Novra S75/S200/S300N
Central Management and Control Software (CMCS) Users Manual

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Important- Please read this entire manual before installing or operating this product.

Disclaimer

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1 MINIMUM SYSTEM REQUIREMENTS

Your computer must have **at least** the following:

- Processor: Pentium Class Processor or better
- CD drive (required for software installation only)
- Ethernet network interface card (NIC): 100 Mbps (100 BaseT)

NOTE: - Performance may be dependent on other applications that your PC is running.

1.1 Supported Operating Systems

CMCS has been tested to support the following operating systems

- OS - Linux (or equivalent):
  - Debian Lenny (Linux Kernel: 2.6.26-2)
  - Gentoo (Linux Kernel: 2.6.31)
  - Ubuntu (Linux Kernel: 2.6.28-18)
  - Red Hat (Linux Kernal: 2.4.20-8)
- MAC OS 10.6
- FreeBSD 1.6
- Solaris 10u8
- Windows 7

Please contact Novra Support (www.novra.com) to ensure you have the correct CMCS executable for you intended OS.

2 INTRODUCTION

2.1 Principles of Operation

The CMCS resides in the Linux M&C server at the central hub and enables centralized configuration and management of a network of S75 or S200 or S300 receivers. Figures 1 and 2 below illustrate 2 possible configuration scenarios.

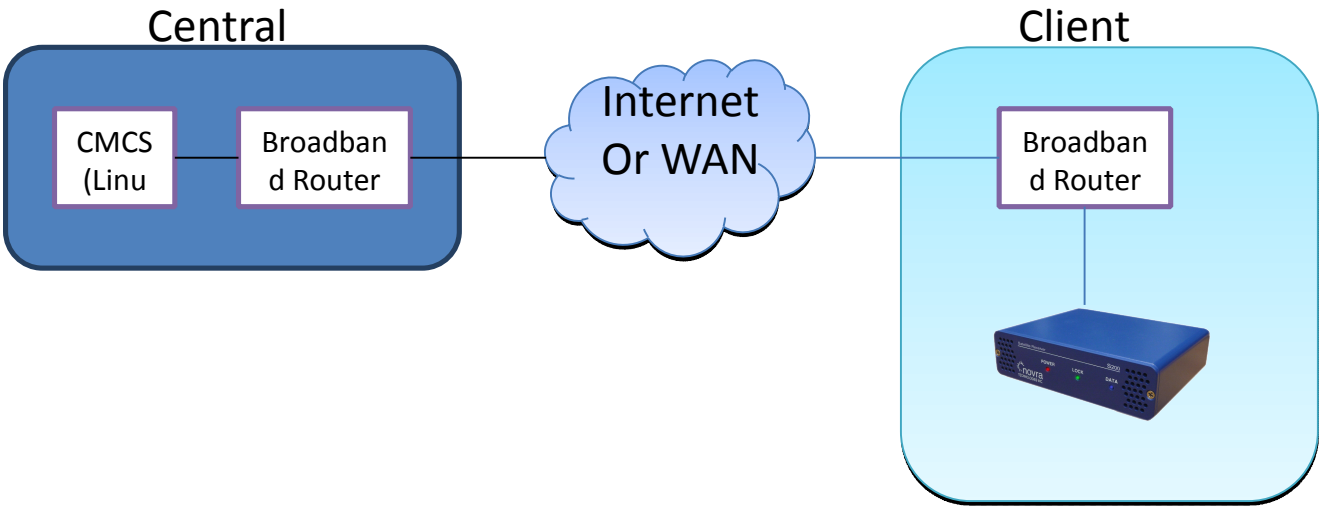

Figure 1 – S75/S200/S300 Mgmt over Internet

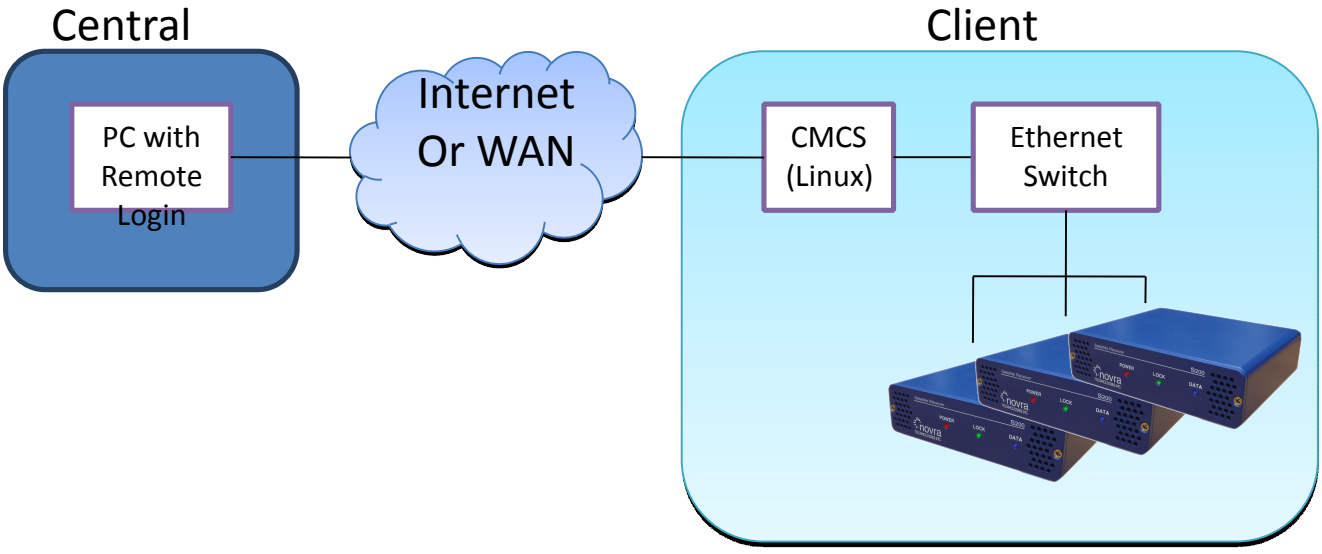

Figure 2 - Remote Management of an S75/S200/S300 Network

The CMCS software has two components or modes of operating. Each mode is described below:

1. Interactive Mode: The main operating mode enables the operator to enter a command shell for sending multiple configuration commands to the S75/S200/S300. In this mode, the operator logs onto a particular receiver and executes command-line commands on that receiver within the command shell.
2. Scripting Mode: The second operating mode enables the operator to issue a single command to the S75/S200/S300 from the Linux command line prompt. Rather than logging onto a particular receiver, a single command with appropriately set switches may be executed by the operator. This command structure allows the operator to string multiple command switches together to efficiently command and control any given S75/S200/S300 that resides on the network.

3 INSTALLATION

The CMCS program is a Linux-based executable file (CMCS). The file should be copied onto the Linux M&C Server in the central hub. The recommended location is: /usr/bin. This will enable the CMCS to be run from any user account. CMCS can be installed at the recommended location using the following command run as a super user: install CMCS /usr/bin.

4 Interactive Mode

This section describes the command structure for the interactive mode. This mode can be used to enter an S75/S200/S300 command shell for sending multiple commands to a particular S75/S200/S300 resident in the network.

NOTE: - To be able to manage the S75/S200/S300 remotely via CMCS, the S75/S200/S300 must have a routable IP address from the M&C server.

4.1 Running CMCS

To run CMCS, at the linux prompt Type:

```
Linux > ./CMCS <cr>
CMCS Utility
CMCS>
```

This will bring up the CMCS prompt as shown above. This lets the operator know he/she is in the CMCS interactive command shell.

NOTE: - The above example uses the Linux distribution. Other OS distributions may use a slightly different name, such as CMCSMAC for MAC OS 10), for example.

4.2 Logging into an S75/S200/S300 Receiver

Once in the CMCS command shell, the operator may log into a particular receiver. To do so, the following would be executed by the operator:

```
CMCS> login <S75/S200/S300 ip address>
```

The operator will then be prompted for the receiver's password:

```
CMCS> Password: <password> <cr>
```

Once the password is input, the CMCS prompt will show the IP address of the S75/S200/S300 being accessed. At this point, the interactive commands may be used to manage and configure the S75/S200/S300 (see Section 4.5)

The example below illustrates the login process:

```
CMCS> login 192.168.0.23
```

CMCS> Password:
192.168.0.23> show lan <cr>
<network interface information displayed on screen>
192.168.0.23> logout <cr>
CMCS>

4.3 Logging into a Receiver from CMCS Prompt

There are a couple of alternate ways to log into a particular receiver from the CMCS prompt. The examples below illustrate the different methods:

Linux> ./CMCS -ip 192.168.0.23 -pw AbcdE

CMCS Utility

192.168.0.23> show lan <cr>
<network interface information displayed on screen>
192.168.0.23> exit <cr>
Linux #

OR

Linux > ./CMCS 192.168.0.23
Password:
CMCS Utility
CMCS 192.168.0.23> show lan <cr>
<network interface information displayed on screen>
192.168.0.23> logout <cr>
CMCS>

4.4 S75/S200/S300 Discovery

To discover all the S75/S200/S300 receivers on you network LAN, use the List command as shown below:

CMCS>List
1. S200CA Pro IP address: 192.168.254.205 MAC: 00-06-76-04-10-33

Select receiver by number to connect or 0 to exit.

