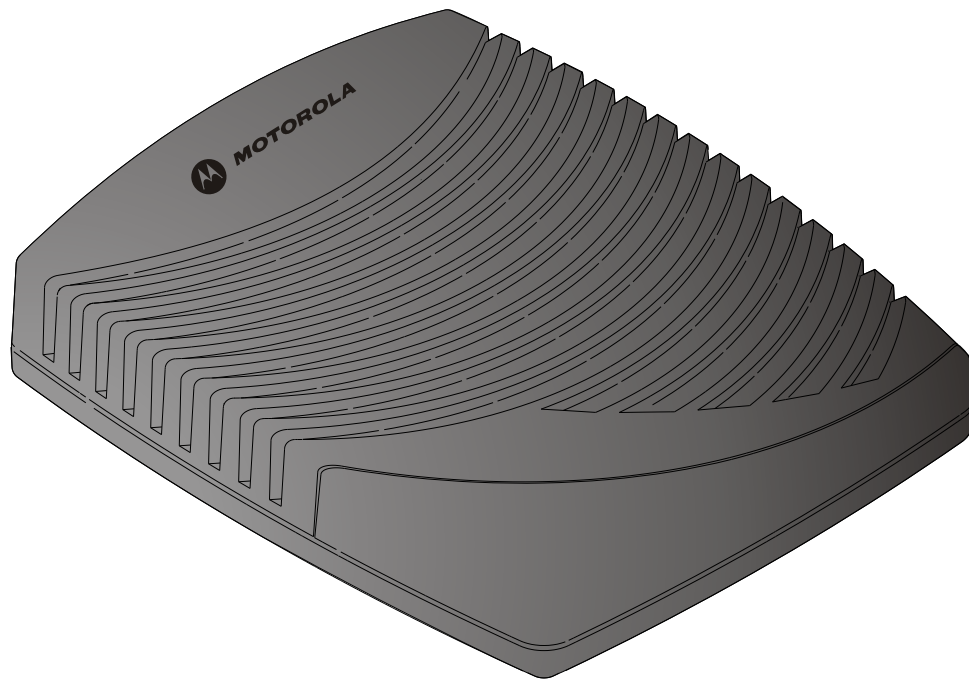
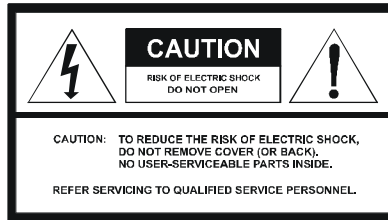




# *Installation Manual*

*DCT700*  
*Digital Consumer Terminal*





Graphical symbols and supplement warning marking locations on the bottom of the appliance.

	This symbol indicates that dangerous voltage levels are present within the equipment. These voltages are not insulated and may be of sufficient strength to cause serious bodily injury when touched. The symbol may also appear on schematics.
	This symbol calls attention to a critical procedure, or means refer to the instruction manual for opening or service information. Only qualified service personnel are to install or service the equipment. The symbol may also appear in text and on schematics.

**WARNING:**

**TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

**CAUTION:**

**TO PREVENT ELECTRICAL SHOCK, DO NOT USE THIS PLUG WITH AN EXTENSION CORD, RECEPTACLE, OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.**

**FCC Compliance:** Federal Communications Commission Radio and Television Interface Statement for a Class 'B' Device

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in the residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiver antenna
- Increase the separation between the equipment and the affected receiver
- Connect the equipment into an outlet or on a circuit different from that to which the receiver is connected
- Consult the dealer or experienced radio/TV technician for help
- Ensure that the cover plate for the security card is secured and tight

Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Declaration of Conformity:** According to 47 CFR, Parts 2 and 15 for Class B Personal Computers and Peripherals; and/or CPU Boards and Power Supplies used with Class B Personal Computers, Motorola, Inc., 6450 Sequence Drive, San Diego, CA 92121, 1-800-225-9446, declares under sole responsibility that the product identifies with 47 CFR Part 2 and 15 of the FCC Rules as a Class B digital device. Each product marketed is identical to the representative unit tested and founded to be compliant with the standards. Records maintained continue to reflect the equipment being produced can be expected to be within the variation accepted, due to quantity production and testing on a statistical basis as required by 47 CFR 2.909. Operation is subject to the following condition: This device must accept any interference received, including interference that may cause undesired operation. The above named party is responsible for ensuring that the equipment complies with the standards of 47 CFR, Paragraphs 15.107 to 15.109

**Repairs:** If repair is necessary, call the Motorola Repair Facility at 1-800-227-0450 for a Return for Service Authorization (RSA) number before sending the unit. The RSA number must be prominently displayed on all equipment cartons. Pack the unit securely; enclose a note describing the exact problem, and a copy of the invoice that verifies the warranty status. Ship the unit PRE-PAID to the following address:

Motorola, Inc.  
Attn: RSA # \_\_\_\_\_  
c/o Rudolph Miles and Sons  
2500 Courage Boulevard  
Brownsville, TX 78521

**NOTE TO CATV SYSTEM INSTALLER:** This reminder is provided to call CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close as possible to the point of cable entry as practical.

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## Section 1 Introduction

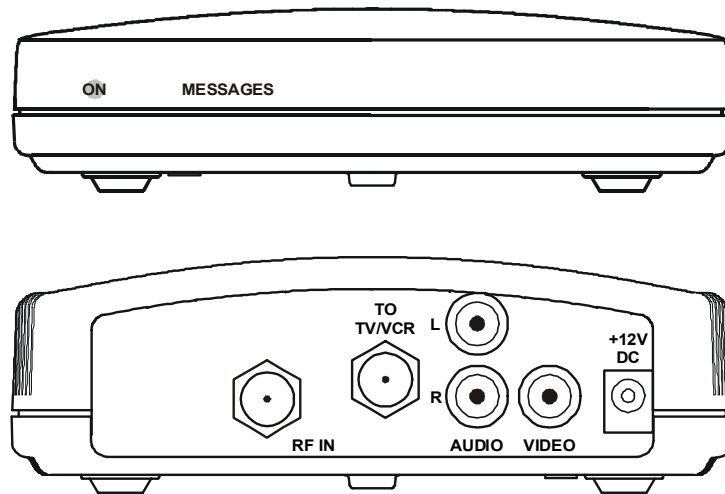
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The Motorola DCT700 is an interactive digital consumer terminal that enables cable operators to cost-effectively deploy an all-digital network. The DCT700:

- Supports services such as an electronic program guide (EPG), impulse pay-per view (IPPV), and video on demand (VOD)
- Is compatible with existing Motorola analog and digital set-top products
- Is compatible with MediaCipher conditional access technology
- Provides a real-time return path

*The DCT700 requires a remote control to operate (remote control sold separately).*

Figure 1-1  
DCT700 set-top front and rear views



## Standard Features

- MPEG-2 digital video processor
- ATSC standard Dolby® Digital (AC-3) audio processor
- ITU standard 64/256 QAM FEC enhanced adaptive equalizer
- On-board real-time RF return (256 Kbps)
- Bitmapped graphics display (4/8-bit)
- 88.75 to 858 MHz tuner
- DES based encryption/DCII access control
- Digital diagnostics
- Frequency agile 2.048 Mbps out-of-band data receiver
- Macrovision copy protection
- IR support for remote control

## Standard Interfaces

- RF remod output (ch. 3, 4)
- Baseband video and audio Outputs

## Using This Manual

This manual provides instructions to install and configure a DCT700:

- |                                   |   |
|-----------------------------------|---|
| <b>Section 1</b>                  | <b>Introduction</b> provides a product description, a list of related documentation, the technical helpline telephone number, and the repair/return procedure.                      |
| <b>Section 2</b>                  | <b>Overview</b> describes the DCT700 and provides an overview of its use. This section also identifies the front-panel displays and switches and describes the rear-panel features. |
| <b>Section 3</b>                  | <b>Installation</b> provides instructions on how to install the DCT700 in a subscriber location and perform operational tests.  |
| <b>Section 4</b>                  | <b>Troubleshooting</b> provides guidelines for troubleshooting the equipment.   |
| <b>Appendix A</b>                 | <b>Specifications</b> provide the technical specifications for the DCT700.  |
| <b>Appendix B</b>                 | <b>Diagnostics</b> provide instructions on accessing and interpreting the built-in diagnostics.   |
| <b>Abbreviations and Acronyms</b> | The <b>Abbreviations and Acronyms</b> list contains the full spelling of the short forms used in this manual.   |

## Related Documentation

Although the *DCT700 User Guide* may be useful, it is not necessary to install or operate the DCT700 if you have this manual.



## Document Conventions

Before you begin working with this manual and using the DCT700, familiarize yourself with the stylistic conventions used in this manual:

<b>SMALL CAPS</b>	Denotes silk screening on the equipment, typically representing front- and rear-panel controls, input/output (I/O) connections, and LEDs
<b>* (asterisk)</b>	Indicates that several versions of the same model number exist and the information applies to all models; when the information applies to a specific model, the complete model number is given
<b><i>Italic type</i></b>	Used for emphasis
<b>Courier font</b>	Displayed text

## If You Need Help

If you need assistance while working with the DCT700, contact the Motorola Technical Response Center (TRC):

- Inside the U.S.: **1-888-944-HELP (1-888-944-4357)**
- Outside the U.S.: **215-323-0044**
- Online: <http://broadband.motorola.com/noflash/websupport.html>.

