to the analyzer's internal memory.
  - c) Press LO-FREQ DISTURB for a hum measurement during the time of the In-Band Flatness test. *HUM measurements made during the CTB, CSO, C/N testing are incorrect.* Record the measurement on the data sheet, if needed. Press EXAMINER START. The measurement is then saved to the analyzer's internal memory.
  - d) At 9:02 am, the Examiner Processor switches to the *CTB, CSO, C/N* test signal. Press C/N. Record the measurement on the data sheet, if needed. Press CTB/CSO or EXAMINER START. The measurement is then saved to the analyzer's internal memory.

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

- e) If EXAMINER START was pressed, now press CTB/CSO.
  - f) The CTB/CSO test automatically measures CTB and CSO frequencies and levels. The worst-case CSO measurement (frequency and level) is saved along with the CTB measurement. When the message CTB/CSO TESTING COMPLETE appears, manual measurements may be made. Record measurements on the data sheet, if needed. Press EXAMINER START. The measurements are then saved to the analyzer's internal memory.
4. At 9:05 am, the Examiner Processor moves testing to channel 16.
    - a) The process is repeated, as in the example, until all eleven (11) channels are tested. Testing always starts with the channel connected to port #1 on the Examiner Processor and then moves to the next higher port.
  5. At 9:55 am, the tests are complete for the first cycle. Then the sequence timer puts the Examiner Processor into a wait mode for the next 5 minutes.
    - a) If using a RAM Card, see section *Save Measurements to RAM Card*.
  6. At 10:00 am the testing cycle restarts. The setup used in the example repeats the testing cycle every (1) hour.

### ***Set up Your Practice Test Session***

- Choose a number of test channels.
- Set In-Band Flatness test ON time.
- Set CTB, CSO, C/N test ON time.
- Set a sequence time.
- Set the vertical interval test line.
- Choose the test measurements to make.
- Work up a test data sheet, blank form for copying is near back of this guide.
- Practice making measurements, adjusting the test ON and sequence times for best performance.

The first practice sessions may be easier if the Check Field Test function is used. This allows the user to manually step through the test cycle. See *Application of Check Field Test* section.

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

### ***Application of Scheduled Field Test***

The Scheduled Field Test operates basically the same as the Manual Field Test with the addition of the configured Examiner Processor start and stop times. Date and time parameters to start and stop the test need to be setup. The configuration parameters start and stop the field test automatically.

Prepare for a Scheduled Field Test by setting these Examiner Processor Main Menu items:

- Set Start Date.
- Set Start Time (24 hour format).
- Set Stop Date.
- Set Stop Time (24 hour format).

The Stop Date must follow the Start Date. Setting the dates otherwise cancels any automatic activation of the Field Tests. This reverse technique is used to cancel an active Scheduled Field Test.

---

**Hint:**

The first test channel's In-Band Flatness test signal starts five (5) seconds after a Manual or Scheduled field test is initiated. This delays the actual start time of all test signals by a constant five (5) seconds. To adjust for the delay, set the test cycle start time to five (5) seconds before the desired test signal start time. Example: Start the test cycle at 8:59:55 instead of 9:00. Only the first test channel (port #1) has the five (5) second delay.

---

**Warnings:**

If the Processor is powered on during the period of a Scheduled Test, the test will be active. The test can be disabled from the Main Menu by doing one of the following:

- Set the Stop Date to a past time, or
- Set the Start Date to a future time

If a power failure occurs during a Scheduled Test, the Examiner Processor must be reinitialized to restore the desired testing schedule.

---

Set the schedule parameters as desired. At the scheduled start time, the Examiner Processor automatically starts the testing cycle as described in the *Manual Field Tests* section. It runs the testing cycle continuously, including sequence time, until the scheduled stop time.

Field measurements are made with the analyzer using the same procedures described in the *Manual Field Test* section.

---

**Important:**

The DLP (downloadable program) installed into the HP 8591C by Examiner Companion Version 1.xx measures the CTB, CSO, and C/N tests, by default, on vertical interval line 19. The Examiner Processor can be set to encode on a line between 10 and 19. To make measurements on a line other than 19, the analyzer must be set up for the proper encoded line at the beginning of each field testing session.

Recommended test line settings for the Examiner Processor Field Test are:

- Signal 1 for line 19; odd field
- Signal 2 for line 19; even field

The Signal settings must be on the same line with different fields.