4.5 Interactive Commands

Once the operator successfully logs into an S75/S200/S300 receiver within the interactive command shell, the following commands are available.

NOTE: - A Quick Configure Command Summary for several of the different receiver types provided in Appendix A.

4.5.1 General Commands (All Receivers)

4.5.1.1 **login**

Command Syntax: login <ip-address> [-timeout <timeout>]
li <ip-address> [timeout]

Input Variables: *ip-address:* a character string representing the ip address of the S75/S200/S300to be configured and managed (e.g. 192.168.250.100)
timeout: an OPTIONAL integer value which instructs the CMCS program how long it should wait between each login re-try attempt.

Description: Initiates a CMCS shell connection to a receiver identified by an IP Address. An optional "timeout" value, given in seconds, specifies how long to wait for a response from the receiver before a re-try attempt. It will prompt for a password, and if the password is accepted, the CMCS prompt will change to the IP address of the receiver otherwise the CMCS program will prompt the operator for a password up to 3 times before exiting the program.
Note: for security purposes, input of the password is not echoed onto the screen.

4.5.1.2 **list**

Command Syntax: list
lis

Description: Provides a listing of all S75/S200/S300 receivers present on the LAN. Allows one of the receivers to be selected for login.

4.5.1.3 **set password**

Command Syntax: set password <new password>
set pa <new password>

Input Variables: *new password:* a character string representing the new receiver password.

The password is limited to 8 characters.

Description: Resets the receiver password to an operator-specified string.

CAUTION: If the password is lost, access to the S75/S200/S300 through CMCS may be interrupted. The Password Recover Tool may be required to locally reset the receiver password to a known value.

4.5.1.4 exit

Command Syntax: exit
quit
e
q

Description: Exits the CMCS control shell back to the Linux prompt.

4.5.1.5 logout

Command Syntax: logout
logo

Description: Logs out from an S75/S200/S300 receiver and returns to the CMCS prompt.

4.5.1.6 show version

Command Syntax: show version
sh ve

Description: Displays the CMCS version

Example:

CMCS 192.168.250.205> show version

CMCS Version 1.9.3

4.5.1.7 help

Command Syntax: help
he
?

Description: Displays one line summaries of each command

The "?" help symbol may also be used on each command (except the history command) to list out the command syntax and a 1-line description of the command:

NOTE: Help can also be used to display single command syntax by typing the command followed by a space followed by "?". For example to display the command syntax for the Add Video command, enter "Add Video ?" as shown below:

CMCS 192.168.250.205> Add Video ?

4.5.1.8 history

Command Syntax: history
hi
Description: Lists previously run commands from this session

Example:

CMCS 192.168.250.205> history

1. Login 192.168.250.31
2. show version
3. sh net int
4. sh sat int

4.5.1.9 reboot

Command Syntax: reboot
re
Description: Enables the operator to reboot the currently logged-in receiver. Note: Once the reboot is completed, the operator will be returned to the CMCS prompt.

4.5.1.10 list

Command Syntax: list
lis
Description: Displays a list of S75/S200/S300 receivers on the local LAN.

4.5.1.11 **save**

Command Syntax: save <filename>
sa
Input Variables: *filename:* a text string containing the configuration filename.
Description: Saves the S75/S200/S300 configuration to a file.

4.5.1.12 **load**

Command Syntax: load <filename>
loa
Input Variables: *filename:* a text string containing the configuration filename.
Description: Loads the S75/S200/S300 configuration from a file.

NOTE: - When performing a load from configuration file, the receiver IP address or gateway IP address will NOT be changed.

4.5.1.13 **show device**

Command Syntax: show device
sh d
Description: Displays the receiver firmware version number(s)

Example:

CMCS 192.168.250.205> show device

Device Type:	S200CA Pro
MAC Address:	00-06-76-04-10-33
DSP Firmware:	Ver. 2 Rel. 6
CAM Firmware:	Ver. 6 Rel. 4
FPGA Firmware:	Ver. 2 Rel. 0

4.5.1.14 **show traffic**

Command Syntax: show traffic
sh tr
Description: Displays the counters for the receiver

Example:

CMCS 192.168.250.205> show traffic

LAN interface statistics	
TX:	208/sec
RX:	2/sec
Dropped:	0/sec
TXErr:	0/sec
Cumulative Ethernet Packets out:	26833
Satellite interface statistics	
Cumulative DVB Packets Accepted:	222007
Cumulative Uncorrectable TS Packets:	2083
DVB Packet Rates	
Accepted:	1344/sec
Scrambled:	718/sec
Clear:	478/sec
Corrupt:	0/sec

Notes:

The DVB Packet Rates may not be available in all releases.

The displayed packet rates are approximate and are not intended to be a precise indication of the data rates.

4.5.1.15 **update firmware (S300)**

Command Syntax:	update firmware <Filename> up f <Filename>
Input variables:	*Filename*: Character string representing the name of the firmware upgrade file.
Description:	Updates the DSP firmware in the receiver with contents of the firmware upgrade file. This command is valid for the S300 receiver only.

Example

CMCS 192.168.250.205> update firmware S300_V2R7.bin

Loading: S300_V2R7.bin
Download complete. Please wait...
Starting new firmware ...

Device Type:	S300
MAC Address:	00-06-76-05-00-2f
DSP Firmware:	Ver. 2, Rev. 7
FPGA Firmware:	Ver. 2, Rev. 0

4.5.2 Network Commands (All Receivers)

4.5.2.1 ip address

Command Syntax: ip address <ip-address> <net-mask>
ip a

Inputs Variables: *ip-address:* Character string representing the IP addresses (e.g. 192.168.250.200)
netmask: Character string representing the netmask value (e.g. 255.255.255.0)

Description: Changes the receiver's ip address and netmask.

CAUTION: Changing the IP address and netmask of the receiver may make it impossible for CMCS to access the receiver (if the ip address is not routable from the CMCS server). This would require the receiver IP address to be changed locally.

4.5.2.2 show lan

Command Syntax: show lan
sh la

Description: Displays the receiver ip route settings (see example below).

Example:

CMCS 192.168.250.205> show lan

Network Interface Settings:

Receiver MAC Address:	00-06-76-00-00-11
Receiver IP:	192.168.250.205
Receiver Subnet Mask:	255.255.255.0
Default Gateway IP address:	192.168.250.100
Unicast Status Destination:	192.168.254.254:6516
IGMP:	OFF
Ethernet Packets out since boot:	1234

4.5.2.3 gateway

Command Syntax: gateway <ip-address>
ga <ip-address>
Input Variable: *ip-address:* a character string representing the IP address (e.g. 192.168.250.100)
Description: Enable the operator to set or change the receiver's default route (a.k.a. gateway address).

CAUTION: Changing the default gateway IP address of the receiver may make it impossible for CMCS to access the receiver (if the ip address is not routable from the CMCS server). This would require the receiver gateway IP address to be changed locally.

4.5.2.4 unicast status address

Command Syntax: unicast status address <ip-address>
uni s a <ip-address>
Input Variables: *ip-address:* a character string representing the ip address (e.g. 192.168.250.100)
Description: Sets the IP address for the unicast status packets which allows the receiver status packets to be broadcasted beyond the local router. It isn't generally needed except when the CMCS configuration tool is to be used remotely. This feature may be turned off by setting the IP address to 255.255.255.255.

4.5.2.5 unicast status port

Command Syntax: unicast status port <port#>
uni s p <port #>
Input Variables: *port#:* an integer value representing the port number (eg: 6516). 10 port numbers are supported:

1. 6516
2. 8309
3. 8565
4. 8821
5. 9077
6. 9333
7. 13429
8. 17525
9. 17781
10. 18037

Description: Sets the port number for the unicast status packets (reference section 4.5.2.4).

4.5.2.6 **broadcast status port**

Command Syntax: broadcast status port <port#>
b s p <port #>

Input Variables: *port#*: an integer value representing the port number (eg: 6516). 10 port numbers are supported:

1. 6516
2. 8309
3. 8565
4. 8821
5. 9077
6. 9333
7. 13429
8. 17525
9. 17781
10. 18037

Description: Sets the port number for broadcast of status packets

4.5.2.7 **igmp**

Command Syntax: igmp <on-off>
ig <on-off>

Input Variables: *on-off:* a text string that is either "on" or "off"

Description: Turns IGMP functionality (on) or (off).