The TRC is open from 8:00 AM to 7:00 PM Eastern Time, Monday through Friday and 10:00 AM to 5:00 PM Eastern Time, Saturday. When the TRC is closed, emergency service *only* is available on a call-back basis. Web Support offers a searchable solutions database, technical documentation, and low priority issue creation/tracking 24 hours per day, 7 days per week.

## Calling for Repairs

If repair is necessary, call the Motorola Repair Facility at **1-800-227-0450** for a Return for Service Authorization (RSA) number before sending the unit. The RSA number must be prominently displayed on all equipment cartons. The Repair Facility is open from 8:00 AM to 5:00 PM Central Time, Monday through Friday.

When calling from outside the United States, use the appropriate international access code and then call **956-541-0600** to contact the Repair Facility.

When shipping equipment for repair, follow these steps:

- 1** Pack the unit securely.
- 2** Enclose a note describing the exact problem. Complete and enclose the checklist provided with the unit.
- 3** Enclose a copy of the invoice that verifies the warranty status.

Ship the unit **PREPAID** to the following address:

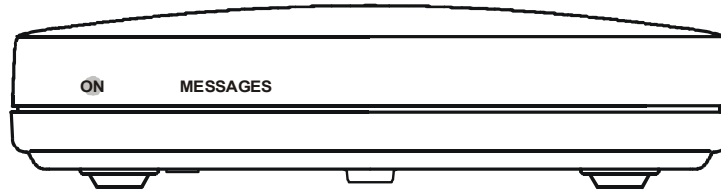
Motorola, Inc.  
Broadband Communications Sector  
Attn: RSA # \_\_\_\_\_  
c/o Rudolph Miles and Sons  
2500 Courage Boulevard  
Brownsville, TX 78521

## Section 2 Overview

---

This section describes the DCT700's displays and connectors. Before you begin to install the DCT700, familiarize yourself with these displays and connectors.

Figure 2-1  
Front panel



The DCT700 front panel has two LEDs:

- ON** Indicates that the unit is on
- MESSAGES** Indicates that a message is present

Figure 2-2  
Rear panel

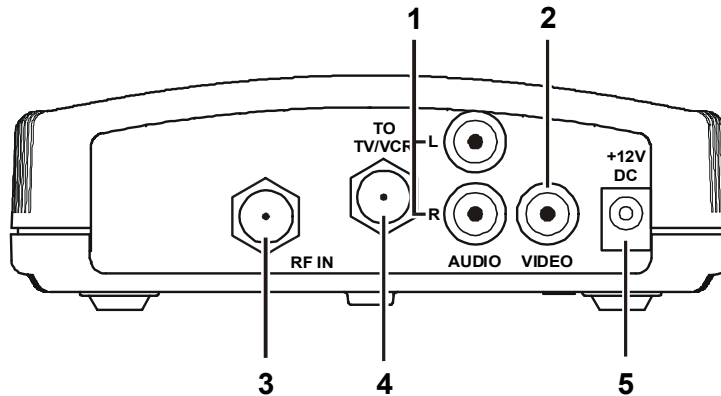


Table 2-1  
Rear panel features

Key	Function
1	Left and right audio RCA jacks used for stereo audio output.
2	RCA jack used to connect the DCT700 to a composite (baseband) video TV or a monitor; in some configurations this jack connects to a VCR.
3	F-type connector used for DCT700 input from the TO RF IN connector.
4	F-type connector used to connect the DCT700 to a standard TV or VCR.
5	DC power connection.

*For instructions on connecting the DCT700, see Section 3, "Installation."*

*A remote control is required to operate the DCT700. We recommend the Motorola DRC450. See "Remote Control" in this section for information.*

## Remote Control

A remote control is required to operate the DCT700. We recommend the Motorola DRC450 Universal Remote Control:

Figure 2-3  
Motorola DRC450 Universal Remote Control

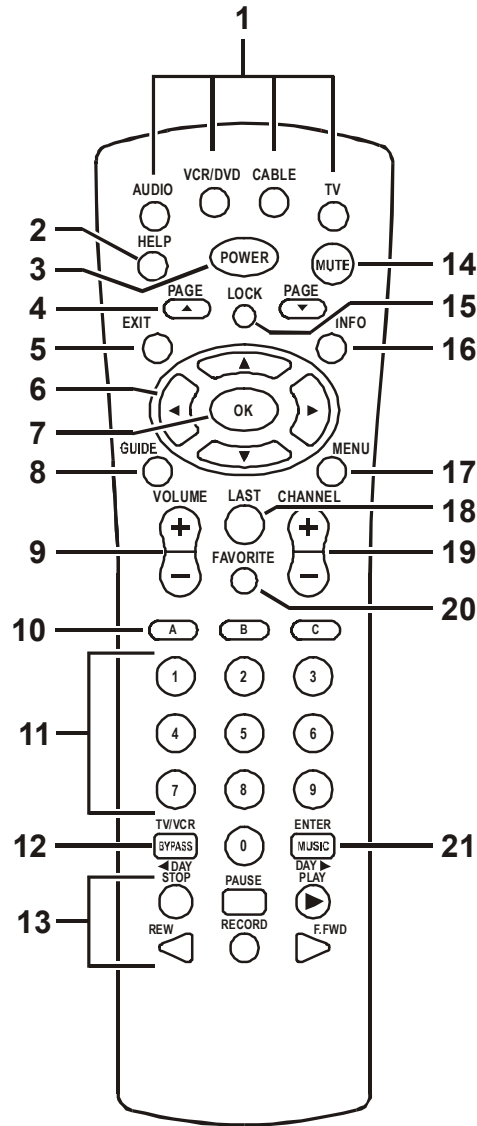



Table 2-2  
DRC450 remote control keys

Key	Item	Description
1	<b>AUDIO, VCR/DVD, CABLE, or TV</b>	Selects a device to control. The selected mode will remain active until you press another device key.
2	<b>HELP</b>	Displays the help screen.
3	<b>POWER</b>	Turns the currently selected home entertainment component on or off.
4	<b>PAGE ▲ or PAGE ▼</b>	Pages through menu screens and the program guide.
5	<b>EXIT</b>	Exits a menu or program guide.
6		Moves the cursor around the program guide and menu screens.
7	<b>OK</b>	Selects menu options, Pay-Per-View events or tune programs from the program guide.
8	<b>GUIDE</b>	Displays the program guide.
9	<b>VOLUME + or VOLUME -</b>	Increases or decreases the volume of the VCR, TV, or audio device. The device must be selected before you can increase or decrease the volume.
10	<b>A, B, or C</b>	Functionality is determined from services offered by the service provider.
11	<b>NUMBER KEYS</b>	Directly selects a channel.
12	<b>TV/VCR BYPASS</b>	When in VCR mode, toggles between television and VCR. Bypass is not available.
13	<b>◀ Day Day ▶</b>	Moves the program guide ahead or back 24 hours.
	<b>STOP, PAUSE, PLAY, REW, RECORD, F.FWD</b>	Controls the VCR.
14	<b>MUTE</b>	Toggles the sound on and off.
15	<b>LOCK</b>	Limits viewing of selected programs; and is used to view the Pay-Per-View menu.
16	<b>INFO</b>	Displays the current channel and program information (not supported by all applications).
17	<b>MENU</b>	Displays the main menu.
18	<b>LAST</b>	Recalls the last channel or goes back one screen in the menu.
19	<b>CHANNEL + or -</b>	Changes the channels by moving up or down.
20	<b>FAVORITE</b>	Displays preset favorite cable channels.
21	<b>ENTER/MUSIC</b>	Displays digital music channel menus. On some TV models, press to enter channels.

## Installing Batteries in the Remote Control

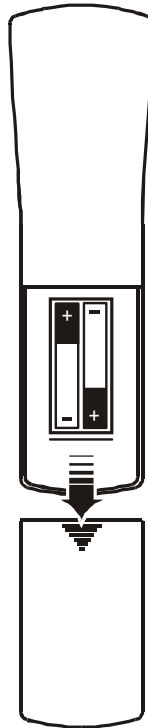
Before using the remote control, you must install two AA (1.5 V) alkaline batteries. Figure 2-4 illustrates battery access on the back of the remote control.

To install batteries in a DRC450:

- 1 Press and slide the battery compartment cover off.
- 2 Place the batteries in the compartment; be careful to observe the correct polarity.
- 3 Slide the battery compartment cover back into place.

*Battery installation will vary with each style of remote control. Refer to the instructions included with your remote control for installing batteries.*

**Figure 2-4**  
Back view of DRC450 remote control



### NOTE!



Use and dispose of batteries in accordance with all applicable laws, rules and regulations. Motorola will not be liable to anyone for the user's failure to use and/or dispose of batteries in the proper manner and in accordance with such laws, rules and regulations, or for any defect contained in batteries that may cause injury damage to persons or property.

## Section 3

# Installation

---

This section provides instructions for installing and cabling the DCT700. To complete the installation, you must:

- Connect the cables
- Supply power to equipment
- Download configuration information and software
- Run operational check and diagnostics

This section also includes the procedure for performing a cold initialization of the DCT700.