---

# Proof-of-Performance System

## *for HP 8591C Analyzer*

### ***Application of Check Field Test***

The Check Field Test allows the user to manually step the Examiner Processor through the FIELD tests. This test requires only the basic Examiner Processor setup without any timing configurations. That is, timing setups are not used in this function. To run this test, first make sure the FIELD indicator is on, and then press the CHECK button.

Indications that the test has started are:

- CHECK indicator is on, and
- *Test In Progress* is displayed.

After a five (5) second delay, the VIDEO TEST indicator turns on and *In Band Flat #01* is displayed.

- Set up analyzer for EXAMINER TESTING.
- Enter test channel to measure.
- Measure IN-BAND FLATNESS.
- Measure LO-FREQ DISTURB.

Advance to *CTB, CSO, C/N #01* by pressing the CHECK button. The VIDEO TEST indicator turns off and the RF TEST indicator turns on.

- Measure C/N.
- Measure CTB/CSO.

Advance to *In Band Flat #02* by pressing the CHECK button.

- Enter test channel to measure.
- Measure IN-BAND FLATNESS.
- Measure LO-FREQ DISTURB.

Advance to *CTB, CSO, C/N #02* by pressing the CHECK button.

- Measure C/N.
- Measure CTB/CSO.

Repeat the process by pressing the CHECK button until all test channels have been cycled.

If RAM Card is used, save measurements. See section *Save Measurements to RAM Card*.

Use this function when it is desired to run a test on a particular test channel continuously or to manually control the testing. The cycle of testing is the same as the Manual Field Test, advancing to the next step by pressing the CHECK button.

Field measurements can be made with the analyzer using the procedures described in the *Manual Field Test* section with the addition of coordination between the headend and the field.

Practice measurements can be made in the headend by placing the analyzer where the user can reach it and the front panel of the Examiner Processor.

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

### ***Headend Testing Overview***

The EXAMINER TESTING menu on the HP Analyzer is used in conjunction with the Examiner Processor and headend encoder system to perform two sets of headend measurements per test channel. Pressing the MANUAL button on the Examiner Processor sequences to the next test channel.

Measurement results can be saved to the analyzer's RAM Card or hand-written on a headend test data sheet. The testing operation of the analyzer is the same whether the measurements are saved to the card or recorded by hand. Measurements saved to RAM Card are later transferred to a PC using the Examiner Companion program. A spreadsheet program is then used to format the measurements.

### ***Basic Steps of Headend Testing***

1. Set up Examiner Processor for headend testing cycle.
2. Start Headend Test - Video Captures #01
3. Set up analyzer for EXAMINER TESTING.
4. Enter test channel to measure.
  - a) Measure DF GAIN DF PHASE.
    - i) Select Examiner composite test signal.
  - b) Measure CLDI.
    - i) Select Examiner composite test signal.
5. Cycle Examiner Processor to next test channel.
6. Repeat steps 4 and 5 for the remainder of the test channels.
7. If RAM Card used, save measurements.

# Proof-of-Performance System

## *for HP 8591C Analyzer*

### ***Application of Manual Headend Test***

The Examiner Processor Headend mode provides FCC Composite and Multiburst signals for color distortion testing, such as differential phase, differential gain, chrominance-to-luminance delay inequality, and flatness.

The Manual Headend Test is configured by setting the Number of Test Channels, Signal 1 & Signal 2 lines, and Signal 1 & Signal 2 fields.

- Signal 1 is a FCC Composite video test signal.
- Signal 2 is a Multiburst video test signal.

---

**Note:** Before setting any of the signal menus for the Headend Test, make sure the HEADEND indicator is on. If it is not on, use the Test Type setup menu to change it to Headend Test.

In the Examiner Processor's Headend Test menu, Signal 1 and Signal 2 can be set to any allowable line / field combination. By default, the 8591C Analyzer checks line 18 for a qualifying test signal. If a test signal is not found on line 18, the analyzer performs search of the vertical interval for a test signal. The desired test signal may need to be selected by using the analyzer's UP/DOWN arrow buttons.

---

To run the Manual Headend Test, first make sure the HEADEND indicator is on, and then press the MANUAL button.

Indications that the test has started are:

- MANUAL indicator is on,
- ACTIVE indicator is on, and
- *Test In Progress* is displayed.

After a five (5) second delay, the VIDEO TEST indicator turns on and *Video Captures #01* is displayed.

