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Motorola General Business Information Level 1

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1. SCOPE

1.1. Scope

This document defines the Motorola Cablevision Installation and Diagnostic menu screens.

1.2. Applicable Documents

The following documents form a part of this specification to the extent specified herein. In the event of conflict between this specification and the reference documents, the referenced specifications shall prevail.

1.3. Motorola BCS Documents

Document Number	Document Name
DCII-097-344	
SEM-2002-023_2	Signal Strength and Signal Quality Reporting Methods for DSRs

1.4. Non-Motorola BCS Documents

Document Number	Document Name
	HDSat FRS For Spyglass Integration
2002-012-001	Motorola DSR501 Diagnostic Screen A-D GUI Specification

1.5. Document History

DOCUMENT HISTORY				
Rev	Number	Description	Author	Date
1.0		Initial Release	Stephen Burd	11/01/2003

1.6. Format

This document covers the following areas

1) Scope

2) Channel Map Information

This section discusses the various settings for channel map and IPG regions including:

- a. Satellite channel maps
- b. Off-Air channel maps
- c. IPG Regions

3) Installation Settings and System Status

This section discusses the various screens used for installation and system status including:

- a. Tune Satellite Signal
- b. Reportback
- c. System Status

4) Set-Top Configuration

This section discusses the various screens used for set-top configuration including:

- a. Manual Tune Frequency
- b. SD, HD Audio & Video Test Patterns
- c. Modem Setup & Test
- d. Authorization Reset
- e. Factory Reset
- f. Audio Test Mode

5) Diagnostic Screens

This section discusses the various Diagnostic A – D screens used for engineering level debug.

6) Front Panel Settings

This section discusses the meaning of the front panel satellite icon and front panel video mode button.

7) Download Progress Screen

This section discusses the meaning of the fields in the download screen.

2. CHANNEL MAP INFORMATION

The following section discusses the variety of satellite and off-air channel maps being used by the system.

2.1. Satellite Channel Maps

The SAC currently has the following satellite channel maps defined:

Map ID	Map Name	Map Description
4547	NDS Lab Map	This map is used solely by the NDS Israel lab personnel. The map has the two NDS defined SD channels (245, and 246) as well as the one HD channel (317). It has other channels as well that do not point to any valid service. The settings in the map allow guide data to be filled in for all of the defined services.
4552	Development Map	The development map has all production map (4560) services plus other services not currently available to customers. These special services are often used for system testing of features such as encryption or PPV.
4554	Test Map	This map was used for the Cablevision ColossalVision testing, and can be used to test changes to the production map before they take place.
4560	Production Map	The production map is the map given out to Sears and used for all customer installations.

2.2. Community System IDs

The SAC currently has the following community (cable) system IDs (CSID) defined. The CSID is analogous to the DMA defined region. Please see <http://www.nab.org/Newsroom/issues/digitaltv/DTVStations.asp> for a detailed list of DTV stations including: market, DMA rank, stations in that market, network affiliation, tune channel, and RF channel. Note: While the initial CSID values were derived from the 2003 Neilson DMA list, they will not vary as the Neilson list is updated each year.

CSID	City	CSID	City	CSID	City	CSID	City
1	New York	46	Greensboro-H.Point-W.Salem	92	Waco-Temple-Bryan	143	Wichita Falls & Lawton
2	Los Angeles	47	Harrisburg-Lncstr-Leb-York	94	Davenport-R.Island-Moline	144	Sioux City
3	Chicago	48	Providence-New Bedford	95	Baton Rouge	145	Albany, GA
4	Philadelphia	49	Albuquerque-Santa Fe	96	Johnstown-Altoona	146	Joplin-Pittsburgh
5	San Francisco-Oak-San Jose	50	Louisville	97	Harlingen-Wslco-Brnsvl-McA	147	Lubbock