4.5.3 Satellite Commands (All Receivers)

4.5.3.1 symbolrate

Command Syntax: symbolrate <MSPS>
sy <MSPS>
Input variables: *MSPS:* a real number representing the tuner symbol rate in mega-symbols/second. Some receivers support symbol rate auto detection (including the S300N receiver). A value of "0" or "auto" will set the symbol rate to auto detection.
Description: Enables the operator to set the symbol rate for the receiver tuner.

4.5.3.2 frequency

Command Syntax: frequency <MHz>
f <MHz>
Input Variables: *MHz:* a real number representing the L-Band (IF) receive frequency in MHz. The frequency range is 950 MHz to 2150 MHz.
Description: Enables the operator to set the L-Band (IF) receive frequency.

NOTE: - The receive L-Band IF frequency must be between 950 MHz and 2150 MHz and is computed from the RF frequency less the LO frequency.
(i.e. IF freq=RF Freq-LO freq)

4.5.3.3 mode (all S200 and S300)

Command Syntax: mode <mode>
Input Variables: *mode:* a text string: "DVB-S", "DVBS", "DVB-S2", "DVBS2", or "auto"
Description: Sets the receive modes to the DVB-S string type, alternatively on the S300 models "auto" will set the S300 to automatically detect the DVB mode (S or S2) and set the receiver appropriately.

4.5.3.4 gold code (S300)

Command Syntax: gold code <code>
go c <code>
Input Variables: *code:* an integer value representing the receiver gold code setting. The code range is 0-262141.

Description: Sets the S300 Gold Code. The Gold Code setting can be used as a simple means to encrypt the data stream in the modulator and decrypt it in the S300.

4.5.3.5 **modcod (S300)**

Command Syntax: modcod <modcod>
modc <code>
Input Variables: *modcod:* a text string of one of the following "ANY", "1/4 QPSK", 1/3 QPSK", "2/5 QPSK", ½ QPSK", "3/5 QPSK", "2/3 QPSK", "3/4 QPSK", 4/5 QPSK", "5/6 QPSK", "8/9 QPSK", 9/10 QPSK", "3/5 8PSK", "2/3 8PSK", "3/4 8PSK", "5/6 8PSK", "8/9 8PSK", "9/10 8PSK", "2/3 16PSK", "3/4 16PSK", "4/5 16PSK", "5/6 16PSK", "8/9 16PSK", or "9/10 16PSK".
Description: Sets which stream to demodulate when receiving a multi-stream VCM signal on an S300 receiver.
For DVB-S operation, the modcod value is not used and therefore does not need to be set.
For single-stream DVB-S2 operation, the modcod value should be set to ANY.
For multi-stream DVB-S2 operation, the S300 modcod should be configured to receive only 1 of the streams by entering the modcod of the signal you wish to receive

4.5.3.6 **isi (S300)**

Command Syntax: isi <on-off>
is <on-off>
Input Variables: *on-off:* a text string that is either "on" or "off"
Description: Turns Input Stream ID (ISI) filtering on or off on a S300 receiver, it should only be used if ISI stream value is set on the incoming DVB-S2 stream and the ISI value is known. You may have to contact your uplink provider to for assistance.
For DVB-S operation, ISI filtering is not used and therefore does not need to be set.

4.5.3.7 **set isi (S300)**

Command Syntax: set isi <isi-value>
se i <isi-value>
Input Variables: *isi-value:* an integer value 0-255 representing received stream isi value.
Description: Sets the ISI filter value on an S300 receiver, it should only be used if ISI stream value is set on the incoming DVB-S2 stream and the ISI value is known. You may have to contact your uplink provider to for assistance.

For DVB-S operation, ISI filtering is not used and therefore does not need to be set.

4.5.3.8 **show satellite**

Command Syntax: show satellite
sh s
show tuner
sh tu

Description: Displays the current settings for the receiver RF satellite interface (see example below):

Example 1 (S75 DVB-S):

CMCS 192.168.250.205> show satellite

Satellite Interface Settings:

Receiver MAC Address:	00-06-76-00-00-11
Receive Mode	DVB-S
Frequency:	1000.0 MHz
Symbol Rate:	30.000 Msps
Viterbi Rate:	¾
Signal Lock:	On
Data Lock:	On
Uncorrectable Rate:	0/Second
Viterbi bit Error Rate:	0.000e+00
Carrier to Noise C/N	>20 dB
Signal Strength	70 percent

Example 2 (S200 or S300 DVB-S2):

CMCS 192.168.250.205> show satellite

Satellite Interface Settings:

Receiver MAC Address:	00-06-76-00-00-11	
Receive Mode	DVB-S2	
Frequency:	1000.0 MHz	
Symbol Rate:	30.000 Msps	
ModCod:	8PSK ¾	
Gold Code	0	*(note: this is for S300 only)*
Input Stream Filter	On	

Input Stream ID	4
Signal Lock:	On
Data Lock:	On
Uncorrectable Rate:	0/Second
Viterbi bit Error Rate:	0.000e+00
Carrier to Noise C/N	>20 dB
Signal Strength	-38 dBm

4.5.3.9 **lnb power**

Command Syntax: lnb power <on-off>
ln pow <on-off>
Input Variables: *on-off:* a text string that is either "on" or "off"
Description: Turns (on) or (off) the LNB power from the receiver to the LNB located at the satellite dish.

4.5.3.10 **lnb voltage**

Command Syntax: lnb voltage <voltage>
ln v <voltage>
Input Variables: *voltage:* a text string that is either "11-15v" or "13-18v" or "21v"
Description: Sets the LNB polarization voltage levels to 11V (horiz/vertical), 15V (left/right); to 13V (horizontal/vertical), 18V (left/right); or 21V fixed. The default setting is 13-18V.

4.5.3.11 **lnb polarization**

Command Syntax: lnb polarization <pol>
ln pol <pol>
Input Variables: *pol:* a text string that is either "horizontal", "vertical", "left" or "right"
Description: Sets the LNB polarization as (horizontal)/(left) or (vertical)/(right).

4.5.3.12 **lnb line compensation**

Command Syntax: lnb line compensation <on-off>
ln l c <on-off>
Input Variables: *on-off:* a text string that is either "on" or "off"

Description: Turns (on) or (off) the LNB long line compensation, which adds 1 VDC to the LNB voltage to compensate for the DC voltage drop in longer cables.

4.5.3.13 **lnb tone**

Command Syntax: lnb tone <on-off>
ln t <on-off>
Input Variables: *on-off:* a text string that is either "on" or "off"
Description: Turns (on) or (off) the LNB band-select tone.

4.5.3.14 **lnb frequency**

Command Syntax: lnb <tone>
ln f <tone>
Input Variables: *tone:* a text string that is either "22khz" or "44khz"
Description: The LNB tone may be set to (44KHz) or (22KHz). The default is 22 KHz.

4.5.3.15 **show lnb**

Command Syntax: show lnb
sh ln
Input Variables:
Description: This command displays the LNB settings

Example:

CMCS 192.168.250.205> show lnb

LNB Power:	On
LNB Status:	Normal
Voltage Range:	13-18v
Long Line:	Off
Polarization:	Vertical/Right
22 KHz Tone:	Off

4.5.4 Data Content Commands (All Receivers)

4.5.4.1 add pid mpe

Syntax	add pid mpe <PID 1> | <PID 2> | <PID 3> … a pi m <PID 1> | <PID 2> | <PID 3> …
Input variables:	*PID 1…PID n:* a list of up to 16 integer PID values that may range from 1 to 8191.
Description:	Adds multiple DVB packet stream identifiers (PID) to be processed by the receiver.

4.5.4.2 delete pid mpe

Command Syntax:	delete pid mpe <PID 1> | <PID 2> | <PID 3> … d pi m <PID 1> | <PID 2> | <PID 3> …
Input variables:	*PID 1…PID n*: a list of up to 16 integer PID values that may range from 1 to 8191.
Description:	Stops multiple DVB packet stream identifiers (PID's) from being processed by the receiver.

4.5.4.3 show pid

Command Syntax:	show pids sh pi
Description:	Displays the list of PIDs currently be processed by the receiver.

4.5.5 Video Content Commands (S75-Pro/S75CA/S200-Pro/S200CA)

4.5.5.1 map pid

Command Syntax	map pid <ip-address> <port> <PID>
Input variables:	ip-address: a character string that represents the IP address (e.g. 192.168.250.200) that the PID(s) will be mapped to. port: an integer value of the IP address port number that the PIDs will be mapped to. *PID:* a list of up to 16 integer PID values that may range from 1 to 8191
Description:	Maps DVB packet stream identifiers (PID) to an IP address/port on an S75-Pro, S75CA, S200-Pro or S200CA receiver.