## Before You Begin

Before you begin, review the installation instructions, gather the required items, and complete the tasks listed below:

- Verify that you have 75-ohm coaxial cables with F-type connectors and RCA baseband phono-type cables.
- Determine if you are connecting the set-top to a standard TV or a composite (baseband) monitor.
- Place the set-top on a smooth, flat surface and remove any obstructions that could interfere with the free flow of air over, under, or around it. Advise the subscriber not to place anything on top of the unit.

## Installing the DCT700

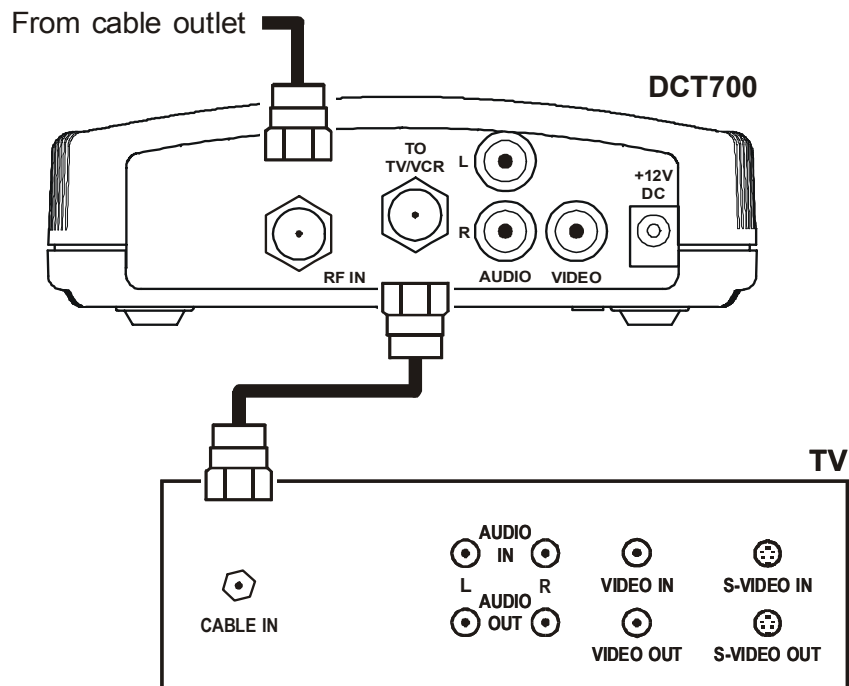
To install the DCT700:

- 1 Determine if you are connecting the set-top to a conventional TV or to a monitor. To install the video connection:
  - For a conventional TV, use a 75-ohm coaxial cable with F-type connectors.
  - For a monitor, use an RCA phono cable to connect the VIDEO connector to the monitor.
- 2 Locate the cabling diagram that matches the subscriber's configuration requirement.
- 3 Connect the cables as illustrated in the diagram.
- 4 Perform the basic operational check in this section after the set-top is installed.

## Standard Cabling Diagram

The DCT700 outputs on either channel 3 or 4 depending on the configuration message from the addressable controller.

**Figure 3-1**  
Connecting the DCT700 to a TV using RF connectors

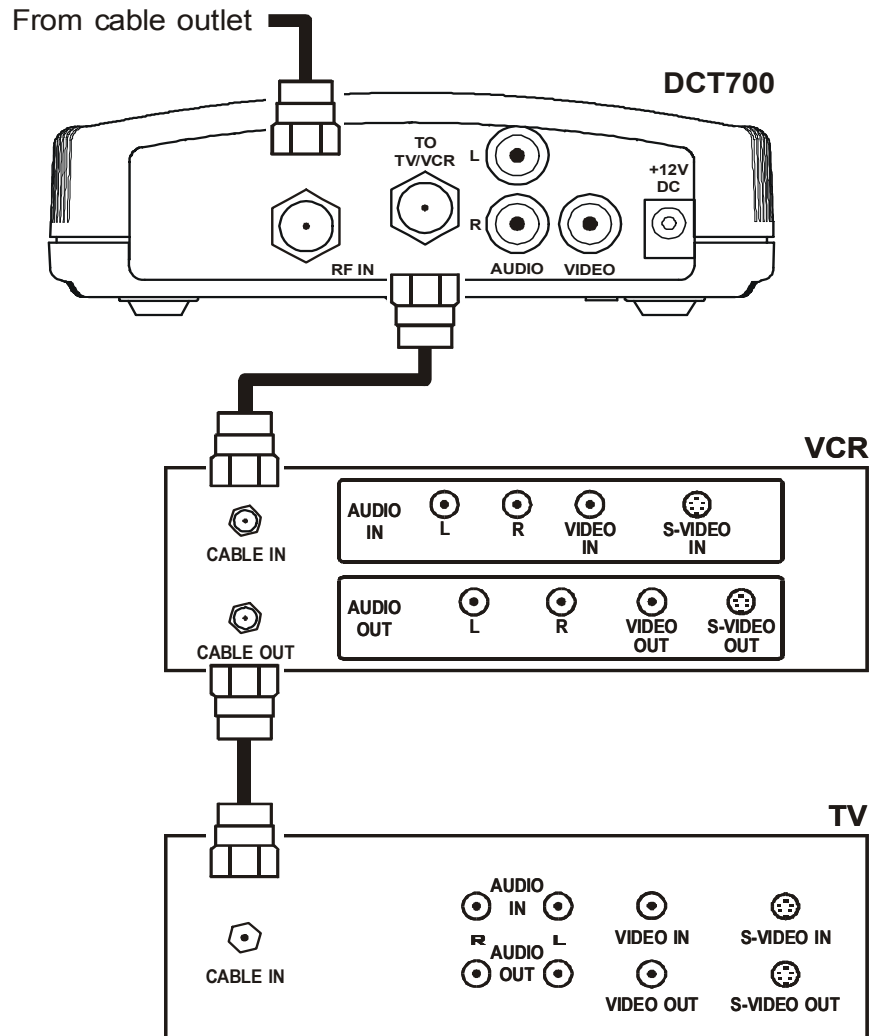


*The remodulated channel, 3 or 4, does not carry stereo for digital channels. To receive stereo, connect the DCT700 using RCA baseband connectors. These connections are illustrated later in this section.*

## Standard VCR Cabling Diagram

Figure 3-2 illustrates cabling using an RF connector that enables the subscriber to record the channel being viewed:

Figure 3-2  
Standard VCR cabling



*The remodulated channel, 3 or 4, does not carry stereo for digital channels. To receive stereo, connect the DCT700 using RCA baseband connectors. These connections are illustrated later in this section.*



## Composite Baseband Cabling Diagrams

Connecting the DCT700 using the baseband RCA type outputs enables the subscriber to experience stereo and Dolby Surround® sound when available on digital channels.

Figure 3-3 illustrates the standard baseband audio and video outputs of the DCT700:

**Figure 3-3**  
Standard baseband cabling

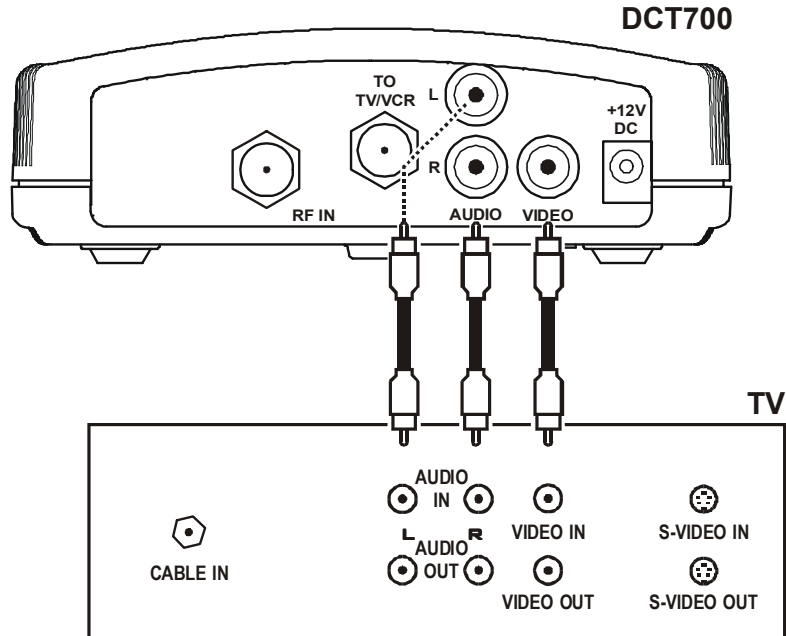
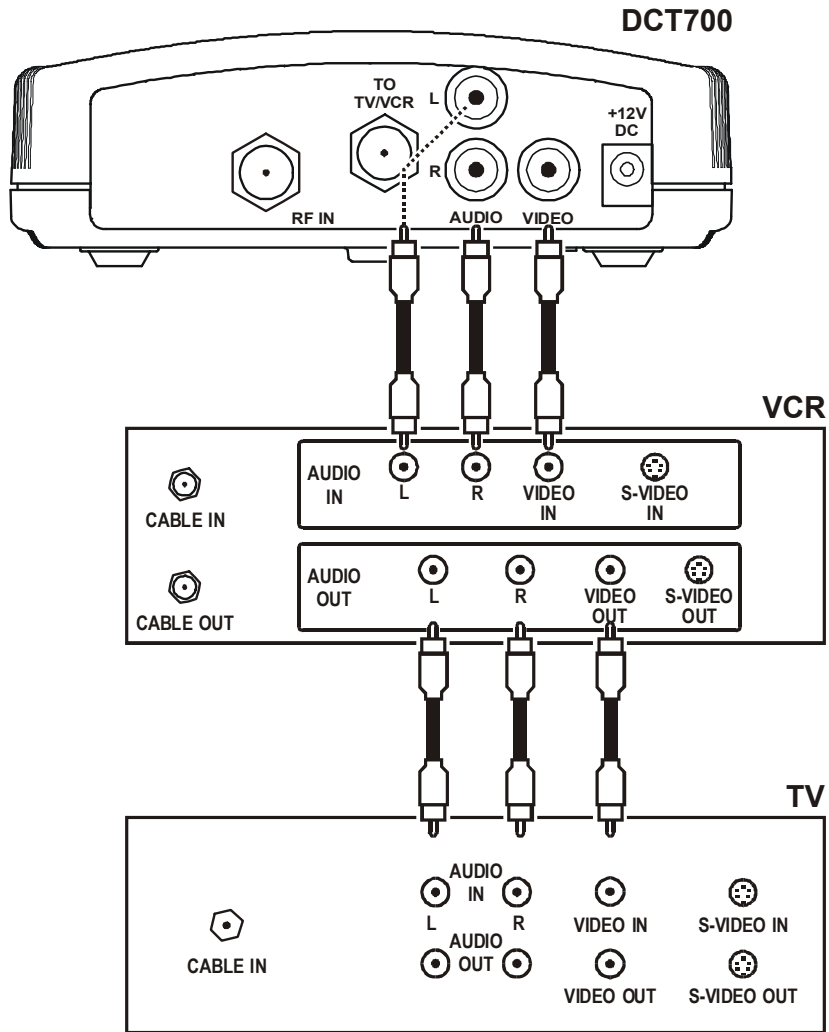