6	Boston (Manchester)	51	Las Vegas	98	Savannah	149	Salisbury
7	Dallas-Ft. Worth	52	Jacksonville, Brunswick	99	Evansville	150	Bluefield-Beckley- Oak Hill
8	Washington, DC (Hagrstwn)	53	Wilkes Barre- Scranton	100	El Paso	151	Wheeling- Steubenville
9	Atlanta	54	Austin	101	Youngstown	152	Rochestr-Mason City-Austin
10	Detroit	56	Little Rock-Pine Bluff	102	Lincoln & Hstngs- Krnv Plus	153	Bangor
11	Houston	57	Fresno-Visalia	103	Greenville-N.Bern- Washngtn	156	Biloxi-Gulfport
12	Seattle-Tacoma	58	Richmond- Petersburg	104	Charleston, SC	157	Odessa-Midland
13	Tampa-St. Pete (Sarasota)	59	Dayton	105	Ft. Wayne	158	Panama City
14	Minneapolis-St. Paul	60	Tulsa	106	Springfield-Holyoke	159	Minot-Bismarck- Dickinson
15	Phoenix	61	Knoxville	108	Ft. Smith-Fay- Sprngdl-Rgrs	160	Palm Springs
16	Cleveland-Akron (Canton)	62	Mobile-Pensacola (Ft Walt)	109	Florence-Myrtle Beach	161	Sherman, TX- Ada, OK
17	Miami- Ft.Lauderdale	63	Charleston- Huntington	110	Lansing	162	Gainesville
18	Denver	64	Flint-Saginaw-Bay City	112	Traverse City- Cadillac	163	Abilene- Sweetwater
19	Sacramnto-Stktn- Modesto	65	Lexington	113	Sioux Falls(Mitchell)	164	Idaho Falls- Pocatello
20	Orlando-Daytona Bch-Melbrn	66	Roanoke- Lynchburg	114	Augusta	166	Quincy-Hannibal- Keokuk
21	St. Louis	67	Wichita-Hutchinson Plus	115	Montgomery (Selma)	168	Hattiesburg- Laurel
22	Pittsburgh	68	Green Bay- Appleton	116	Reno	169	Missoula
23	Baltimore	69	Toledo	117	Peoria-Bloomington	170	Billings
24	Portland, OR	70	Ft. Myers-Naples	118	Fargo-Valley City	172	Yuma-El Centro
25	Indianapolis	71	Tucson (Sierra Vista)	119	SantaBarbra- SanMar-SanLuOb	174	Rapid City
26	San Diego	72	Honolulu	120	Eugene	176	Alexandria, LA
27	Hartford & New Haven	73	Des Moines-Ames	121	Monterey-Salinas	179	Jonesboro
28	Charlotte	74	Portland-Auburn	122	Macon	180	Harrisonburg
29	Raleigh-Durham (Fayetteville)	75	Rochester, NY	123	Boise	181	Bowling Green
30	Nashville	76	Paducah-C.Gird- Harbg-Mt VN	125	Columbus, GA	182	Greenwood- Greenville
31	Kansas City	77	Omaha	126	La Crosse-Eau Claire	184	Meridian
32	Cincinnati	78	Springfield, MO	127	Yakima-Pasco- Rchlnd-Knnwck	185	Lima
33	Milwaukee	79	Syracuse	129	Amarillo	188	Great Falls

34	Columbus, OH	80	Spokane	130	Bakersfield	189	Lafayette, IN
35	Greenville-Spart- Ashevil-And	81	Shreveport	131	Columbus-Tupelo- West Point	194	Butte-Bozeman, MT
36	Salt Lake City	82	Champaign&Sprngf Id-Decatur	132	Chico-Redding	195	San Angelo
37	San Antonio	83	Huntsville-Decatur (Flor)	133	Rockford	196	Cheyenne, WY- Scottsbluff
38	Grand Rapids- Kalmzoo-B.Crk	84	Columbia, SC	134	Wausau- Rhinelanders	198	Mankato
39	West Palm Beach- Ft. Pierce	85	Madison	135	Monroe-El Dorado	199	Bend, OR
40	Birmingham (Ann and Tusc)	86	Chattanooga	136	Duluth-Superior	200	Casper-Riverton
41	Norfolk-Portsmth- Newpt Nws	87	South Bend-Elkhart	137	Topeka	204	Victoria
42	New Orleans	88	Cedar Rapids- Wtrlo-IWC&Dub	138	Beaumont-Port Arthur	205	Presque Isle
43	Memphis	89	Burlington- Plattsburgh	139	Columbia-Jefferson City		
44	Buffalo	90	Jackson, MS	140	Medford-Klamath Falls		
45	Oklahoma City	91	Tri-Cities, TN-VA	141	Erie		

2.3. IPG Region

The IPG data is broken up by groups of states. Guide data streams are built based on the IPG region. The STB then looks at and pulls in only the data associated with the IPG region that it is a part of. The table below cross references the State to IPG Region list.