4.5.5.2 unmap pid

Command Syntax	unmap pid <ip-address> <port> <PID> unm p <ip-address> <port> <PID >
Input variables:	*ip-address:* a character string that represents the IP address (e.g. 192.168.250.200) that the associated PID will be mapped to. *port:* an integer value of the IP address port number that the PIDs will be mapped to. *PID:* a list of up to 16 integer PID values that may range from 1 to 8191
Description:	Stops DVB packet stream identifiers (PID) from being sent to an IP address/port on an S75-Pro, S75CA, S200-Pro or S200CA receiver.

4.5.5.3 show map

Command Syntax	show map sh m
Description:	Displays the DVB packet stream identifiers (PIDs) that are mapped to each IP address/port on an S75-Pro, S75CA, S200-Pro or S200CA receiver.

Example:

CMCS 192.168.250.205> show map

Destinations	PIDs			
225.0.0.101:2000	413	513	2120	8190
225.0.0.101:2000	412	512	2125	8190

4.5.5.4 **set forwardall**

Command Syntax forwardAll <on/off> <dest ip-address> <port> [fwdnulls]

Description: Forwards All PIDs to a set destination.

Example:

```
CMCS 192.168.4.71> set forwardall on 192.168.4.11 5678

Forward All Command Successful.
```

Note: sh map does not show the forward all mapping on version 1.9.10

4.5.5.5 **add video**

Command Syntax add video <ip-address> <port> <prog no.> <[S]crambled/[C]lear> <PMT PID> <Video PID> <Audio PID> <PCR PID> [<Teletext PID>]
a vi <ip-address> <port> <prog no.> <[S]crambled/[C]lear> <PMT PID> <Video PID> <Audio PID> <PCR PID> [<Teletext PID>]

Input variables:
ip-address: a character string that represents the IP address (e.g. 225.0.250.200) that the PIDs will be mapped to.
port: an integer value that represents the IP address port number
Prog no.: an integer that represents the program number (or SID) of the video stream.
[S]crambled/[C]lear: a character string that is "S" or "C". Set to "S" if the stream is to be descrambled by the receiver and is set to "C" if the stream is clear or Free-to-Air (FTA).
Video PID: an integer from 1 to 8191 that represents the stream video PID.
Audio PID: an integer from 1 to 8191 that represents the stream audio PID.
PCR PID: an integer from 1 to 8191 that represents the PCR PID. Note: often the PCR is sent in the video PID and the video PID can just be entered here.
[Teletext PID]: an optional integer value from 1 to 8191 representing the teletext PID. Note: often the teletext information is not required or even sent with the video stream so this PID is optional. Note 2: This field may also be used to send other stream PID's that are not defined above.

Description: This command specifies all the information needed to define a video program in an S75-Pro, S75CA, S200-Pro or S200CA receiver.

NOTE: - It is assumed that a program (SID) may be mapped to multiple IP addresses, but that multiple programs (SID's) may NOT be mapped to a single IP address.

NOTE: To display the command syntax for the Add Video command, enter "Add Video ?" as shown below:

CMCS 192.168.250.205> Add Video ?

4.5.5.6 **delete video**

Command Syntax: del video <ip-address> <port> <prog no.>
d vi <ip-address> <port> <prog no.>

Input variables: *ip-address:* a character string that represents the IP address (e.g. 225.0.250.200) that the program is is currently being sent to.
port: an integer value that represents the IP address port number of the program being sent
Prog no.: an integer value that represents the program number or SID of the video program.

Description: Stops a video program from being sent on an S75-Pro, S75CA, S200-Pro or S200CA receiver by using the Program Number to determine which PIDs need to be unmapped from their corresponding IP address and removing the program from the CAM and PAT tables.

NOTE: - The delete video command will only remove entries in the CAM table and the PAT table if the given PMT PID is no longer mapped to an IP address. In the case where a particular program is mapped to several different IP address, then the all of the video programs must be removed before the program is removed from the CAM and PAT tables.

4.5.5.7 **show video**

Command Syntax: show video
sh vi

Description: Displays configuration parameters associated with each video program on an S75-Pro, S75CA, S200-Pro or S200CA receiver.

Example:

CMCS 192.168.250.205> show video

Program	Destination	PIDs	CA	Status
2020	225.0.0.101:2000	413 513 2120 8190	Y	No Program

2025	225.0.0.101:2000	412	512	2125	8190	Y	Program Found

4.5.6 PAT Commands (S75-Pro/S75CA/S200-Pro/S200CA)

4.5.6.1 add pat

Syntax: add pat < Prog No.> <PMT PID >
a pa < Prog No.> <PMT PID >

Input variables: *Prog No.*: an integer value that that represents the Program Number (SID).
PMT PID: an integer value that represents the PMT PID for the associated program.

Description: Associates a program number with a PMT that the receiver uses to generate a program specific mini-PAT. This command is only applicable to the S75-Pro, S75CA, S200-Pro or S200CA receivers.

4.5.6.2 delete pat

Command Syntax: delete pat < Prog No.>
d pa < Prog No.>

Input variables: *Prog No.*: an integer value that represents program number

Description: Specifies a Program Number that will be removed from the PAT on an S75-Pro, S75CA, S200-Pro or S200CA receiver.

4.5.6.3 show pat

Command Syntax: show pat
sh pa

Description: Displays the list of PATs currently specified to be processed by an S75-Pro, S75CA, S200-Pro or S200CA receiver.

Example:

CMCS 192.168.250.205> show pat

Program	PMT PID
2020	2120
2025	2125

4.5.7 CAM Commands (S75CA/S200CA)

4.5.7.1 add cam

Syntax	add cam <Prog No. 1> | < Prog No. 2> | < Prog No. 3> … a c <Prog No. 1> | < Prog No. 2> | < Prog No. 3> …
Input variables:	*Prog No. 1… Prog No. n*: a list of up to 16 integer values that represent program numbers.
Description:	Specifies a list of DVB program numbers to be descrambled by an S75CA or S200CA receiver.

4.5.7.2 cam watchdog

Syntax	cam watchdog <Timeout> ca w <Timeout>
Input variables:	*Timeout*: an integer value that represents the number of seconds that the CAM watchdog waits before resetting the CAM.
Description:	Should be used if the CAM does not descramble an authorized stream that it is receiving; it will cause the receiver to automatically reset the CAM after the timeout interval. This can be disabled by setting the Watchdog Timeout to 0. Note: any free-to-air traffic passing thru the CAM may prevent the watchdog from resetting the CAM.

4.5.7.3 delete cam

Command Syntax:	delete cam <Prog No. 1> | < Prog No. 2> | < Prog No. 3> … d c <Prog No. 1> | < Prog No. 2> | < Prog No. 3> …
Input variables:	*Prog No. 1… Prog No. n*: a list of up to 16 integer values that represent program numbers to do be removed from the CAM.
Description:	Stops up to 16 programs from being descrambled by the CAM on an S75CA or the S200CA receiver.

4.5.7.4 show cam

Command Syntax:	show cam sh ca
Description:	Displays the list of programs to be descrambled by the S75CA or the S200CA receivers. Also shows the CA status for each.

Example:

CMCS 192.168.250.205> show cam

CAM Card Status:	Ready
Watchdog Interval:	0 seconds
CA Processed	Status
Programs	
2020	No Program
2025	Decoding

4.5.8 Video Commands (S200V/S200VCA)

4.5.8.1 add vprogram

Command Syntax: add vprogram <prog no.><IP address><port>
a vp <prog no.><IP address><port>

Input variables: P*rog no.*: an integer value representing the program number (or SID) of the video stream.
ip-address: a character string representing the IP address (e.g. 225.0.250.200).
port: an integer value of the IP address port number.

Description: Forwards a video program to a specified destination (IP Address/Port) on an S200V or S200VCA receiver.

4.5.8.2 add dprogram

Command Syntax: add dprogram <prog no.>
a dp <prog no.>

Input variables: P*rog no.*: an integer representing the program number (or SID) of a data program.

Description: Forwards a data program in an S200V or S200VCA receiver.

4.5.8.3 del vprogram

Command Syntax: del vprogram <prog no.><IP address><port>
d vp <prog no.><IP address><port>

Input variables: P*rog no.*: an integer representing the program number (or SID) of the video stream.
ip-address: a character string representing the IP address (e.g. 225.0.250.200).
port: an integer value of the IP address port number

Description: Stops a video program from being forwarded to a specified destination (IP Address/Port) on an S200V or S200VCA receiver.

4.5.8.4 del dprogram

Command Syntax: del dprogram <prog no.>
d dp <prog no.>>

Input variables: P*rog no.*: an integer representing the program number (or SID) of the video stream

Description: Stops a data program from being forwarded by the receiver on an S200V or S200VCA receiver.