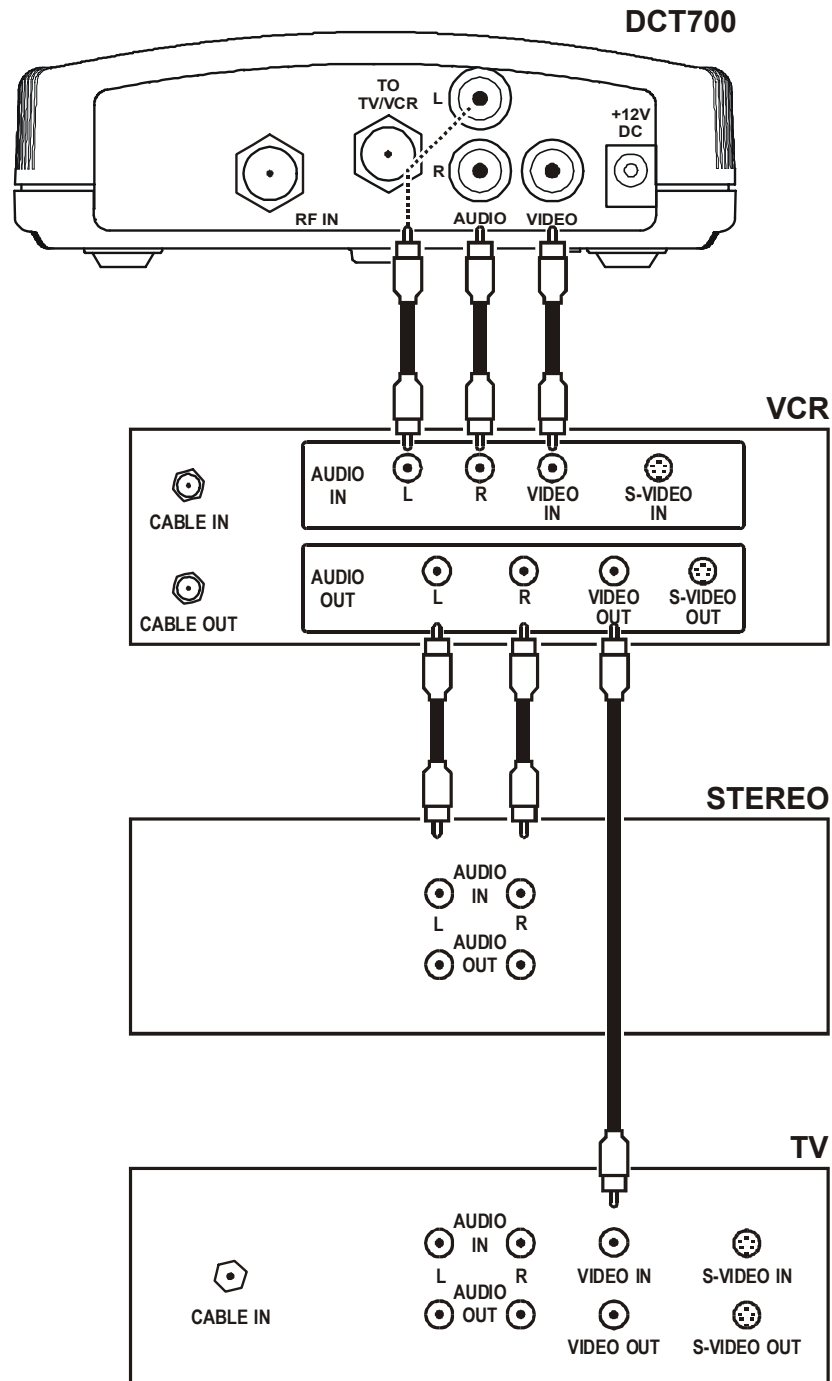
Figure 3-4  
Baseband audio and video connections to a VCR and TV



## Stereo Cabling Diagrams (Baseband)

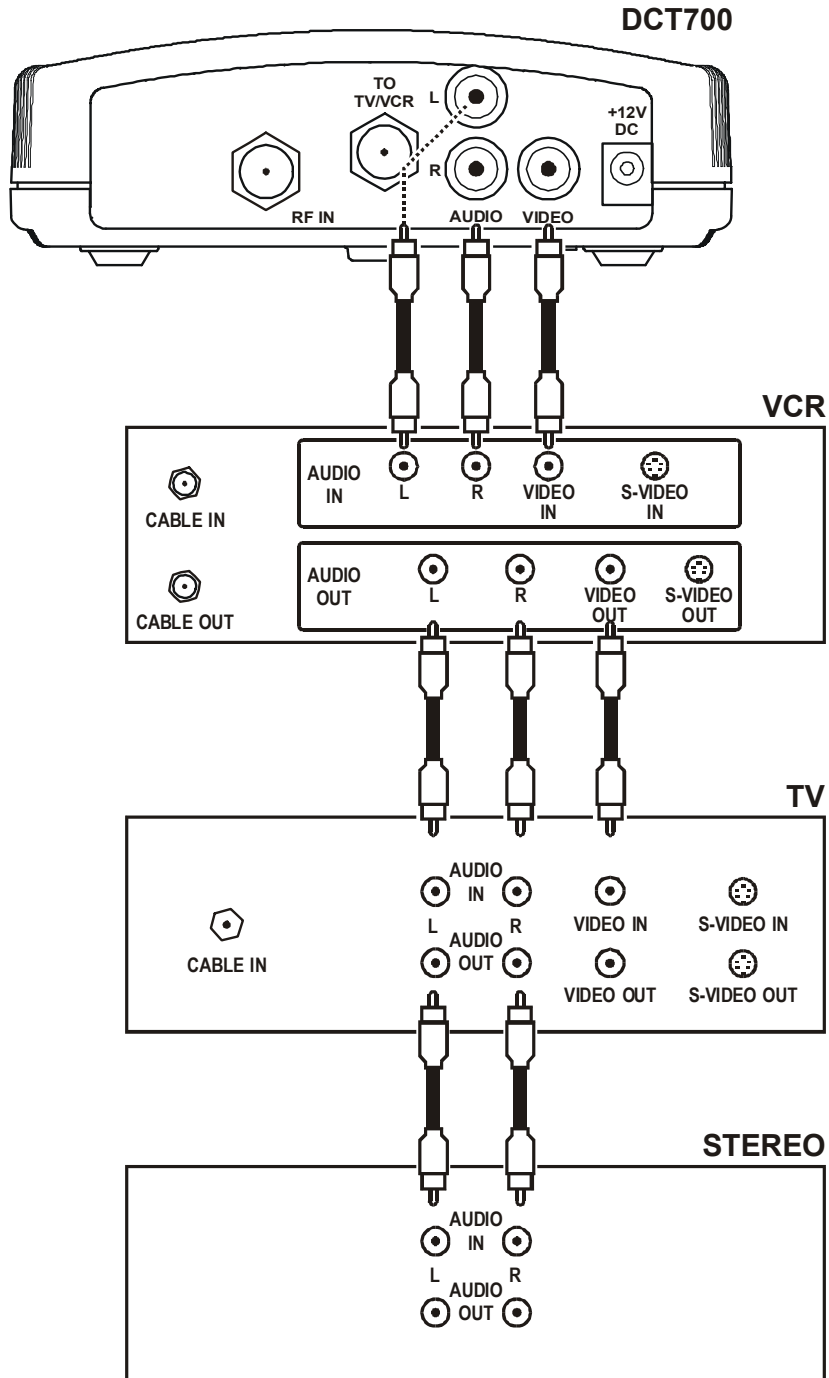
This audio configuration does not provide for a TV playing through the stereo. Figure 3-5 illustrates how to connect the DCT700 to a stereo using the audio connectors on the VCR:

Figure 3-5  
Audio on the VCR



This audio configuration enables the TV to play through the stereo. Figure 3-6 shows how to connect the DCT700 to a stereo using the audio loop-through connectors on the VCR and the audio output ports on the TV monitor:

**Figure 3-6**  
Audio on VCR/Audio output on TV



## Operational Check

The operational check tests communications between the remote control and the set-top and verifies the set-top response to remote control commands:

**Table 3-1**  
Operational check procedures

Feature	Testing Procedure
<b>Power on</b>	<ol style="list-style-type: none"> <li>1 Press <b>POWER</b> on the remote control to turn on the set-top.</li> <li>2 Turn on the TV and tune it to the set-top output channel (3 or 4).</li> </ol>
<b>Channel Selection</b>	Tune to several channels by entering the channel number with the numeric keys on the remote control.