- Set up analyzer for EXAMINER TESTING.
- Enter test channel to measure.
- Measure DF GAIN, DF PHASE, and CLDI.

Press the MANUAL button to advance to the next test channel *Video Captures #02*.

- Enter test channel to measure.
- Measure DF GAIN, DF PHASE, and CLDI.

Repeat the process by pressing the MANUAL button until the test has gone through all test channels. When on the last channel and the MANUAL button is pressed, the Headend Test is turned off and the Processor defaults to the Field Test mode.

If RAM Card is used, save measurements. See section *Save Measurements to RAM Card*.

### ***HP 8591C Cable TV Analyzer (in the headend)***

Use a chart to help organize the testing cycle and to record measurements. Prepare a chart, such as the sample on the next page, before making measurements. Copies of this chart can be made from the blank form located near the back of this User's Guide.

# Proof-of-Performance System

*for HP 8591C Analyzer*

## *Examiner Headend Test Data Sheet – Example*

Date \_\_\_\_\_

Location \_\_\_\_\_

Examiner Processor Port #	System Channel	System Frequency MHz	Diff Gain percent	Diff Phase degrees	CLDI nSec	Other
1	4	67.2500				
2	16	133.2625				
3	10	193.2500				
4	25	229.2625				
5	30	259.2625				
6	36	295.2625				
7	45	349.2625				
8	60	439.2500				
9	70	499.2500				
10	84	583.2500				
11	100	649.2500				
12	116	745.2500				

**Signal 1** Line 18  
Field odd

**Signal 2** Line 18  
Field even

# Proof-of-Performance System

## *for HP 8591C Analyzer*

---

### ***Manual Headend Test - Example***

The Manual Headend Test example uses the channels and settings from the Example Test Data Sheet on the previous page. Note the following Examiner Processor settings:

- Number of test channels twelve (12).
- Signal 1 line 18 and field odd (Composite signal).
- Signal 2 line 18 and field even (Multiburst signal) - not currently utilized in Examiner testing.

### ***Practice Testing and Measurement Session***

1. On the Examiner Processor, set the Test Type to Headend Test. Make sure the HEADEND indicator is on.
2. Press the MANUAL button. After a five (5) second delay, the VIDEO TEST indicator turns on and *Video Captures #01* is displayed. The Processor encodes a FCC Composite test signal onto line 18 (odd field) and a Multiburst test signal onto line 18 (even field) of Channel 4. Any signals already on these lines are removed and replaced by the test signals.
3. Connect the 8591C Analyzer to a system test point, press the PRESET or the MODE button, and then press softkey EXAMINER TESTING.
4. If using a RAM Card (HP #82215A), insert the card into front panel slot. Make sure it is fully seated. See the sections *Save Measurements to RAM Card* and *Review RAM Card Contents* to determine available numbers for saving the measurements.
5. Select channel 4 by pressing 4 and then ENTER on the numeric keypad.
  - a) Press EXM MAIN 1 of 2, then HEADEND TESTS.
  - b) Press DF GAIN / DF PHASE. The analyzer searches for a qualifying test signal. It may find a non-Examiner test signal. If this is the case, use the STEP UP/DOWN buttons or the numeric keypad to set the proper line number for Signal 1 of the Examiner Processor for the Headend test type. You may need to press FIELD ODD EVEN to view the Examiner Processor's composite test signal. When the Examiner Processor's composite test signal is displayed, press CONTINUE.
  - c) The analyzer performs a series of averaging measurements before displaying the final Differential Gain and Differential Phase measurements. Record the measurements on the data sheet, if needed. Press BACK TO EXAMINER. The measurements are then saved to the analyzer's internal memory.

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

- d) Press CLDI. The analyzer again searches for a qualifying composite test signal. It may find a non-Examiner test signal. If this is the case, use the STEP UP/DOWN buttons or the numeric keypad to set the proper line number for Signal 1 of the Examiner Processor for the Headend test type. You may need to press FIELD ODD EVEN to view the Examiner Processor's composite test signal. When the Examiner Processor's composite test signal is displayed, press CONTINUE.
  - e) The analyzer performs a series of luminance and chrominance measurements before displaying the Chroma-Luma Delay measurement. Record the measurement on the data sheet, if needed. Press BACK TO EXAMINER. The measurement is saved to the analyzer's internal memory.
6. Press EXAMINER START.
  7. On the Examiner Processor, press the MANUAL button to advance to the next test channel *Video Captures #02*.
  8. On the analyzer, select channel 16 by pressing 1, 6 and then ENTER on the numeric keypad.
    - a) Repeat the process, as in the example, until all twelve (12) channels are tested. Testing always starts with the channel connected to port #1 on the Examiner Processor and then moves to the next higher port.
    - b) When on the last channel and the MANUAL button is pressed, the Headend Test is turned off and the Examiner Processor defaults to the Field Test mode.
  9. If using a RAM Card, see section *Save Measurements to RAM Card*.