State	Region	State	Region	State	Region	State	Region
AK	28	IL	23	ND	8	SD	8
AL	14	IN	16	NE	8	TN	15
AR	12	KY	15	NH	21	TX	10
AZ	5	KS	9	NJ	19	UT	5
CA	1	LA	13	NM	2	VA	25
CO	2	MA	21	NV	5	VI	28
CT	21	ME	21	NY	20	VT	21
DC	22	MD	22	OH	18	WA	6
DE	22	MI	17	OK	9	WI	24
FL	3	MN	11	OR	6	WV	25
GA	27	MO	12	PA	26	WY	7
HI	28	MS	13	PR	28		
IA	11	MT	7	RI	21		
ID	7	NC	4	SC	4		

3. INSTALLATION SETTINGS AND SYSTEM STATUS

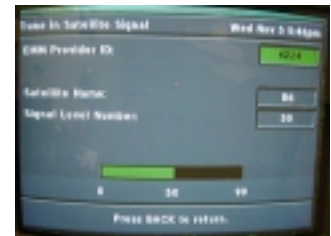
The following section discusses the Installation Settings and System Status screens. To get to the “Installation Settings” menu, press the following buttons on the remote control unit:

- a. VoOm
- b. Green Button (To access Options and Settings screen)
- c. Select “System Settings” menu option
- d. Select option 8 “Installation Settings”
- e. The “Installation Settings” menu will come up with the following options:
 - (a) Tune Satellite Signal
 - (b) Reportback
 - (c) System Status



3.1. Tune Satellite Signal

The Tune Satellite Signal menu has the following items.



Field	Typical Values	Description
EMM Provider ID	4224 (decimal) is the current Cablevision value.	Value indicating the provider for entitlement management messages. EMMs come from the Cablevision SAC. Installer may enter in a value into this field to check if a particular EMM provider is in the stream. The color of the field is green when the set-top box has located the correct EMM ID. The color is red until the EMM ID is located in the stream. Once located, the color will be green. The current ID is automatically filled in.
Satellite Name	B6 is the current Cablevision value.	The satellite name comes from the Satellite Information Table configured at the uplink.
Signal Level Number	0 – 99.	The signal level is a weighted average of the automatic gain control (AGC) and the signal-to-noise ratio (EsNo). Currently, the signal strength value is calculated as follows: $SS = (0.25 \times AGC) + (0.75 \times EsNo)$ Where SS is signal strength, $AGC = (val + 50) \times 2, \text{ for } -70 \leq val \leq -20$ $AGC = -20, \text{ for } val > -20; \quad AGC = -70, \text{ for } val < -70$ $val = \text{value returned from Broadcom device's Power Meter function, truncated or rounded to nearest integer.}$ $EsNo = 100 \times (SNR - (\text{threshold} - \text{offset})) / \text{range}$ where, $SNR = \text{value returned from the Broadcom device's SNR function, truncated or rounded to the nearest 10th.}$ $\text{threshold} = 7.3, \text{ for } 1.92; \quad 8.2, \text{ for } 2.07; \quad 8.7, \text{ for } 2.11$ $9.5, \text{ for } 2.20; \quad 10.2, \text{ for } 2.30; \quad 10.8, \text{ for } 2.40$ $\text{offset} = 1.0, \quad \text{range} = 10$
Signal Level Bar Graph	0 – 99. (red/yellow/green), Installers should attempt to maximize the value and get a green display.	The bar graph gives a color indication of the Signal Level. The bar graph goes from yellow to green when the Signal Level is 5db above threshold. Red indicates no signal. Additionally, the set-top box generates a 1kHz aural tone modulated by the signal strength while in this screen. The tone is toggled on/off at a rate relative to the Signal Level Number and ranges from 2 seconds on/2 seconds off for no signal to always on for the strongest signal.

3.2. Reportback

The Reportback menu currently has the following items defined:



Field	Typical Values	Description
Reportback	Start	Button used to manually initiate a reportback message be sent from the set-top box to the head-end. This is useful to make sure the box is connected to a phone jack, or to clear the PPV credit stacks.
Trip Count	0 – 9999	Dynamically reflects a number of unit addressed authorization (trip) messages being received by the set-top box. Trips are sent intermittently from the SAC to every set-top box. An “instant-trip” may also be sent from the SAC to a specific box; in this event, the trip count will increment near-immediately.
<i>Modem Status Graph</i>	Idle, Started, Retrying, Success, Incorrect ACK, Busy, No Tone, No Carrier, No Answer, No ACK, 2 nd Attempt Failed	Reflects current status of the modem.
Unit ID	xxx-xxxxx-xxxxx-xxx eg 000-03088-11111-111	The unique Motorola unit address of set-top box.
Phone	xxx-xxx-xxxx, N/A	Reflects the reportback phone number that the box will call when attempting a reportback. This is assigned from the SAC.
Last Report Time	Time/Date	Reflects the last time a reportback was attempted.
Last Report Status	Successful/ Unsuccessful	Reflects whether or not the last attempted reportback was successful.