*If the set-top does not operate properly, refer to Section 4, "Troubleshooting."*

## Selecting the OOB Frequency

*Use the Motorola universal remote control to operate the DCT700.*

To select the OOB frequency:

- 1 From the O2 OOB STATUS diagnostic, press the **MENU** button to enter the frequency selection mode. The OSD displays a new **MANUAL FREQ** line at the bottom of the screen, indicating the LKC frequency.
- 2 Press the **MENU** key a second time to exit the frequency change mode.

Or

Press the **UP/DOWN** channel or cursor keys to scroll through the frequencies to locate the desired OOB frequency. The frequency selection appears on the **MANUAL FREQ** line of the OSD.

The first frequency to display is 75.25. The system scrolls through each frequency until it reaches the last, 103.75, and then scrolls back to the beginning. This diagnostic scrolls through the OOB frequencies in the following order:

- 75.25 MHz
- 104.20 MHz
- 72.75 MHz
- 92.25 MHz
- 98.25 MHz
- 107.25 MHz
- 107.40 MHz
- 110.25 MHz
- 116.25 MHz
- 103.75 MHz

- 3 Press **SELECT** to begin searching for the OOB frequency.

On the OSD the MANUAL FREQ line of text clears, the HUNT MODE displays FIX to indicate the fixed frequency search, and the CUR FREQ field changes to the frequency selected to search.

If the frequency is found with the proper EMM Provider ID, the OSD LKC field changes to display the new frequency.

If after 40 seconds the frequency search is not successful, the set-top performs a warm reset and returns to the last known carrier frequency.

- 4 To abort a search without waiting the 40 seconds, press **POWER** to cause a warm reset.

### Set-top Cold Initialization

The DCT700 has no front panel buttons. To perform a cold initialization, or *reset*, using the remote control:

- 1 Hold down any key while disconnecting and reconnecting AC power to the set-top.

After booting up, the POWER LED on the set-top front panel flashes.

- 2 Within 3 seconds, press **3**.

The POWER LED flashes at a decreased rate.

- 3 Within 3 seconds, press **2**.

The POWER LED flashes at an increased rate.

- 4 Within 3 seconds, press **8** to initiate the cold reset.

*During the cold initialization procedure, if the appropriate remote control key is not pressed within the three-second time period, the procedure terminates and the set-top resumes normal operation.*

## Section 4

# Troubleshooting

---

This section provides information to assist you in quickly detecting, isolating, and resolving error conditions that might occur when using the DCT700.

If you need assistance while working with the DCT700, contact the Motorola Technical Response Center (TRC):

- Inside the U.S.: **1-888-944-HELP (1-888-944-4357)**
- Outside the U.S.: **215-323-0044**
- Online: <http://broadband.motorola.com/noflash/websupport.html>.

The TRC is open from 8:00 AM to 7:00 PM Eastern Time, Monday through Friday and 10:00 AM to 5:00 PM Eastern Time, Saturday. When the TRC is closed, emergency service *only* is available on a call-back basis. Web Support offers a searchable solutions database, technical documentation, and low priority issue creation/tracking 24 hours per day, 7 days per week.

Table 4-1 is a list of possible problems and solutions:

**Table 4-1**  
**Troubleshooting guidelines**

<b>Problem</b>	<b>Possible Solution</b>
<b>No power to the DCT700</b>	<p>Check the power outlet for AC power.</p> <p>Be sure the TV is tuned to the output channel of the DCT700 (channel 3 or 4).</p> <p>Verify that cable connections are correct from the TV set or monitor to the DCT700.</p> <p>Check that the power cord is properly plugged into the outlet and DCT700.</p>
<b>Remote control is not responding</b>	<p>Check for an obstruction between the remote control and the DCT700. Aim the remote control directly at the DCT700, not the TV or VCR.</p> <p>Be sure you firmly and deliberately press and release operation keys one at a time.</p> <p>Check that the DCT700 has been initialized correctly; refer to Diagnostics.</p> <p>Change the batteries in your remote control according to the instructions in Section 2, "Overview".</p>
<b>The DCT700 is not receiving a cable signal</b>	<p>Check the cable connections and hand-tighten if necessary.</p> <p>Verify that the cable connections are correct.</p> <p>Verify the TV is working and has a clear picture.</p>
<b>Guide has no data</b>	<p>Unplug the power to the DCT700 and plug in the unit again. Wait for the DCT700 to collect the data.</p>

## Appendix A

# Specifications

---

<b>Input frequency</b>	88.75 to 858 MHz (excluding data carrier frequency)
<b>HRC/IRC frequency assignments</b>	Downloadable
<b>Number of channels:</b>	128 carriers per cable; more than one digital channel per carrier, content dependent
<b>Average digital input level:</b>	
<b>64 QAM</b>	-15 dBmV to +15 dBmV
<b>256 QAM</b>	-12 dBmV to +15 dBmV
<b>Data carrier:</b>	QPSK-modulated carrier
<b>Frequency</b>	Agile
<b>Bandwidth</b>	1.5 MHz
<b>Level</b>	-15 dBmV to +15 dBmV
<b>Video signal to noise ratio</b>	57 dB minimum for baseband output, unified weighted, 4.2 MHz bandwidth
<b>Remod output frequency accuracy</b>	±80 kHz
<b>Return loss:</b>	
<b>Input</b>	4 dB minimum
<b>Output</b>	8 dB minimum
<b>Spurious output</b>	-57 dBc maximum, in band
<b>Remod output level</b>	10 to 15 dBmV
<b>Isolation (input/output)</b>	70 dB minimum
<b>On-screen display (OSD):</b>	
<b>Screen size</b>	352 x 480 pixels (configuration dependent)
<b>Message/barker capacity</b>	Up to 40 pages (configuration dependent)
<b>Operating environment range:</b>	
<b>Temperature</b>	0° to 40°C (32° to 104°F)
<b>Humidity</b>	5 to 95% (non-condensing)
<b>AC voltage:</b>	
<b>USA and Canada</b>	105 to 125 V, 60 Hz
<b>Mexico</b>	114 to 140 V, 60 Hz
<b>Power dissipation</b>	16 W at 115 V
<b>Surge protection</b>	Provided on power supply and RF ports
<b>Size</b>	5.5 x 6.7 x 1.8 inches
<b>Weight</b>	0.85 pounds



## Appendix B

# Diagnostics

---

This section describes the on-screen diagnostics to confirm proper DCT700 installation, including:

- Checking error states and signal integrity
- Identifying the set-top on the network
- Verifying communications with the headend

For the diagnostics provided here:

- All indicators are in decimal notation unless otherwise noted.
- All screens self-refresh at a minimum rate of once every five seconds.
- All sample displays are illustrative; actual data will differ from the examples.

## Using Diagnostics

To access and navigate the diagnostics using the Motorola universal remote control:

- 1 Press **POWER** to turn on the set-top.
- 2 Wait five seconds and then press **POWER** again to turn off the set-top.
- 3 To enable diagnostic mode, press **OK** within two seconds after powering off. The **DIAGNOSTICS** main menu is displayed on the OSD:

DIAGNOSTICS	
01	GENERAL STATUS
02	OOB STATUS
03	IN BAND STATUS
04	AUDIO/VIDEO STATUS
05	UNIT ADDRESS
06	FIRMWARE VERSION
07	CURRENT CHANNEL STATUS
08	RENEWABLE SECURITY
09	UPSTREAM MODEM
10	APP CODE MODULES
11	MEMORY CONFIG
12	INTERACTIVE INFO
13	MAC FREQUENCY TABLE
14	CONTROL CHANNELS
15	MESSAGE TYPES
16	IN BAND PAT
17	IN BAND PMT
18	TASK STATUS
19	USB STATUS
20	IB MCA STATUS
21	KEYBOARD / LED

- 4 Use the **CHANNEL** or **cursor** keys to select the desired diagnostic.
- 5 Press **cursor <**, **cursor >**, **ENTER**, or **OK** to run the selected diagnostic.
- 6 To exit the diagnostic mode, press **POWER** on the remote control. The set-top exits the diagnostic mode and powers off.