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

### ***Save Measurements to RAM Card***

1. When all channels have been tested, press EXM MAIN 1 of 2.
2. Press SAVE TO RAM CARD.
3. Follow on-screen instructions and from the numeric keypad enter a number to identify this testing session.
4. Press the ENTER button to exit this screen. (A number between 1 and 40 must be entered in order to exit this screen.)
  - a) Note the warning that if a number has already been used, reusing that number will over-write the previous measurements with the new measurements. The previous information will be lost from the card.

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**Note:** A maximum of 40 test sessions can be saved to a RAM Card.

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### ***Review RAM Card Contents***

1. Press the RECALL button.
2. Press INTERNAL CARD so that CARD is underlined.
3. Press CATALOG CARD.
4. Press CATALOG ALL.
  - a) Examiner Tests are labeled beginning as tField\_xx for field tests and tHeadend\_xx for headend tests.
  - b) All files on the RAM Card are listed. Files can be deleted by first selecting that file and then pressing DELETE FILE.
5. Press the PRESET or MODE button to return to the main menu.

# Proof-of-Performance System

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## *for HP 8591C Analyzer*

### ***Transfer Saved Measurements from RAM Card to PC***

1. If the PC is running, follow normal shutdown procedures before connecting the communication cable.
2. If the HP 8591C is on, press the LINE button to turn it off.
3. With the PC off, connect one end of the communication cable (HP 24542U) to a serial port on the PC. An adapter (not supplied) may be needed.
4. Connect the other end of the communication cable to the SERIAL port on the HP 8591C. An adapter (not supplied) may be needed.
5. Turn power on for both the PC and the HP 8591C.
6. Insert the RAM Card into the analyzer's front panel slot. Insure the RAM Card is fully seated.
7. Open the Examiner Companion program.
  - a) START>PROGRAMS>EXAMINER COMPANION>EXAMINER.
8. On the EXAMINER COMPANION window, click on SETTINGS>PORT.
  - a) Make the appropriate selections for your PC.
  - b) Click OK.
9. Click on CHECK FOR ANALYZER.
  - a) If successful, the button label changes to ANALYZER VERIFIED with your analyzer's information displayed.
  - b) If the ANALYZER NOT FOUND message appears, recheck the cable connections and port settings.
10. Click on RETRIEVE FILES.
  - a) The button label changes to READING RAM CARD.
  - b) All Examiner files on the RAM Card are written to the Examiner Companion folder.
  - c) If a file on the RAM Card has been previously retrieved to the folder, an OVERWRITE FILE? window appears.
    - i) Click YES to overwrite the existing file or NO to not overwrite the existing file.
  - d) The button label changes to FILES RETRIEVED when complete.
11. Close the Examiner Companion window.

# Proof-of-Performance System

## *for HP 8591C Analyzer*

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### ***Load Examiner Files to Spreadsheet Program***

1. Open your spreadsheet program.
2. Click on FILE>OPEN.
3. Select the COMSONICS folder.
4. Select the EXAMINER COMPANION folder.
5. Select DISPLAY ALL FILES (\*.\*)).

Field test files are named **tField\_xx MM-DD-YY t s**

where:

<b>xx</b>	the number of the saved file
<b>MM-DD-YY</b>	the date of the saved file
<b>t</b>	the time of the saved file
<b>s</b>	the last four digits of the analyzer's serial number

Headend test files are named **tHdEnd\_xx MM-DD-YY t s**

where:

<b>xx</b>	the number of the saved file
<b>MM-DD-YY</b>	the date of the saved file
<b>t</b>	the time of the saved file
<b>s</b>	the last four digits of the analyzer's serial number

6. Click on the file to open.
7. Click OPEN.
8. Follow the steps of your spreadsheet program to import the file.
  - a) The files are tab delimited.
9. Format the information as needed.
10. Print the information as desired.
11. Save the file in your spreadsheet program's standard format.