4.5.8.5 **show guide**

Command Syntax: show guide
sh g
Description: Displays the list of all available programs that can be viewed on the S200V or S200VCA receivers.
Example:

CMCS 192.168.250.205> show guide

Program	
200	AB SAT – RTL9 (CA)
201	AB SAT – AB1 (CA)
202	AB SAT – AB MOTEURS (CA)

4.5.8.6 **show program**

Command Syntax: show progam
sh pr
Description: Displays a list of all the video programs that are being forwarded by the receiver on an S200V or S200VCA receiver.
Example:

CMCS 192.168.250.205> show program

Destination	Program	CS Status
225.0.0.100:2000	200	Scrambled
225.0.0.101:2000	201	Clear

4.5.9 Cipher commands (S200CA-CS/S200CA-CS2)

4.5.9.1 cipher key (S200CA-CS/S200CA-CS2)

Command Syntax: cipher key <key>
ci k <key>
Input variables: *key*: an character string representing cipher saber key
Description: Imports the encrypted cipher saber key into an S200CA-CS or S200CA-CS2 receiver

4.5.9.2 cipher iterations (S200CA-CS/S200CA-CS2)

Command Syntax: cipher iterations <count>
ci i <count>
Input variables: *count*: an integer value representing the iteration count
Description: Sets the cipher saber iteration count of an S200CA-CS or S200CA-CS2 receiver. Note iteration count only goes 1-5 in v1 and goes 1-99 in v2.

4.5.9.3 cipher version (S200CA-CS/S200CA-CS2)

Command Syntax: cipher version <v1-v2>
ci v <v1-v2>
Input variables: *v1-v2*: a character string of either "v1" or "v2"
Description: Selects encryption version. For S200CA-CS receiver the only option is version 1 (v1). The S200CA-CS2 receiver can handle either version 1 (v1) or version 2 (v2).

4.5.9.4 show cipher version (S200CA-CS/S200CA-CS2)

Command Syntax: show cipher version
sh cipher v
Description: Displays the encryption version number of an S200CA-CS or S200CA-CS2 receiver.

4.5.9.5 show cipher (S200CA-CS/S200CA-CS2)

Command Syntax: show cipher
sh cipher
Description: Displays the iteration count of an S200CA-CS or S200CA-CS2 receiver.

5 Scripting commands

This section describes the command structure for the scripting mode. This mode enables the operator to enter single-line commands to a particular S75/S200/S300. This mode enables the user to string several command switches together on one line. It is particularly useful to quickly query receiver performance, or configure receiver parameter(s), without the need to enter the command shell; it may also be used to set up script commands to enable more efficient management of the receivers.

NOTE: - To be able to manage the S75/S200/S300 remotely via CMCS, the receiver must have a routable IP address from the M&C server.

This section describes the command structure for the CMCS scripting mode. No command shell or receiver log in is required to use this mode, although the receiver password and IP address are needed within the command structure to send a command to a particular receiver. If the IP address and/or receiver password and at least one further command switch are not provided, the program will initiate CMCS interactive mode. Each command will have the following basic structure:

NAME

./CMCS[<-ip [IP-ADDRESS]> | <-pw [PW-PASSWORD]> | <Optional Command Switches>]

Where the following command switches may used on a particular command:

SYNOPSIS
./CMCS [-ip ipAddress] [-pw login Password] [-timeout timeout] [-list] [-save filename] [-load filenam] [-help] [-setip newIPAddress] [-gway gateway] [-igmp OnOff] [-shdev] [-shlan] [-shsat] [-shtraf] [-shlnb] [-shpid] [-shmap] [-shvid] [-shpat] [-shcam] [-usp unicastPort] [-usa unicastAddr] [-bsp broadcastPort] [-sym symbolRate] [-rfreq rfrequency] [-goldcode code] [-modcod modcod] [isi isi_value] [setisi onoff] [-lnbpwr onoff] [-lnbv voltage] [-lnblc linecomp] [-lnbpol polarization] [-lnbt onoff] [-lnbtf tonefreq] [-recm rcvrmode] [-reboot] [-add newpid] [-del delpid] [-mpid ipaddr_port_pid] [-umpid ipaddr_port_pid] [-addvid ipaddr_port_progno_Scram/Clear_pmtpid_videopid_audiopid_pcrpid_[teletexpid] [-delvid] [-addpat progno_pmtpid] [-delpat progno] [-addcam progno] [-delcam progno] [-setpassword newpassword] [-addvprog progno ipaddr port] [-adddprog progno] [-delvprog progno ipaddr port] [-deldprog progno] [-shvprog] [-shguide] [-xmlstatus] [-setcipherkey key] [-setcipheriter count] [-setcipherversion v1-v2] [-shcipherversion] [-shcipher] [-updatefirmware filename]

5.1 Required Command Switches

Two command switches (-ip and –pw) and at least one optional command is required to execute a scripting mode command. Because of the nature of the scripting syntax, the password is echoed onto the screen.

1) -ip <ip-address> IP Address of receiver to communicate with,
1 String value

2) -pw <password> Configuration password of the receiver to be used in creating a connection to the S75/S200/S300, 1 string value.

NOTE: - if the required command switches (-ip and –pw) and at least one optional command switch are not present in the command line, then the program will enter into the interactive mode (see second example below)

Examples:

Linux > ./CMCS –ip 192.168.0.23 –pw abcde -add 1000

OR to log into the interactive mode:

Linux > ./CMCS –ip 192.168.0.23 –pw abcde

CMCS S75/S200/S300 Configuration Utility

CMCS 192.168.0.23>

5.2 Optional Command Switches

The optional command switches, provided below, must follow the required command switches in the command line syntax. The order of the optional command switches in the command line is not important.

5.2.1 General Commands (All Receivers)

5.2.1.1 –timeout

Command Syntax: -timeout <timeout>
Input Variables: *timeout:* integer value representing the timeout value in seconds. Default value is 5 seconds
Description: Instructs the CMCS program how long it should wait between each login re-try attempt.

5.2.1.2 -setpassword

Command Syntax: -setpassword <new password>
Input Variables: *new password*: a character string representing the new receiver password. The password is limited to 8 characters.
Description: Resets the receiver password to an operator-specified string.

CAUTION: If the password is lost, access to the S75/S200/S300 through CMCS may be interrupted. The Password Recover Tool may be required to locally reset the receiver password to a known value.

5.2.1.3 -reboot

Command Syntax: -reboot
Description: Enables the operator to reboot the currently logged-in receiver. Note: Once the reboot is completed, the operator will be returned to the CMCS prompt.

5.2.1.4 -help

Command Syntax: -help
Description: Displays a one line summary of each command.

5.2.1.5 -list

Command Syntax: -list
Description: Displays a list of S75/S200/S300 receivers on the local LAN
Allows the operator to select one of the receivers for further configuration.

5.2.1.6 **-save**

Command Syntax: -save <filename>
Input Variables: *filename:* a text string containing the configuration filename.
Description: Saves the receiver configuration to a file.

5.2.1.7 **-load**

Command Syntax: *-load* <filename>
Input Variables: *filename*: a text string containing the configuration filename.
Description: Loads the receiver configuration from a file.

NOTE: - When performing a load from configuration file, the receiver IP address or gateway IP address will NOT be changed.

5.2.1.8 **–updatefirmware (S300N)**

Command Syntax: -updatefirmware <Filename>
Input variables: *Filename*: Character string representing the name of the firmware upgrade file.
Description: Updates the DSP firmware in the receiver with contents of the firmware upgrade file. This command is valid for the S300 receiver only.

5.2.2 Monitoring/Status/Info Commands

5.2.2.1 **-shdev**

Command Syntax: shdev
Description: Displays the receiver firmware version number(s)

5.2.2.2 **-shtraf**

Command Syntax: -shtraf
Description: Displays the accumulated counters for the receiver

5.2.2.3 **-csv1status**

Command Syntax: -csv1status <filename>
Input Variables: *filename*: a text string containing the filename for the log entry
Description: Adds one extra log entry line to the specified file

The columns/values of the comma separated file are as follows:

STATUS_TIMESTAMP
DEVICE_TYPE
RECEIVER_MAC
RECEIVER_IP
DATA_SYNC_LOSS
SIGNAL_STRENGTH_AS_PERCENTAGE
SIGNAL_LOCK
DATA_LOCK
LNB_FAULT
VBER
UNCORRECTABLES
CARRIER_TO_NOISE
SIGNAL_STRENGTH_AS_DBM
DVB_ACCEPTED
TOTAL_DVB_PACKETS_ACCEPTED
TOTAL_UNCORRECTABLE_TS_PACKETS

5.2.2.4 **-csv2status**

Command Syntax: -csv2status <filename>
Input Variables: *filename*: a text string containing the filename for the log entry
Description: Adds one extra log entry line to the specified file

The columns/values of the comma separated file are the same as csv1status along with the following:

ETHERNET_TRANSMIT
ETHERNET_RECEIVE
ETHERNET_PACKET_DROPPED
ETHERNET_RECEIVE_ERROR
TOTAL_ETHERNET_PACKETS_OUT

5.2.2.5 **-xmlstatus**

Command Syntax: -xmlstatus
Description: Returns an xml listing of the receiver status

Examples: The examples provided below show a typical listing for various different receiver models.