The complete list of remote control buttons you can use to navigate the diagnostics is:

Button	Function using the diagnostics main menu	Function using a diagnostic
<b>POWER</b>	Exits diagnostic mode and enters OFF state	Exits diagnostic mode and enters OFF state
<b>CH/CUR +, CURSOR UP</b>	Moves the cursor up	Displays the DIAGNOSTICS main menu
<b>CH/CUR -, CURSOR DOWN</b>	Moves the cursor down	Displays the DIAGNOSTICS main menu
<b>CURSOR RIGHT, CURSOR LEFT, OK, ENTER</b>	Runs the selected diagnostic	Displays the DIAGNOSTICS main menu
<b>GUIDE</b>	None	None
<b>MENU</b>	None	None
<b>INFO</b>	None	None

## d 01: General Status

This diagnostic displays the error code, a short description of the error, the purchase count, and specific model information:

DCT700 STATUS	
ERROR	: E 00
NO ERROR	
PURCHASES	: 0
Platform ID:	: 0x0060
Family ID	: 0x0000
Model ID	: 0x008F
TUNER	: <i>tuner type</i>
Remod Channel	: 3
Time Zone (hhhhhhhh)	MMMM min
DS Entry Time	
1/1/1999	00:00 GMT
DS Exit Time	
1/1/1999	00:00 GMT
Current GPS Time	
1/1/1999	00:00 GMT

The General Status fields are:

<b>Field</b>	<b>Description</b>
<b>Error Codes</b>	A sequence of LED flashes communicates errors when they occur. The Error Code field displays the code for the active error when appropriate.
<b>Purchases</b>	Indicates the number of unreported purchases.
<b>Platform ID</b>	A 16-bit hexadecimal number used to differentiate between digital platform images in the field. It is also called the ROM ID.
<b>Family ID</b>	A hexadecimal number that indicates the set-top manufacturer and product family.
<b>Model ID</b>	A hexadecimal number that indicates the set-top model.
<b>Tuner</b>	Indicates the tuner type.
<b>Remod Channel</b>	The Remod Channel can be 3 or 4 (NA systems). The output port configuration displays the configuration of the set-top output or re-modulated (remod) port. The output port/remod port is the interface from the set-top to the subscriber TV.
<b>Time Zone</b>	Indicates the time zone offset (in minutes) relative to GMT.
<b>DS Entry Time</b>	Indicates the daylight savings entry time.
<b>DS Exit Time</b>	Indicates the daylight savings exit time.
<b>Current GPS Time</b>	Indicates the current time.

## Error Codes

A sequence of LED flashes communicates errors when errors occur. The errors associated flash sequences, causes, and remedies are:

Code	Flash Sequence	Cause	Remedy
E 00	None; no error condition exists	Indicates normal condition after initialization	Not applicable
E 01	MESSAGES LED flashes on and off	The set-top did not receive a connect message	Restore out-of-band signal Send a connect message
E 02	Repeating series of two MESSAGES LED flashes, separated by a pause	Init Error	The set-top needs a power cycle to recover
E 03	Repeating series of three MESSAGES LED flashes, separated by a pause	DRAM error	Not used at this time
E 04	Repeating series of four MESSAGES LED flashes, separated by a pause	DP-SRAM error	Not used at this time
E 07	Repeating series of seven MESSAGES LED flashes, separated by a pause	ROM verification failure	Power cycle the set-top; if repetitive, return for repair
E 08	Repeating series of eight MESSAGES LED flashes, separated by a pause	Faulty RAM, ROM, EEPROM, or POST failure (this is a hardware failure)	Return the set-top for repair
E 09	Repeating series of nine MESSAGES LED flashes, separated by a pause	Dead battery or the memory has not been initialized; occurs if the battery fails to keep the RAM alive during power-down; causes set-top to be disconnected	Return the set-top for repair; requires factory initialization message
E 10	POWER LED flashes on and off; MESSAGES LED remains off	Invalid serial number	Not used at this time
E 11	POWER LED flashes once; MESSAGES LED flashes once	Invalid unit address	Return the set-top for repair; requires a unit creation message
E 12	POWER LED flashes once; MESSAGES LED flashes twice	POST failed	Not used at this time
E 13	POWER LED flashes once; MESSAGES LED flashes three times	Sys_boot initialization failure	Power cycle the set-top; if repetitive, return for repair
E 14	POWER LED flashes once; MESSAGES LED flashes four times	System startup failure	Power cycle the set-top; if repetitive, return for repair
E 15	POWER LED flashes once; MESSAGES LED flashes five times	TSI structure is corrupted	Power cycle the set-top; if repetitive, return for repair
E 16	POWER LED flashes once; MESSAGES LED flashes six times	Bad flash number specified for Initiate Flash Platform	Error logged, ignore
E 17	POWER LED flashes once; MESSAGES LED flashes seven times	Bad platform validation step number	Error logged, ignore

Only the ALPS TDER1-0001 A appears on the on-screen display.

## d 02: Out-of-Band (OOB) Status

This diagnostic indicates the status of the out-of-band control channel.

OOB DIAGNOSTIC			
DATA	*	SNR	23 dB GOOD
EMM DATA	*		
CARRIER LOCK	YES	COUNT	1
HUNT MODE	None		
CUR FREQ			
LKC			
EMM PRVDR ID	0x0001		

The OOB Diagnostic fields are:

Field	Description
<b>Data</b>	The OSD indicates with a "*" that data has been received. The indicators cover all packet processors regardless of which stream they are monitoring and are cleared when you enter the diagnostic.
<b>EMM Data</b>	Indicates whether the set-top is receiving a message on the EMM stream: <b>Blank</b> No data received. <b>*</b> Data received. <i>The set-top can receive only 12 PIDs at once. Data on PIDs can be present on the out-of-band multiplex that the set-top is not receiving.</i>
<b>Carrier Lock</b>	The CARRIER LOCK is reset to "1" after an initialization from the DAC 6000 or a power cycle. Each time the set-top detects a drop in OOB connectivity, the counter increments. The following Carrier Lock variables can display: <b>YES</b> Carrier locked <b>NO</b> Carrier unlocked
<b>Hunt Mode</b>	Indicates the state of OOB stream acquisition. The Hunt Mode can be: <b>None</b> The set-top is locked to an OOB carrier. <b>RR (Round Robin)</b> The set-top is searching OOB frequencies trying to find an EMM Provider of 0 or 1. <b>EMM</b> The set-top received a Provider ID change and is searching OOB frequencies for the new ID. <b>FIX</b> The set-top has been commanded to attempt to lock onto a frequency. <b>SRCH</b> The set-top at some point had a valid Provider ID on the OOB frequency and is attempting to re-acquire it.
<b>CUR Freq</b>	Indicates the current out-of-band frequency.
<b>LKC</b>	Indicates the last known carrier (OOB frequency that had correct Provider ID).
<b>EMM Provider ID</b>	The ID of the provider of the Entitlement Management Message (EMM).

## Selecting the OOB Frequency

To select the OOB frequency:

- 1 From the OOB STATUS diagnostic, press **MENU** on the remote control to enter the frequency selection mode. The OSD displays a new **MANUAL FREQ** line at the bottom of the screen, indicating the LKC frequency.
- 2 Press **MENU** a second time to exit the frequency change mode.

Or

Press the **CHANNEL** or **cursor** keys to scroll through the frequencies to locate the desired OOB frequency. The frequency selection appears on the **MANUAL FREQ** line of the OSD.

The first frequency to display is 75.25. The system scrolls through each frequency until it reaches the last, 103.75, and then scrolls back to the beginning. This diagnostic scrolls through the OOB frequencies in the following order:

- 75.25 MHz
- 104.20 MHz
- 72.75 MHz
- 92.25 MHz
- 98.25 MHz
- 107.25 MHz
- 107.40 MHz
- 110.25 MHz
- 116.25 MHz
- 103.75 MHz

- 3 Press **SELECT** to begin searching for the OOB frequency.

On the OSD the **MANUAL FREQ** line of text clears, the **HUNT MODE** displays **FIX** to indicate the fixed frequency search, and the **CUR FREQ** field changes to the frequency selected to search.

If the frequency is found with the proper EMM Provider ID, the OSD **LKC** field changes to display the new frequency.

If after 40 seconds the frequency search is not successful, the set-top performs a warm reset and returns to the last known carrier frequency.

- 4 To abort a search without waiting the 40 seconds, press **POWER** to cause a warm reset.

## d 03: In-band Status

This diagnostic displays for the last attempted channel tune. If a digital carrier is not present, the diagnostics indicate the carrier lock is analog. When the carrier lock is analog, all fields for digital (other than a carrier lock channel) are blank.

IN BAND DIAGNOSTIC		
DATA		*
EMM DATA		*
CARRIER LOCK		YES
PCR LOCK		YES
SNR	36 dB	ssss
MODULATION MODE		QAM 64
SHORT TERM ERROR COUNT		0000
LONG TERM ERROR COUNT		9999
TUNED FREQ		543.000

The In-band Diagnostic fields are:

Field	Description
<b>Data Activity Indicator</b>	Lights when the set-top is receiving data on the in-band channels. The indicator covers all packet processors regardless of which stream they are monitoring. The following variables can display: <b>Blank</b> No data received <b>*</b> Data received
<b>EMM Data Indicator</b>	Lights when the set-top is receiving a message on the EMM stream. The indicator is clear when entering this diagnostic. The following variables can display: <b>Blank</b> No data received <b>*</b> Data received
<b>Carrier Lock</b>	Indicates that the digital in-band receiver is locked to the carrier with the following variables: <b>YES</b> Carrier locked <b>NO</b> Carrier unlocked <b>Analog</b> Analog channel
<b>PCR Lock</b>	Indicates a program-clock-reference lock with the current digital data stream.
<b>SNR</b>	Displays an estimate of the carrier signal-to-noise ratio. The SNR displayed is a measure of the QAM cluster variance, which is proportional to the SNR. Analog channels display <code>analog</code> for carrier lock. The SNR displays a number for the numeric value and blank for the <code>ssss</code> value. The following variables can display: <b>Blank</b> The digital section is still in the initial state. If this occurs, check diagnostic d07. <b>GOOD</b> Good value <b>FAIR</b> Marginal signal level; check the signal <b>POOR</b> Unusable signal
<b>Modulation Mode</b>	Indicates the modulation mode — QAM 64 or QAM 256



Field	Description
<b>Short Term Error Count</b>	Indicates the FEC errors (maximum count of 65535) at 5-second intervals. The Short Term Error Count is cleared after polling.
<b>Long Term Error Count</b>	Indicates the accumulation of the Short Term Error Count (maximum count of 65535). The Long Term Error Count is cleared every 24 hours.
<b>Tuned Frequency</b>	Indicates the actual frequency the tuner is programmed (Carrier Definition Frequency + 1.75 MHz).