3.3. System Status- Hardware

The System Status-Hardware menu currently has the following items defined:



Field	Typical Values	Description
Box Address	xxx-xxxxx-xxxxx-xxx eg 000-03088-11111-111	The unique Motorola unit address of set-top box.
Card Serial Number	xxxxxxxxxx	11 character NDS smart card number as printed on the physical smart card.
Hours Since Last Standby	x hrs	Reflects the number of hours since the set-top box was in standby mode.
Secure Firmware Version	V16	Motorola MediaCipher version.
Last Reboot	Time/Date	Reflects the time and date of the last reboot (power cycle or front panel reset).

3.4. System Status- Software & EMM

The System Status-Software & EMM menu currently has the following items defined:



Field	Typical Values	Description
Current Software Version	V00.xx.xx	Reflects the current firmware package (packing list) in the box. <i>Note: As of Nov03, this field indicates the Neptune version number. This will be fixed in a future download code version.</i>
Target Software Version	V00.xx.xx , N/A	Reflects the version of code indicated by the active opportunity code download. Field is N/A if there is no opportunity download in progress. <i>Note: As of Nov03, this field indicates the current software version packing list. This will be fixed in a future download code version</i>
EMM Providers	1080, xxx (1080 is the hex value for 4224, the current Cablevision EMM provide).	Reflects all of the EMM provider IDs that the set-top box identifies in the transport stream.
EMM Provider	1080	Reflects the EMM provider ID that is being used by the box. This value is transmitted to the set-top box via the trip from the SAC.
EMM Stream	yes/no	Reflects if the set-top box is holding/using the EMM stream.

3.5. System Status- Channel

The System Status-Channel menu currently has the following items defined:



Field	Typical Values	Description
Signal Quality	0 - 99	See Section 3.1 Signal Level Number for description of Signal Quality.
Signal Power	0 - 99	AGC as defined in Section 3.1. Indication of power of signal coming in.
Authorization Status	“XX”	See 5.2.1 Authorization States.

3.6. System Status- Channel Map

The System Status-Channel Map menu currently has the following items defined:



Field	Typical Values	Description
Satellite Map	4560 is the current Cablevision map being used for production.	Reflects the current satellite channel map being used by the set-top box. This value is assigned from the SAC. See section 2.1 for details.

Off-Air Map	0000-0205	Reflects the current off-air 8VSB map being used by the set-top box. This value is assigned from the SAC. See section 2.2 for details.
# of Satellite Channels	000 – 999	Reflects the number of satellite channels in the satellite map. As of Nov03, this value is 086.
# of Off-Air Channels	00 – 99	Reflects the number of off-air channels in the off-air map. This value will vary depending on the off-air region of the set-top box.
IPG Region	00 – 99	Reflects the current IPG region being used by the set-top box. This value is assigned from the SAC. See section 2.3 for details.

3.7. System Status- Reportback

The System Status-Reportback menu currently has the following items defined:



Field	Typical Values	Description
Last Successful Report	Time/Date field	Reflects the last successful reportback from the set-top box to the head-end.
Last Report Time	Time/Date field	Displays the local time, date, and year of the last attempted reportback. If no reportback, N/A is displayed.
Last Report Status	Successful/ Unsuccessful	Reflects whether or not the last attempted reportback was successful.
Phone Number	xxx-xxx-xxxx, N/A	Reflects the reportback phone number that the box will call when attempting a reportback. This is assigned from the SAC.
Modem Tone/Pulse	Tone/Pulse	Displays what type of modem the system has detected.

4. SET-TOP CONFIGURATION MENU

The following section discusses the System Configuration screens. To get to the “System Configuration” menu, press the following buttons on the remote control unit:

- a. VoOm
- b. Green Button (To access Options and Settings screen)
- c. Select “System Settings” menu option
- d. Select option 8 “Installation Settings”
- e. Press “9 8 8” on the remote control unit.
- f. The “System Configuration” menu will have the following options:
 - (a) Manual Tune
 - (b) SD Audio & Video Test
 - (c) HD Audio & Video Test
 - (d) Modem Setup & Test
 - (e) Authorization Reset
 - (f) Factory Reset
 - (g) Audio Test Mode



4.1. Manual Tune

The Manual Tune function is used to manually tune the receiver to a known frequency to be able to lock to a satellite signal. The following inputs and outputs are available via this screen.