1) S200VCA

```
<RECEIVER_STATUS TIME_STAMP="2010/10/27 14:41:18.145">
    <DEVICE_TYPE>S200VCA</DEVICE_TYPE>
    <RECEIVER_MAC>00-06-76-04-10-40</RECEIVER_MAC>
    <RECEIVER_IP>192.168.254.254</RECEIVER_IP>
    <STATUS_TIMESTAMP>2010/10/27 14:41:18.141</STATUS_TIMESTAMP>
    <DATA_SYNC_LOSS>0</DATA_SYNC_LOSS>
    <CARRIER_FREQUENCY>1000 MHz (+57 kHz)</CARRIER_FREQUENCY>
    <DVB_SIGNAL_TYPE>DVBS</DVB_SIGNAL_TYPE>
    <VITERBI_RATE>3/4 QPSK</VITERBI_RATE>
    <MODCOD>Unknown</MODCOD>
    <SIGNAL_STRENGTH_AS_DBM>-40</SIGNAL_STRENGTH_AS_DBM>
    <SIGNAL_STRENGTH_AS_PERCENTAGE>70.000000</SIGNAL_STRENGTH_AS_PERCENTAGE>
    <SIGNAL_LOCK>Locked</SIGNAL_LOCK>
    <DATA_LOCK>Locked</DATA_LOCK>
    <LNB_FAULT>No Fault</LNB_FAULT>
    <VBER>0.00e+00</VBER>
    <PER>0.00e+00</PER>
    <UNCORRECTABLES>0</UNCORRECTABLES>
    <CARRIER_TO_NOISE>100.000000</CARRIER_TO_NOISE>
    <FREQUENCY_OFFSET>57</FREQUENCY_OFFSET>
    <SPECTRAL_INVERSION_FLAG>Normal</SPECTRAL_INVERSION_FLAG>
    <PILOT_SYMBOL_FLAG>Off</PILOT_SYMBOL_FLAG>
    <FRAME_LENGTH>Long</FRAME_LENGTH>
    <DVB_ACCEPTED>0</DVB_ACCEPTED>
    <TOTAL_DVB_PACKETS_ACCEPTED>0</TOTAL_DVB_PACKETS_ACCEPTED>
    <TOTAL_UNCORRECTABLE_TS_PACKETS>1174</TOTAL_UNCORRECTABLE_TS_PACKETS>
    <ETHERNET_TRANSMIT>1</ETHERNET_TRANSMIT>
    <ETHERNET_RECEIVE>6</ETHERNET_RECEIVE>
    <ETHERNET_PACKET_DROPPED>0</ETHERNET_PACKET_DROPPED>
    <ETHERNET_RECEIVE_ERROR>0</ETHERNET_RECEIVE_ERROR>
    <TOTAL_ETHERNET_PACKETS_OUT>7820</TOTAL_ETHERNET_PACKETS_OUT>
    <CAM_STATUS>Not Inserted</CAM_STATUS>
    <DVB_SCRAMBLED>0</DVB_SCRAMBLED>
    <DVB_CLEAR>0</DVB_CLEAR>
    <SYMBOL_RATE>27500</SYMBOL_RATE>
</RECEIVER_STATUS>
```

2) S75-Pro

```
<RECEIVER_STATUS TIME_STAMP="2010/10/25 18:59:00.343">
    <DEVICE_TYPE>S75+ Pro</DEVICE_TYPE>
    <RECEIVER_MAC>00-06-76-00-00-99</RECEIVER_MAC>
    <RECEIVER_IP>192.168.254.252</RECEIVER_IP>
    <STATUS_TIMESTAMP>2010/10/25 18:59:00.336</STATUS_TIMESTAMP>
    <DATA_SYNC_LOSS>0</DATA_SYNC_LOSS>
    <VITERBI_RATE>5/6 QPSK</VITERBI_RATE>
    <SIGNAL_STRENGTH_AS_PERCENTAGE>87.500000</SIGNAL_STRENGTH_AS_PERCENTAGE>
    <SIGNAL_LOCK>Locked</SIGNAL_LOCK>
    <DATA_LOCK>Locked</DATA_LOCK>
    <LNB_FAULT>No Fault</LNB_FAULT>
    <VBER>0.00e+00</VBER>
    <UNCORRECTABLES>0</UNCORRECTABLES>
    <CARRIER_TO_NOISE>100.0</CARRIER_TO_NOISE>
```

```
    <DEMODULATOR_GAIN>67</DEMODULATOR_GAIN>
    <AGCA>105</AGCA>
    <AGCN>67</AGCN>
    <GNYQA>0</GNYQA>
    <GFARA>0</GFARA>
    <NEST>2</NEST>
    <CLOCK_OFFSET>6</CLOCK_OFFSET>
    <FREQUENCY_ERROR>1</FREQUENCY_ERROR>
    <ADC_MID>0</ADC_MID>
    <ADC_CLIP>255</ADC_CLIP>
    <DIGITAL_GAIN>0</DIGITAL_GAIN>
    <AA_CLAMP>0</AA_CLAMP>
    <PID_COUNT>5</PID_COUNT>
    <DVB_ACCEPTED>69</DVB_ACCEPTED>
    <TOTAL_DVB_PACKETS_ACCEPTED>55244</TOTAL_DVB_PACKETS_ACCEPTED>
    <TOTAL_UNCORRECTABLE_TS_PACKETS>6168</TOTAL_UNCORRECTABLE_TS_PACKETS>
    <ETHERNET_TRANSMIT>70</ETHERNET_TRANSMIT>
    <ETHERNET_RECEIVE>7</ETHERNET_RECEIVE>
    <ETHERNET_PACKET_DROPPED>0</ETHERNET_PACKET_DROPPED>
    <ETHERNET_RECEIVE_ERROR>0</ETHERNET_RECEIVE_ERROR>
    <TOTAL_ETHERNET_PACKETS_OUT>5589</TOTAL_ETHERNET_PACKETS_OUT>
    <DVB_SCRAMBLED>69</DVB_SCRAMBLED>
    <DVB_CLEAR>0</DVB_CLEAR>
    <SYMBOL_RATE>27500</SYMBOL_RATE>
</RECEIVER_STATUS
```

3) S75CA

```
<RECEIVER_STATUS TIME_STAMP="2010/10/25 18:45:47.849">
    <DEVICE_TYPE>S75CA Pro</DEVICE_TYPE>
    <RECEIVER_MAC>00-06-76-03-02-54</RECEIVER_MAC>
    <RECEIVER_IP>192.168.254.250</RECEIVER_IP>
    <STATUS_TIMESTAMP>2010/10/25 18:45:47.841</STATUS_TIMESTAMP>
    <DATA_SYNC_LOSS>0</DATA_SYNC_LOSS>
    <VITERBI_RATE>5/6 QPSK</VITERBI_RATE>
    <SIGNAL_STRENGTH_AS_PERCENTAGE>83.000000</SIGNAL_STRENGTH_AS_PERCENTAGE>
    <SIGNAL_LOCK>Locked</SIGNAL_LOCK>
    <DATA_LOCK>Locked</DATA_LOCK>
    <LNB_FAULT>No Fault</LNB_FAULT>
    <VBER>0.00e+00</VBER>
    <UNCORRECTABLES>0</UNCORRECTABLES>
    <CARRIER_TO_NOISE>100.0</CARRIER_TO_NOISE>
    <DEMODULATOR_GAIN>66</DEMODULATOR_GAIN>
    <AGCA>114</AGCA>
    <AGCN>66</AGCN>
    <GNYQA>0</GNYQA>
    <GFARA>0</GFARA>
    <NEST>3</NEST>
    <CLOCK_OFFSET>6</CLOCK_OFFSET>
    <FREQUENCY_ERROR>0</FREQUENCY_ERROR>
    <ADC_MID>0</ADC_MID>
    <ADC_CLIP>255</ADC_CLIP>
    <DIGITAL_GAIN>0</DIGITAL_GAIN>
    <AA_CLAMP>0</AA_CLAMP>
    <PID_COUNT>5</PID_COUNT>
    <DVB_ACCEPTED>69</DVB_ACCEPTED>
    <TOTAL_DVB_PACKETS_ACCEPTED>69499</TOTAL_DVB_PACKETS_ACCEPTED>
    <TOTAL_UNCORRECTABLE_TS_PACKETS>21842</TOTAL_UNCORRECTABLE_TS_PACKETS>
    <ETHERNET_TRANSMIT>70</ETHERNET_TRANSMIT>
    <ETHERNET_RECEIVE>8</ETHERNET_RECEIVE>
    <ETHERNET_PACKET_DROPPED>0</ETHERNET_PACKET_DROPPED>
```

```
    <ETHERNET_RECEIVE_ERROR>0</ETHERNET_RECEIVE_ERROR>
    <TOTAL_ETHERNET_PACKETS_OUT>63353</TOTAL_ETHERNET_PACKETS_OUT>
    <CAM_STATUS>Ready</CAM_STATUS>
    <DVB_SCRAMBLED>70</DVB_SCRAMBLED>
    <DVB_CLEAR>0</DVB_CLEAR>
    <SYMBOL_RATE>27500</SYMBOL_RATE>
    <CA_PROGRAM_STATUS_LIST />
</RECEIVER_STATUS>
```