## d 04: Audio/Video Status

This diagnostic displays the audio and video information for the current tuned channel:

AUDIO/VIDEO STATUS	
ADP Lock	YES
Audio Mode	STEREO
Audio SPDIF	N/A
VP Lock	YES
MPEG Method	MUTE BLACK

The Audio Video Status fields are:

Status	Description
<b>ADP Lock</b>	The Audio Processor locked status: YES or NO
<b>Audio Mode</b>	The audio modes are: <ul style="list-style-type: none"> <li>▪ N/A</li> <li>▪ Mono</li> <li>▪ Stereo</li> <li>▪ Surround</li> </ul>
<b>VP Lock</b>	The Video Processor locked status: YES or NO
<b>MPEG Method</b>	The MPEG Method selected: <ul style="list-style-type: none"> <li>▪ Unmuted</li> <li>▪ Mute Still</li> <li>▪ Mute Black</li> </ul>

## d 05: Unit Address

This diagnostic displays the 16-digit (40-bit) unit address of the set-top.

On the unit address OSD, the unit, network, and TV PassCard (TVPC) addresses are in decimal form (13 address digits and three check digits). The multicast 16-bit address is in TCP/IP decimal byte form.

```

DCT700 UNIT ADDRESS :
000-02831-99902-038

Network Address :
085-14316-55765-159

TVPC :
000-00000-00000-000

Multicast 16 Address :
085.085  102.102
119.119  136.136

DATA
068.068  051.051
034.034  017.017

Seed Health      0xFF
  
```

The Unit Address fields are:

Field	Description
<b>DCT700 Unit Address</b>	Indicates the unit address
<b>Network Address</b>	Indicates the network address
<b>TVPC</b>	Indicates the TV Passcard Address.
<b>Multicast 16 Address</b>	The Multicast 16 address numbers change to display the values for each data stream. The following is a list of Multicast 16 addresses: <ul style="list-style-type: none"> <li>▪ NET</li> <li>▪ EMM</li> <li>▪ SCC</li> <li>▪ DWLD</li> <li>▪ DATA</li> <li>▪ VCN</li> <li>▪ POLL</li> </ul>
<b>Seed Health</b>	This value represents the health of the set-top and should be 0xFF. If it is not 0xFF, see the “Troubleshooting” section for more information.

## d 06: Firmware Version

This diagnostic displays the:

- Dena firmware version or revision number
- Build date and time
- TSODA firmware version number
- CAMEL (CMLBK) firmware version number (always 0000)

The BOOT is the lowest level of firmware code that can be used on the DCT700.

```

FIRMWARE VERSION
02.06                                BOOT 02.03
Oct 6, 2003
19:18:46

TSODA t16

CMLBK 0000

```

## d 07: Current Channel Status

This diagnostic displays the instantaneous status of the last attempted channel tune on the in-band tuner. It shows the channel type (analog/digital), acquisition state, purchasable indicator, preview indicator, parental control status, and mute status.

```

CURRENT CHANNEL STATUS

TYPE DIGITAL          aaa bb
STATUS                ccccc
dddd                 CONNECTED
PREVIEW               NO

                                CURR      NEXT
PURCHASABLE          NO          --
PURCHASED            NO          --
EPOCH NUM            0X0         1
EPOCH TYPE           0x0         0x0
AUTH                 0X0         0X0

SERVICE 0 STATUS 1 ID 0X0004 0X00
CH 204    TUNED 543.000

```

The Current Channel Status fields are:

<b>Field</b>	<b>Description</b>
<b>Type</b>	Indicates whether the current channel is analog or digital.
<b>Status</b>	Indicates the channel type with the following variables: <ul style="list-style-type: none"> <li>▪ Authorized</li> <li>▪ Unauthorized</li> <li>▪ Encrypted</li> <li>▪ Unencrypted</li> </ul>
<b>Connected</b>	Indicates whether the set-top is connected or disconnected. If the value is connected, the program is viewable.
<b>Preview</b>	Indicates whether the program is in the free preview state (YES or NO).
<b>Purchasable</b>	Indicates whether the current or next program can be purchased (YES or NO).
<b>Purchased</b>	Indicates whether the current or next program has been bought (YES or NO).
<b>EPOCH Number</b>	For Motorola use only.
<b>EPOCH Type</b>	For Motorola use only.
<b>Authorization</b>	For Motorola use only.
<b>Service</b>	For Motorola use only.
<b>Status</b>	For Motorola use only.
<b>ID</b>	For Motorola use only.
<b>CH</b>	Indicates the channel currently tuned when the OSD appeared.
<b>Tuned Frequency</b>	Indicates the actual frequency the tuner is programmed (Carrier Definition Frequency + 1.75 MHz).

The CURRENT CHANNEL STATUS variables are:

<b>OSD Variable</b>	<b>State</b>
<b>aaa</b>	ENC encrypted
	UNE unencrypted
	FWK fixed key
	FPK fixed program key
<b>bb</b>	Current epoch authorization reason in the current_epoch_auth_reason field. This is displayed in hex:
	00 missing program re-key
	01 missing working key epoch message
	02 missing event blackout message
	03 missing category rekey
	04 old category sequence in program, rekey message
	10 program bought
	11 program bought without taping
	12 subscribed with taping
	13 subscribed without taping
	14 subscribed with taping purchasable
	15 IPPV with taping
	16 IPPV without taping
	20 bad seed checksum
	21 bad debit buffer checksum
	30 IPPV not enabled
	31 insufficient credit to purchase
	32 show count limit exceeded
	33 debit register will overflow
	34 no AFP records available
	36 maximum package cost exceeded
	37 no IPPV overlay in message
40 not subscribed	
41 regional blackout	
42 event blackout	
<b>cccc</b>	INIT – Initialized state
	CONF – Configured
	ACQUI – Acquiring the program
	AUTH – Authorized for the program
	Not A – Not authorized for the program
<b>ddd</b>	blank – Connected
	NOT – Not connected

## d 08: Renewable Security

This diagnostic includes a TVPC card that returns the security status to current.

```
RENEWABLE SECURITY

TVPC NOT REQUIRED
CRYPTO      NOT MATED
STATUS     00
VERSION    00
```

The Renewable Security fields are:

Field	Description
<b>TVPC Required / Not Required</b>	Indicates whether further operation of the set-top requires the TVPC.
<b>CRYPTO</b>	Lists the current mode as displayed on the CRYPTO OSD (Stand Alone, Support, or Not Mated).
<b>Status</b>	Indicates the TVPC status: <ul style="list-style-type: none"> <li><b>00</b> OK</li> <li><b>01</b> TVPC communication problem</li> <li><b>02</b> TVPC required</li> <li><b>03</b> Validator does not match between GK and TVPC</li> <li><b>04</b> Invalid unit key number</li> <li><b>05</b> Old TVPC unit address</li> <li><b>0a</b> TVPC not mated</li> <li><b>0b</b> TVPC /base module unit address mismatch</li> <li><b>0c</b> New TVPC, but wrong version number</li> <li><b>0d</b> TVPC unit address mismatch</li> </ul>
<b>Version</b>	Indicates the version of renewable security being used.

## d 09: Upstream Modem (STARVUE II Diagnostics)

This diagnostic shows the status and operating parameters for the STARVUE II RF return:

```

STARVUE II DIAGNOSTICS
STATUS:                DISABLED
FREQUENCY:            23.000 MHz
LEVEL:                39
IPPV:                 DISABLED

170                   6-15-01                   20:49:33
  
```

The STARVUE II Diagnostics fields are:

Field	Description
<b>Status</b>	Indicates the transmitter status: - Idle t Transmitting
<b>Frequency</b>	Indicates the transmitting frequency.
<b>Level</b>	Indicates the approximate power value of the STARVUE II transmitter in dBmV. The difference between the power value on the diagnostic screen and the actual power of the STARVUE II module may be $\pm 5$ dBmV.
<b>IPPV</b>	Indicates the Interactive Pay-Per-View status with the following variables: <b>ENABLED</b> IPPV enabled <b>UNSENT -##</b> The set-top contains unsent IPPV transactions. <i>The variable -## is the number of unsent transactions.</i> <b>DISABLED</b> IPPV disabled
<b>Last Line</b>	Displays the sequence number, time, and date of the last poll message.