Field	Typical Values	Description
Polarity	Right_Vert, Left_Horiz	Cablevision uses Right_Vert
22kHz Tone Select	Off, On	Cablevision uses off. This option allows for 22kHz tone to be enabled or disabled. The default value is determined per channel as defined by the VCT.
Symbol Rate	Auto, 20.0, 20.5, 21.0, 21.5, 22.0, 22.5, 23	As of Nov 03, Cablevision uses 22.0. In the future, the rate of 23.0 is expected to be used. The Auto selection causes the receiver to try each listed mode round-robin.
Coding Mode	Auto, 1.92, 2.05, 2.11, 2.20, 2.30, 2.40, DVB-Q3/4	As of Nov 03, Cablevision uses 2.30. In the future, the mode of 2.2 is expected to be used. The Auto selection causes the receiver to try each listed mode round-robin.
Frequency	950.000 – 2150.000	To tune to a known Cablevision frequency, enter 1235.444.
<i>Tune Button</i>	Tune, Tuning, Tuned	Highlighting this button and pressing Enter on the remote control unit causes the receiver to begin tuning using the selected parameters. The screen changes from Tune to Tuning to Tuned if tuning is successful.

4.2. SD Audio & Video Test

The SD Audio & Video Test function displays a various test patterns (e.g., color bar, NTSC component, red bar, Y ramp, TC ramp). Additionally, a 1kHz audio tone is generated at the analog outputs.

Pressing any key on the remote control unit cancels the audio and video test patterns and returns to the System Configuration menu. The menu has a timeout duration of 30 minutes. After 30 minutes without any user input, the screen tears down and displays live video.

4.3. HD Audio & Video Test

The HD Audio & Video Test function displays a multi-burst black & white test pattern. An installer can press the Video Menu Select button on the front panel (see section 6.2) to determine which is the best HD video mode to use. Additionally, a 1kHz audio tone is generated at the analog outputs.

Pressing any key on the remote control unit cancels the audio and video test patterns and returns to the System Configuration menu. The menu has a timeout duration of 30 minutes. After 30 minutes without any user input, the screen tears down and displays live video.

4.4. Modem Setup & Test

The Modem Setup & Test function is used to setup and test the set-top box modem.



Field	Typical Values	Description
Modem Setup & Test	Start, Stop	When Start is pressed, the output window shall present the states that the modem cycles through during an internal analog loopback test. During the test, the Start button display changes to Stop.
Modem Setting	Auto, Pulse	Specifies the dialing mode of the modem. The Auto mode attempts tone dialing first, and then switches to pulse if tone is unsuccessful.
<i>Modem Status</i>	Modem testing in progress, Stopping modem test, Modem connect, Hanging up modem, Modem test successful, Modem test stopped Error, Stopping modem test Error, Modem test stopped	The window is updated as the modem status changes. The menu has a timeout duration of five minutes.

4.5. Authorization Reset



The Authorization Reset causes the set-top box to clear the EMM provider and initiate an EMM search. While the search is taking place, “Please wait... The system is searching for a new authorization stream” is displayed. Upon completion of the search, the set-top box returns to the System Configuration menu.

Pressing GoBack (or other keys) will terminate the current search and take the set-top box back to the System Configuration menu. Canceling the reset will leave the unit in a state requiring a ‘trip’ prior to viewing services.

The menu has a timeout duration of five minutes.

4.6. Factory Reset



The Factory Reset causes the set-top box to clear most non-volatile memory and take the set-top box back to a factory initialized state. Upon completion of the reset, the set-top box returns to the System Configuration menu. Only the information in the secure processor are saved (e.g., PPV credit).

Pressing GoBack (or other keys) will terminate the current reset and take the set-top box back to the System Configuration menu.

The menu has a timeout duration of five minutes

4.7. Audio Test Mode



The Audio Test Mode allows the receiver to enable (1) dialog normalization, and (2) dynamic range compression to any audio stream which supports such normalization. Upon exit of the menu, the audio is turned off.