# Proof-of-Performance System

## for HP 8591C Analyzer

### Sample Field Test Report

#### Examiner Companion Test Results

File Name = tField\_5  
Date = 12/9/99  
Time = 14:04  
VITS Line = 19  
Field = Both

Test	Channel	In-Band		CTB		CSO		Lo-Freq Dist	DF Gain	DF Phase	CLDI
		Flat	C/N	CTB Offset	CSO Offset						
1	4	0.5	45.4	49.6	0.03	64.8	1.29	1.6	0	0	0
2	16	0.2	45.1	49.6	0.01	67.1	1.29	2.6	0	0	0
3	10	0.1	45.5	49.1	0.02	69.3	-1.29	2.2	0	0	0
4	25	0.4	45.1	48.8	0.02	65.9	0.75	2.6	0	0	0
5	30	0.6	45.3	49.8	0.01	67.9	1.21	2.7	0	0	0

### Sample Headend Test Report

#### Examiner Companion Test Results

File Name = tHdEnd\_17  
Date = 12/10/99  
Time = 10:50  
VITS Line = 18  
Field = Odd

Test	Channel	In-Band		CTB		CSO		Lo-Freq Dist	DF Gain	DF Phase	CLDI
		Flat	C/N	CTB Offset	CSO Offset						
1	4	0	0	0	0	0	0	0	3.1	1.3	37
2	16	0	0	0	0	0	0	0	1.5	2	39
3	10	0	0	0	0	0	0	0	2.3	2.5	32

# Proof-of-Performance System

## *for HP 8591C Analyzer*

### *Examiner Field Test Data Sheet*

Test Start Time \_\_\_\_\_

Date \_\_\_\_\_

Sequence Time \_\_\_\_\_

Location \_\_\_\_\_

Examiner Processor Port #	System Channel	System Frequency MHz	Examiner Processor Test	Test On-Time Minutes	Minutes after Start	Test Measurement	
1			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
2			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
3			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
4			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
5			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
6			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
7			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
8			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
9			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
10			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
11			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO
12			In-band flat			IBF	LFD
			CTB, CSO			C/N	CTB/CSO

**Signal 1**

**Signal 2**

Line \_\_\_\_\_

Line \_\_\_\_\_

**Total Test Time** \_\_\_\_\_

(# of test channels times In-Band Flatness ON time plus # of test channels times CTB, CSO ON time)

Field \_\_\_\_\_

Field \_\_\_\_\_

**Wait Time** \_\_\_\_\_

(Sequence Time minus Total Test Time)

**Important:** Both Signals must be set the same line number. One with ODD field and the other with EVEN field.

# Proof-of-Performance System

*for HP 8591C Analyzer*

## *Examiner Headend Test Data Sheet*

Date \_\_\_\_\_

Location \_\_\_\_\_

Examiner Processor Port #	System Channel	System Frequency MHz	Diff Gain percent	Diff Phase degrees	CLDI nSec	Other
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

**Signal 1** Line \_\_\_\_\_ **Signal 2** Line \_\_\_\_\_  
Field \_\_\_\_\_ Field \_\_\_\_\_

# Proof-of-Performance System

## *for HP 8591C Analyzer*

### ***Examiner Supplies and Accessories***

<b>Supply / Accessory</b>	<b>Reorder Number</b> Quantity One
Examiner Processor	101129-001
Examiner Encoder	101121-001
Examiner Companion, Software Kit for HP 8591C Analyzer, includes Installation CD-ROM and communications cable	101171-001
Examiner User's Guide	101158-001
<b>Installation Cables</b> - Specify length when ordering	
Cable - Examiner Processor to Encoder video cable, BNC connector on each end, two (2) required.	101166-001
Cable - Examiner Processor to Encoder control cable, Category 5 type cable, RJ-45 connector on each end, one (1) required.	101168-001
Cable - Encoder to Modulator IF jumper cable, "F" connector on each end, two (2) required.	101167-001
<i>Only one (1) of the following cables is required per Encoder installation.</i>	
Cable - Encoder to Modulator video jumper cable, a BNC connector on each end. <i>For modulators with a BNC connector for video input.</i>	101170-001
Cable - Encoder to Modulator video jumper cable, a BNC connector on one end and a "F" connector on the other end. <i>For modulators with a "F" connector for video input.</i>	101169-001

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**Note:** A total of six (6) cables are needed for each Examiner Processor / Encoder test channel installation.

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