## d 10: Application (APP) Code Modules

This diagnostic displays the currently downloaded code modules. This can be a multi-page display. Press **SELECT** to display additional pages. This is an example of an OSD screen for a set-top that contains ROM:

```

APP CODE MODULES

ASTB xxxx    aaa    bbb    ccc
MODULE                VER    STATUS    ID
0-8-0772                07.72    ENABLED    0001
App1_____    02.00    DOWNLD    07DA
  
```

The Application Code Modules fields are:

<b>Field</b>	<b>Description</b>
<b>ASTB</b>	xxxx indicates: <ul style="list-style-type: none"> <li>▪ INVD — Not configured for code suite downloads</li> <li>▪ VALD — Configured for code suite downloads</li> <li>▪ BLDG — Building code suite</li> </ul> If xxxx is VALD or BLDG: <ul style="list-style-type: none"> <li>▪ <i>aaa</i> — The code suite list ID</li> <li>▪ <i>bbb</i> — The code suite list version</li> <li>▪ <i>ccc</i> — The code suite time remaining</li> </ul>
<b>Module</b>	Indicates the object name
<b>Version</b>	Indicates the object version
<b>Status</b>	The available modes are: <ul style="list-style-type: none"> <li>▪ LOADING</li> <li>▪ DELETED</li> <li>▪ ENABLING</li> <li>▪ ENABLED</li> <li>▪ DSABLNG</li> <li>▪ DISABLD</li> <li>▪ DELETNG</li> <li>▪ POSTPND</li> <li>▪ ENNORUN</li> <li>▪ DISNORUN</li> </ul>
<b>ID</b>	Indicates the object AppID

## d 11: Memory Status

This diagnostic displays the set-top memory status. The format depends on the installed memory types.

MEMORY STATUS			
EEPROM VER.NO.			00.00
	PLATFORM	APPLICATION	
NVMEM	238k		20k
DRAM	8192k		8192k
FLASH	1408k		2048k

The Memory Status fields are:

<b>Field</b>	<b>Description</b>
<b>EEPROM Version Number</b>	Indicates the EEPROM version (never used, should always be 00.00).
<b>Platform</b>	Indicates sizes of memory types allocated to platform code.
<b>Application</b>	Indicates sizes of memory types allocated to application code.
<b>System Heap</b>	Indicates breakdown of DRAM allocations.



## d 12: Interactive Info

This diagnostic tool gathers data about your system:

```

INTERACTIVE INFO

IP                :    0.0.0.0
UPM               :    0X000021
UPSTREAM ID      :    0X0000
DOWNSTREAM ID    :    0X0000
STATE            :    UNCONFIG
MAC ABORT CNTR   :    0000

GOOD PACKETS :
ERROR PACKETS :

SOCKET PORT STATE
0             UNUSED
1             UNUSED
2             UNUSED
3             UNUSED
4             UNUSED
5             UNUSED

```

The Interactive Info fields are:

Field	Description
<b>IP</b>	Indicates the set-top IP address assigned by the NC 1500, in dotted-decimal format; for example, xxx.xxx.xxx.xxx where each xxx ranges from 000 to 255.
<b>UPM</b>	Indicates the upstream modem address. This UPM value is the same as the terminal ID assigned by the DAC 6000. The UPM is a unique, system-generated, eight-digit integer between 1 and 16777215 displayed in hexadecimal format.
<b>Upstream ID</b>	The set-top transmission parameter assigned by the DAC 6000. It is a four-digit value ranging from 0000 to 9999 displayed in hexadecimal format.
<b>Downstream ID</b>	The set-top transmission parameter assigned by the DAC 6000. It is a four-digit value ranging from 0000 to 9999 displayed in hexadecimal format.
<b>State</b>	The state modes are: <ul style="list-style-type: none"> <li>▪ MAC CONNECT</li> <li>▪ UNCONFIG</li> <li>▪ INIT_WAIT_DC_OR_</li> <li>▪ WAIT_LM_ACK</li> <li>▪ WAIT_SO_ACK</li> <li>▪ WAIT_LA_OR_SO</li> <li>▪ INIT_STOPPED</li> <li>▪ RUN_WAIT-DC-OR-C</li> <li>▪ RUNNING</li> <li>▪ RUN_STOPPED</li> <li>▪ INVALID</li> </ul>

Field	Description
<b>MAC Abort Cntr</b>	The MAC Abort Counter increments every time the MAC layer reaches the Cell Abort Count limit. The MAC Abort Counter is reset by the successful upstream transmission of a cell, for example, when an ACK is received by the set-top.
<b>Good Packets</b>	Not implemented.
<b>Error Packets</b>	Not implemented.
<b>Socket Port State</b>	The Socket Port State modes are: <ul style="list-style-type: none"> <li>▪ UNUSED</li> <li>▪ OPENED</li> <li>▪ READY</li> <li>▪ RECVING</li> <li>▪ SENDING</li> </ul>

### d 13: MAC Frequency Table

The set-top uses a range of frequencies set by the host for upstream communications. The MAC FREQUENCY TABLE that displays your frequency and signal power:

MAC FREQUENCY TABLE	
FREQ	POWER

The MAC Frequency Table fields are

Field	Description
<b>Frequency</b>	Indicates the frequency, in Hz, for an upstream channel.
<b>Power</b>	Indicates the power level, in dBmV, used on a particular upstream channel to send data to the RPD.

### d 14: Control Channels

This diagnostic lists channels, band types, PIDs, and counts.

Control Channel Info					
CHN	BAND	PID	Cnt	Ovfl	Err
0	INB	0000	1	0	0
1	INB	00A9	2198	0	0
.	.	.	.	.	.
8	OOB	0777	15207	1	0

## d 15: Message Types

This diagnostic displays a listing of PIDs and counts. In addition the message types with IDs and counts are shown:

Message Types (hex data)					
Msg	Id	Cnt	Msg	Id	Cnt
0	-	216	9A	E	0
1	2	89	A0	15	0

The Message Types fields are:

Field	Description
<b>Msg</b>	The message type
<b>ID</b>	The connection ID
<b>Cnt</b>	The number of messages received of this type

## d 16: In-Band Program Association Table (PAT)

This diagnostic displays the Program Association Table Information. (For Motorola use only.)

IN BAND PAT (hex data)		
PAT	SN	PID
001	0001	0029

## d 17 In-Band Program Map Table (PMT)

This diagnostic displays the Program Map Table information. (For Motorola use only.)

IN BAND PMT (hex data)				
PMT	TYPE	PID	PCR	0210
001	0080	0210	ECM	0211

## d 18: Task Status

This diagnostic displays a listing of tasks. (For Motorola use only.)

TASK STATUS (hex data)					
TID	RID	PRI	STARTS	RUNTIME	STK%
64	00	2	21553	47441	26
63					
...					
0					

## d 19: USB Diagnostics

This diagnostic is used to verify the functionality of the USB port. (For Motorola use only)

USB DIAGNOSTICS NOT INSTALLED
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## d 20 In-Band Multicast Address Filter

This diagnostic displays in-band multicast filter information:

IN BAND MULTICAST ADDRESS FILTER								
Filter Table:								
	DMCA	MCA	PQ	RQ	APP	CID		
NA	0000	0000	-01	-01	0000	0000	0000	0000
NA	0000	0000	-01	-01	0000	0000	0000	0000
NA	0000	0000	-01	-01	0000	0000	0000	0000
NA	0000	0000	-01	-01	0000	0000	0000	0000
REGISTER VALUES:								
	MCA	PID						
	0000	0000						
	0000	0000						
	0000	0000						
	0000	0000						

The In-Band Multicast Address Filter fields are:

Field	Description
<b>Filter Table</b>	
<b>DMCA</b>	Indicates the default multicast 16 address.
<b>MCA</b>	Indicates the current multicast 16 address.
<b>PQ</b>	Indicates the preemption notification queue ID.
<b>RQ</b>	Indicates the response queue ID.
<b>APP</b>	Indicates the application ID.
<b>CID</b>	Indicates the connection ID.
<b>Register Values</b>	
<b>MCA</b>	Indicates Multicast 16 filter register contents.
<b>PID</b>	Indicates PID filter register contents.

## d 21: Keyboard / LED Diagnostics

This diagnostic does not apply to the DCT700.

## Abbreviations and Acronyms

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<b>CSR</b>	Customer Service Representative
<b>DCT700</b>	Digital Consumer Terminal 700
<b>EMM</b>	entitlement management message(s)
<b>EPG</b>	electronic program guide
<b>HRC</b>	harmonically related carriers
<b>IPG</b>	interactive program guide
<b>IPPV</b>	impulse pay-per-view
<b>IRC</b>	incrementally related carriers
<b>MCAA</b>	Motion Picture Advisory Association
<b>NVOD</b>	Near Video on Demand
<b>NVRAM</b>	Non-volatile random-access memory
<b>OSD</b>	on-screen display
<b>PCR</b>	program clock reference
<b>PID</b>	packet identifier
<b>PPV</b>	Pay-Per-View
<b>QAM</b>	quadrature amplitude modulation
<b>QPSK</b>	quadrature phase shift keying
<b>RSA</b>	Return for Service Authorization
<b>TCP/IP</b>	Transmission Control Protocol/Internet Protocol
<b>TRC</b>	Technical Response Center
<b>TvPC</b>	TV PassCard
<b>VOD</b>	video on demand

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