The menu has a timeout duration of sixty minutes

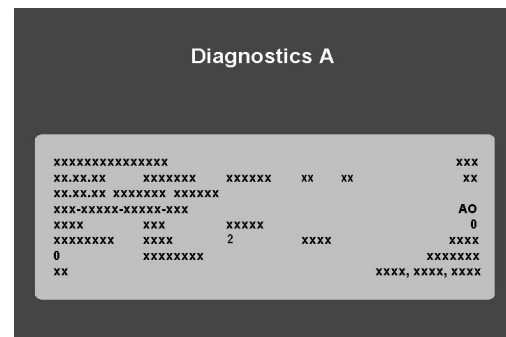
5. DIAGNOSTIC SCREENS

The following section provides a high level specification of the GUI layout for Diagnostic Screens A, B, C, and D. To get to the “Diagnostic Screen” menu, press the following buttons on the remote control unit:

- VoOm
- Green Button (To access Options and Settings screen)
- Select “System Settings” menu option
- Select option 8 “Installation Settings”
- Press “9 7 7” on the remote control unit. You will see the hidden “Advanced System Status” menu.
- Select 1. Diagnostic Data

5.1. Diagnostic A

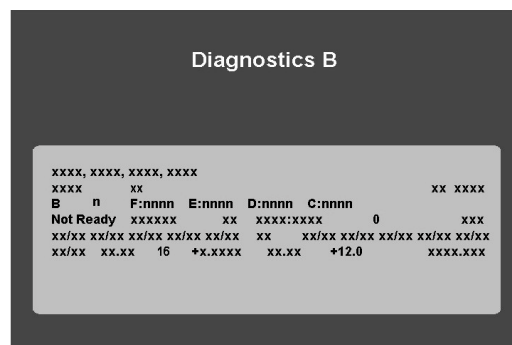
The following table describes the fields in Diagnostic screen A.



Line #	Field	Displaying Description
1	Product String	{string: xxxxxxxxxxxxxx}
1	Channel Number	{integer: xxx}
2	Neptune Firmware Version	{string: xx.xx.xx}
2	Open TV Middleware Version	{string: xxxxxxx}
2	Operating System Version	{string: xxxxxxx}
2	Driver Version	{string: xx}
2	Setup App Version	{string: xx}
2	IPG App Version	{string: xx}
3	Download Target Versions (Neptune/Open TV/OS)	{string: xx.xx.xx xxxxxxx xxxxxx}
4	Unit Address	{string: xxx-xxxx-xxxx-xxx}.
4	Download Status	{string: “ID”, “AO” or “ER”}
5	EMM Provider ID	{hex: xxxx}
5	VCT Channel Count	{integer: xxx}
5	VCT ID	{decimal: xxxx}
5	IPG Status	{integer: 0 or 1}
6	GPS Current Time	{hex: xxxxxxx}
6	Time Zone	{hex: xxxx}
6	EMM Search State	{integer: 0, 1, or 2}
6	Current Epoch Number	{hex: xxxx}
6	ECM PID	{hex: xxxx}
7	Daylight Savings State	{integer: 0 or 1}
7	DST Entry Time	{hex: xxxxxxx}
7	DST Exit Time	{hex: xxxxxxx}
8	Geographic Region Byte	{hex: xx}.
8	Geographic Locations	{hex: xxxx, xxxx, xxxx}

5.2. Diagnostic B

The following table describes the fields in Diagnostic screen B.

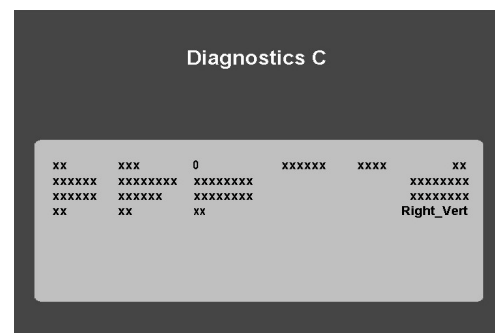


Line #	Message Name	Displaying Description
1	Multicast Addresses	{hex: xxxx, xxxx, xxxx, xxxx}
2	Internal Use	
2	Internal Use	
2	Internal Use	
3	Tier Banks	{string: "B" or "T"}, {hex: n} {hex: F:nnnn E:nnnn D:nnnn C:nnnn} or {hex: nn:hhhhhhh:eo}
4	Internal Use	
4	Internal Use	
4	Internal Use	
4	Internal Use	
4	Internal Use	
4	Internal Use	
5	Current Authorization State	{string: xx/xx xx/xx xx/xx xx/xx }
5	Internal Use	
5	Next Authorization State	{string: xx/xx xx/xx xx/xx xx/xx }
6	Coding Mode	{integer: xx/xx}
6	Symbol Rate	{decimal: xx.xx}
6	Modulation Mode	{integer: 0, 1, 2, 3, 4, 5, 6, 7, 8, or 16}
6	Current LNB Offset	{decimal: ±x.xxxx}
6	IF Frequency	{decimal: x.xx}
6	Eb/No	{decimal: +0.0 to +12.0}
6	RF Frequency	{decimal: xxxx.xxx}