4) S200-Pro

```
<RECEIVER_STATUS TIME_STAMP="2010/10/25 17:39:09.652">
    <DEVICE_TYPE>S200 Pro</DEVICE_TYPE>
    <RECEIVER_MAC>00-06-76-00-00-22</RECEIVER_MAC>
    <RECEIVER_IP>192.168.254.251</RECEIVER_IP>
    <STATUS_TIMESTAMP>2010/10/25 17:39:09.637</STATUS_TIMESTAMP>
    <DATA_SYNC_LOSS>0</DATA_SYNC_LOSS>
    <CARRIER_FREQUENCY>1000 MHz (+77 kHz)</CARRIER_FREQUENCY>
    <DVB_SIGNAL_TYPE>DVBS</DVB_SIGNAL_TYPE>
    <VITERBI_RATE>5/6 QPSK</VITERBI_RATE>
    <MODCOD>Unknown</MODCOD>
    <SIGNAL_STRENGTH_AS_DBM>-37</SIGNAL_STRENGTH_AS_DBM>
    <SIGNAL_STRENGTH_AS_PERCENTAGE>76.000000</SIGNAL_STRENGTH_AS_PERCENTAGE>
    <SIGNAL_LOCK>Locked</SIGNAL_LOCK>
    <DATA_LOCK>Locked</DATA_LOCK>
    <LNB_FAULT>No Fault</LNB_FAULT>
    <VBER>0.00e+00</VBER>
    <PER>0.00e+00</PER>
    <UNCORRECTABLES>0</UNCORRECTABLES>
    <CARRIER_TO_NOISE>100.000000</CARRIER_TO_NOISE>
    <FREQUENCY_OFFSET>77</FREQUENCY_OFFSET>
    <SPECTRAL_INVERSION_FLAG>Normal</SPECTRAL_INVERSION_FLAG>
    <PILOT_SYMBOL_FLAG>Off</PILOT_SYMBOL_FLAG>
    <FRAME_LENGTH>Long</FRAME_LENGTH>
    <PID_COUNT>5</PID_COUNT>
    <DVB_ACCEPTED>67</DVB_ACCEPTED>
    <TOTAL_DVB_PACKETS_ACCEPTED>17361</TOTAL_DVB_PACKETS_ACCEPTED>
    <TOTAL_UNCORRECTABLE_TS_PACKETS>1302</TOTAL_UNCORRECTABLE_TS_PACKETS>
    <ETHERNET_TRANSMIT>11</ETHERNET_TRANSMIT>
    <ETHERNET_RECEIVE>9</ETHERNET_RECEIVE>
    <ETHERNET_PACKET_DROPPED>0</ETHERNET_PACKET_DROPPED>
    <ETHERNET_RECEIVE_ERROR>0</ETHERNET_RECEIVE_ERROR>
    <TOTAL_ETHERNET_PACKETS_OUT>6359</TOTAL_ETHERNET_PACKETS_OUT>
    <DVB_SCRAMBLED>67</DVB_SCRAMBLED>
    <DVB_CLEAR>0</DVB_CLEAR>
    <SYMBOL_RATE>27500</SYMBOL_RATE>
</RECEIVER_STATUS>
```

5) S200CA

```
<RECEIVER_STATUS TIME_STAMP="2010/10/25 19:05:09.314">
    <DEVICE_TYPE>S200CA Pro</DEVICE_TYPE>
    <RECEIVER_MAC>00-06-76-04-10-35</RECEIVER_MAC>
    <RECEIVER_IP>192.168.254.254</RECEIVER_IP>
    <STATUS_TIMESTAMP>2010/10/25 19:05:09.296</STATUS_TIMESTAMP>
    <DATA_SYNC_LOSS>0</DATA_SYNC_LOSS>
    <CARRIER_FREQUENCY>1000 MHz (+60 kHz)</CARRIER_FREQUENCY>
    <DVB_SIGNAL_TYPE>DVBS</DVB_SIGNAL_TYPE>
    <VITERBI_RATE>5/6 QPSK</VITERBI_RATE>
    <MODCOD>Unknown</MODCOD>
```

```
    <SIGNAL_STRENGTH_AS_DBM>-39</SIGNAL_STRENGTH_AS_DBM>
    <SIGNAL_STRENGTH_AS_PERCENTAGE>72.000000</SIGNAL_STRENGTH_AS_PERCENTAGE>
    <SIGNAL_LOCK>Locked</SIGNAL_LOCK>
    <DATA_LOCK>Locked</DATA_LOCK>
    <LNB_FAULT>No Fault</LNB_FAULT>
    <VBER>0.00e+00</VBER>
    <PER>0.00e+00</PER>
    <UNCORRECTABLES>0</UNCORRECTABLES>
    <CARRIER_TO_NOISE>100.000000</CARRIER_TO_NOISE>
    <FREQUENCY_OFFSET>60</FREQUENCY_OFFSET>
    <SPECTRAL_INVERSION_FLAG>Normal</SPECTRAL_INVERSION_FLAG>
    <PILOT_SYMBOL_FLAG>Off</PILOT_SYMBOL_FLAG>
    <FRAME_LENGTH>Long</FRAME_LENGTH>
    <PID_COUNT>5</PID_COUNT>
    <DVB_ACCEPTED>66</DVB_ACCEPTED>
    <TOTAL_DVB_PACKETS_ACCEPTED>38635</TOTAL_DVB_PACKETS_ACCEPTED>
    <TOTAL_UNCORRECTABLE_TS_PACKETS>1250</TOTAL_UNCORRECTABLE_TS_PACKETS>
    <ETHERNET_TRANSMIT>10</ETHERNET_TRANSMIT>
    <ETHERNET_RECEIVE>9</ETHERNET_RECEIVE>
    <ETHERNET_PACKET_DROPPED>0</ETHERNET_PACKET_DROPPED>
    <ETHERNET_RECEIVE_ERROR>0</ETHERNET_RECEIVE_ERROR>
    <TOTAL_ETHERNET_PACKETS_OUT>7588</TOTAL_ETHERNET_PACKETS_OUT>
    <CAM_STATUS>Ready</CAM_STATUS>
    <DVB_SCRAMBLED>66</DVB_SCRAMBLED>
    <DVB_CLEAR>0</DVB_CLEAR>
    <SYMBOL_RATE>27500</SYMBOL_RATE>
    <CA_PROGRAM_STATUS_LIST />
</RECEIVER_STATUS>
```