5.2.1. Authorization States (System Status – Channel)

Auth State		Auth State		Auth State	
B	Bought	BWO	Bought Without Taping	PS	Max Package Cost Exceeded
C	Program Can Buy w/Taping	CWO	Program Can Buy w/o Taping	SW O	Subscribed Without Taping
CB	Event Blackout	MW	Missing Working Key Message	RB	Regional Blackout
DF	Debit Reg Will Overflow	NA	No AFP Records	S	Subscribed
IS	Insufficient Credit	NI	IPPV Not Enabled	SC	Show Count Limit Exceeded
MC	Missing Category Key	NO	No IPPV Overlay In Message	XD	Bad Debit Buffer Checksum
ME	Missing Event Blackout Msg	NS	Not Subscribed	XS	Bad Seed Checksum
MP	Missing Program Rekey	OC	Old Category Sequence	ST	Subscribed With Taping

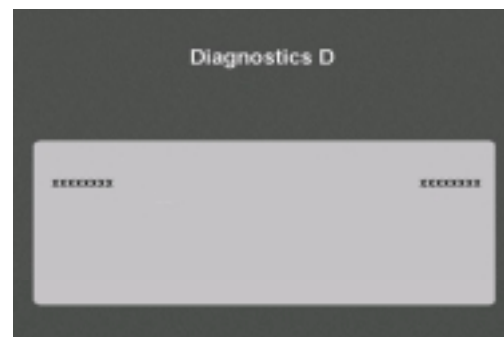
5.3. Diagnostic C



The following table describes the fields in Diagnostic screen C.

Line #	Message Name	Displaying Description
1	Unreported Show Count	{hex: xx}.
1	Days Since Last Successful Reportback	{hex: xxx}.
1	IPPV State	{integer: 0 or 1}
1	Time Without Reportback Trigger	{hex: xxxxxx}.
1	Service Provider ID	{hex: xxxxx}.
1	Package Provider ID	{hex: xx}.
2	Reportback Time Slot	{hex: xxxxxx}.
2	Last Successful Reportback Date	{hex: xxxxxxxx}.
2	Last Reportback Attempt	{hex: xxxxxxxx}.
2	Next Reportback Date	{hex: xxxxxxxx}.
3	Total Show Count	{hex: xxxxxx}
3	Stack Limit	{hex: xxxxxx}.
3	Debit Total	{hex: xxxxxxxx}.
3	Credit Total	{hex: xxxxxxxx}.
4	Model ID	{hex: xx}.
4	Configuration ID	{hex: xx}.
4	Satellite ID	{hex: xx}.
4	Polarity	{string: "Right_Vert" or "Left_Horiz"}.

5.4. Diagnostic D



The following table describes the fields in Diagnostic screen D.

Line #	Message Name	Displaying Description
1	Free Memory Available	{hex: xxxxxxxx}
1	Largest Single Memory Block Available	{hex: xxxxxxxx}

6. FRONT PANEL SETTINGS

The following section discusses the Installation Settings and System Status screens. To get to the “Installation Settings” menu, press the following buttons on the remote control unit:

6.1. Front Panel Satellite Icon Display

The front panel satellite icon display is currently defined as follows:



The satellite icon indicator LED on the front panel have the following states:

- The indicator LED is **OFF** when the STB is in the standby state.
- The indicator LED is **red** when the STB is in the viewing (a.k.a., active) state without signal lock.
- The indicator LED is **green** when the STB is in the viewing state with signal lock.

6.2. Front Panel Video Mode Setting



The front panel video mode button setting is currently defined as follows:

The Video Mode Selection button is located under the Motorola Logo (bottom right hidden panel on the set-top box). This button cycles/changes through the various video modes of the box.

When changing modes, the amber “light pipes” are individually backlit. Modes include:

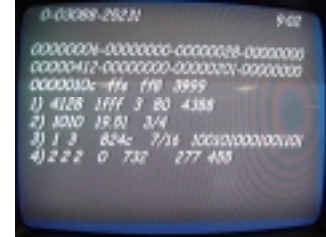
- Native Mode (all lights on)
- 480i (bottom light),
- 480p (second light from bottom)
- 720p (third light from bottom)
- 1080i (top light).

7. MINIMAL DOWNLOAD DIAGNOSTICS SCREEN (CURRENT)

The following section discusses the Download diagnostics screen that is displayed during a code download.

7.1. Minimal Diagnostic Screen

The minimal diagnostic screen for firmware packing list versions 0x28 and 0x38 is currently defined as follows:



```

1  u u u - u u u u u - u u u u u                               m i n : s e c
2
3  c a v          c d d v          c f w v          c o s v
4  t a v          t d d v          t f w v          t o s v
5  B C v e r      p r e          D L          D L c h a n
6  1 )   p r i D      E M M          T S          S L          V C T
7  2 )   f r e q      s y m          c r
8  3 )   D S   P C   T E   N F C / T N F   C o l l e c t i o n S t a t u s B i t m a p
9  4 )   D P F S   D M F S   D C T S   B S C   L S N   R S C   C S N
10

```

7.2. Minimal Diagnostic Screen Data Description

The Table below describes the information available on each Line for Minimal Diagnostic Screen.

Line #	Name	Definition
1	uuu-uuuuu-uuuuu	Unit Addr
	min:sec	Time in minutes and seconds since DL start
2		Blank
3	cav	Current application version
	cddv	Current device driver version
	cfwv	Current firmware version
	cosv	Current OS version
4	tav	Target application version
	tddv	Target device driver version
	tfwv	Target firmware version
	tosv	Target OS version
5	BCver	Boot Code version
	pre	Preamble PID
	DL	Download PID
	DLchan	Download channel
6	1)	Number
	prID	EMM provider ID
	EMM	EMM PID
	TS	Transport State

Line #	Name	Definition
	SL	Signal Level
	VCT	Single map VCT ID
7	2)	Number
	freq	Frequency
	sym	Symbol Rate
	cr	Code Rate
8	3)	Number
	DS	Download State
	PC	Pass Count
	TE	Table Extension
	NFC/TNF	Number of files collected / Total number of files
	CollectionStatusBitmap	Shows files downloaded as a 1 and those to be downloaded as a 0
9	4)	Number
	DPFS	Download Preamble Filter State
	DMFS	Download Message Filter State
	DCTS	Download Channel Tune State
	BSC	Bad Section Count
	LSN	Last Section Number
	RSC	Remaining Section Count
	CSN	Current Section Number

8. MINIMAL DOWNLOAD DIAGNOSTICS SCREEN (NEXT VERSION)

The following section discusses the Download diagnostics screen that is displayed during a code download. *Note: The discussion/screens shown below are not yet part of the installed code. This version will be added in the future.*

8.1. Minimal Diagnostic Screen



1	u u u - u u u u u - u u u u u	m i n : s e c
2		
3	c a v c d d v c f w v c o s v	
4	t a v t d d v t f w v t o s v	
5	B C v e r p r e D L D L c h a n	
6	1) p r i D E M M T S S L V C T	
7	2) f r e q s y m c r	
8	3) D S N F C / T N F P C T E	
9	4) C o l l e c t i o n S t a t u s B i t m a p	
10	5) D P F S D M F S D C T S B S C L S N R S C C S N	
11		

8.2. Minimal Diagnostic Screen Data Description

The Table below describes the information available on each Line for Minimal Diagnostic Screen.

Line #	Name	Definition
1	uuu-uuuuu-uuuuu	Unit Addr
	min:sec	Time in minutes and seconds since DL start
2		Blank
3	cav	Current application version
	cddv	Current device driver version
	cfwv	Current firmware version
	cosv	Current OS version
4	tav	Target application version
	tddv	Target device driver version
	tfwv	Target firmware version
	tosv	Target OS version
5	BCver	Boot Code version
	pre	Preamble PID
	DL	Download PID
	DLchan	Download channel
6	1)	Number
	prID	EMM provider ID

Line #	Name	Definition
	EMM	EMM PID
	TS	Transport State
	SL	Signal Level
	VCT	Single map VCT ID
7	2)	Number
	freq	Frequency
	sym	Symbol Rate
	cr	Code Rate
8	3)	Number
	DS	Download State
	NFC/TNF	Number of files collected / Total number of files
	PC	Pass Count
	TE	Table Extension
9	4)	Number
	CollectionStatusBitmap	Shows files downloaded as a 1 and those to be downloaded as a 0
10	5)	Number
	DPFS	Download Preamble Filter State
	DMFS	Download Message Filter State
	DCTS	Download Channel Tune State
	BSC	Bad Section Count
	LSN	Last Section Number
	RSC	Remaining Section Count
	CSN	Current Section Number