6) S300

```
<RECEIVER_STATUS TIME_STAMP="2011/01/07 10:50:13.350">
    <DEVICE_TYPE>S300</DEVICE_TYPE>
    <RECEIVER_MAC>00-06-76-00-00-00</RECEIVER_MAC>
    <RECEIVER_IP>192.168.254.242</RECEIVER_IP>
    <STATUS_TIMESTAMP>2011/01/07 10:50:13.338</STATUS_TIMESTAMP>
    <DATA_SYNC_LOSS>0</DATA_SYNC_LOSS>
    <CARRIER_FREQUENCY>1000 MHz (+46 kHz)</CARRIER_FREQUENCY>
    <DVB_SIGNAL_TYPE>DVBS</DVB_SIGNAL_TYPE>
    <VITERBI_RATE>5/6 QPSK</VITERBI_RATE>
    <MODCOD>2/5 QPSK</MODCOD>
    <SIGNAL_STRENGTH_AS_DBM>-38</SIGNAL_STRENGTH_AS_DBM>
    <SIGNAL_LOCK>Locked</SIGNAL_LOCK>
    <DATA_LOCK>Locked</DATA_LOCK>
    <LNB_FAULT>No Fault</LNB_FAULT>
    <VBER>0.00e+00</VBER>
    <PER>0.00e+00</PER>
    <UNCORRECTABLES>0</UNCORRECTABLES>
    <CARRIER_TO_NOISE>24.600000</CARRIER_TO_NOISE>
    <FREQUENCY_OFFSET>46000</FREQUENCY_OFFSET>
    <LOCKED_SYMBOL_RATE>44998</LOCKED_SYMBOL_RATE>
    <SPECTRAL_INVERSION_FLAG>Inverted</SPECTRAL_INVERSION_FLAG>
    <PILOT_SYMBOL_FLAG>Off</PILOT_SYMBOL_FLAG>
    <FRAME_LENGTH>Long</FRAME_LENGTH>
    <PID_COUNT>5</PID_COUNT>
    <DVB_ACCEPTED>14260</DVB_ACCEPTED>
    <TOTAL_DVB_PACKETS_ACCEPTED>615273839</TOTAL_DVB_PACKETS_ACCEPTED>
    <TOTAL_UNCORRECTABLE_TS_PACKETS>1137</TOTAL_UNCORRECTABLE_TS_PACKETS>
    <ETHERNET_TRANSMIT>2567</ETHERNET_TRANSMIT>
    <ETHERNET_RECEIVE>5</ETHERNET_RECEIVE>
    <ETHERNET_PACKET_DROPPED>0</ETHERNET_PACKET_DROPPED>
    <ETHERNET_RECEIVE_ERROR>0</ETHERNET_RECEIVE_ERROR>
```

```
    <TOTAL_ETHERNET_PACKETS_OUT></TOTAL_ETHERNET_PACKETS_OUT>
    <DVB_SCRAMBLED>0</DVB_SCRAMBLED>
    <DVB_CLEAR>14260</DVB_CLEAR>
</RECEIVER_STATUS>
```

5.2.3 Network Commands (All Receivers)

5.2.3.1 -setip

Command Syntax: -setip <ip-address> <net-mask>
Inputs Variables: *ip-address:* Character string representing the IP addresses (e.g. 192.168.250.200)
netmask: Character string representing the Netmask value (e.g. 255.255.255.0)
Description: Enables the operator to set or change the receiver's ip address and netmask.

CAUTION: Changing the IP address and netmask of the receiver may make it impossible for CMCS to access the receiver (if the ip address is not routable from the CMCS server). This would require the receiver IP address to be changed locally.

5.2.3.2 -shlan

Command Syntax: -shlan
Description: Enables the operator to display the S75/S200/S300 ip route settings.

5.2.3.3 -gway

Command Syntax: -gway <ip-address>
InputVariable: *ip-address:* character string representing the IP address (e.g. 192.168.250.100)
Description: Enables the operator to set or change the receiver's default route (a.k.a. gateway address).

CAUTION: Changing the default gateway IP address of the receiver may make it impossible for CMCS to access the receiver (if the ip address is not routable from the CMCS server). This would require the receiver gateway IP address to be changed locally.

5.2.3.4 -usp

Command Syntax: -usp <port#>
Input Variables: *port#*: integer value representing the port number (eg: 6516). 10 port numbers are supported. They include:

11. 6516

12. 8309
13. 8565
14. 8821
15. 9077
16. 9333
17. 13429
18. 17525
19. 17781
20. 18037

Description: Sets the port number for the destination of broadcast status packets.

5.2.3.5 **–usa**

Command Syntax: -usa <ip-address>
Input Variables: *ip-address:* character string representing the ip address (e.g. 192.168.250.100)
Description: Enables the operator to set the IP address for the destination of unicast status packets. This allows for the receiver status packets to be broadcast beyond the

local S75/S200/S300 router. It is generally not needed for CMCS, but may be need if the receiver local configuration tool is to be used remotely.
For CMCS operation, this feature may be turned off by setting the IP address to: 255.255.255.255.

5.2.3.6 **–bsp**

Command Syntax: -bsp <port#>
Input Variables: *port#*: integer value representing the port number (eg: 6516). 10 port numbers are supported. They include:

1. 6516
2. 8309
3. 8565
4. 8821
5. 9077
6. 9333
7. 13429
8. 17525
9. 17781
10. 18037

Description: Sets the port number for the destination of broadcast status packets.

5.2.3.7 **–igmp**

Command Syntax: -igmp <on-off>
Input Variables: *on-off:* a text string that is either “on” or “off”
Description: Enables (on) or disables (off) the IGMP functionality on the receiver.

5.2.4 Satellite Commands

5.2.4.1 -sym

Command Syntax: -sym <MSPS>
Input variables: *MSPS*: real variable representing the tuner symbol rate in Mega-symbols/second. For receivers that support auto detection of the received symbol rate (includes all S300 receivers), a value of "0" or "auto" will set the symbol rate top auto detection.

Description: Enables the operator to sets the symbol rate for the receiver tuner.

5.2.4.2 –rfreq

Command Syntax: -rfreq <MHz>
Input Variables: *MHz:* real variable representing the receiver L-Band (IF) receive frequency in MHz. The frequency range is 950 MHz to 2150 MHz.
Description: Enables the operator to set the L-Band (IF) receive frequency of the receiver.

NOTE: - The L-Band IF frequency must be between 950 MHz and 2150 MHz and is computed from the RF frequency less the LO frequency.
(i.e. IF freq=RF Freq-LO freq)

5.2.4.3 -recm

Command Syntax: -recm <mode>
Input Variables: mode: a text string that is either "DVB-S" or "DVB-S2"
Description: This command sets the receive modes as follows: "DVB-S" for DVB-S, and "DVB-S2" for DVB-S2 or "auto" for both. The mode values are supported in the receivers as follows:
"DVB-S" - All receivers
"DVB-S2" – All S200 and S300 receivers
"auto" – All S300 receivers

5.2.4.4 –goldcode (S300)

Command Syntax: -goldcode <code>
Input Variables: *code:* integerl variable representing the receiver gold code setting.
The code range is 0-262141.
This command is only applicable to the S300 receiver family.
Description: Enables the operator to set the receiver Gold Code.

5.2.4.5 **-modcod (S300)**

Command Syntax: -modcod <modcod>
Input Variables: *modcod:* a text string representing the modcod that the receiver will be set to
This command is only applicable to the S300 receiver family.
Description: The modcod value is used to tell the receiver which stream to demodulate when receiving a multi-stream VCM signal.
For DVB-S operation, the modcod value is not used and therefore does not need to be set.

For single-stream DVB-S2 operation, the modcod value should be set to ANY.

For multi-stream DVB-S2 operation, the S300 should be configured to receive only 1 of the streams. This is accomplished by entering the modcod of the signal you wish to receive. The following provides a list of possible modcod entries:
"ANY"
"1/4 QPSK", 1/3 QPSK", "2/5 QPSK", ½ QPSK", "3/5 QPSK", "2/3 QPSK", "3/4 QPSK", 4/5 QPSK", "5/6 QPSK", "8/9 QPSK", 9/10 QPSK"
"3/5 8PSK", "2/3 8PSK", "3/4 8PSK", "5/6 8PSK", "8/9 8PSK", "9/10 8PSK"
""2/3 16PSK", "3/4 16PSK", "4/5 16PSK", "5/6 16PSK", "8/9 16PSK", "9/10 16PSK"

5.2.4.6 **-isi (S300)**

Command Syntax: -isi <on-off>
Input Variables: *on-off:* a text string that is either "on" or "off"
This command is only applicable to the S300 receiver family.
Description: Enables the operator to turn Input Stream ID (ISI) filtering on or off. This command should only be used if ISI stream value is set on the incoming DVB-S2 stream and the ISI value is known. You may have to contact your uplink provider to for assistance.
For DVB-S operation, ISI filtering is not used and therefore does not need to be set.

5.2.4.7 **-setisi (S300)**

Command Syntax: -setisi <isi-value>

Input Variables: *isi-value:* integer variable representing received stream isi value. The value range is 0-255
This command is only applicable to the S300 receiver family.
Description: Enables the operator to set the ISI filter value.
This command should only be used if ISI stream value is set on the incoming DVB-S2 stream and the ISI value is known. You may have to contact your uplink provider to for assistance.
For DVB-S operation, ISI filtering is not used and therefore does not need to be set.

5.2.4.8 **-shsat**

Command Syntax: -shsat
-shtun
Description: Displays the current settings for the receiver RF satellite interface

5.2.4.9 **-lnbpwr**

Command Syntax: -lnbpwr <on-off>
Input Variables: *on-off*: a text string that is either "on" or "off"
Description: Turns on or off the LNB power from the receiver to the LNB located at the satellite dish.

5.2.4.10 **-lnbv**

Command Syntax: -lnbv <voltage>
Input Variables: *voltage:* a text string that is either "11-15" or "13-18"
Description: Sets the LNB polarization voltage levels to 11V (horiz/vertical) and 15V (left/right) OR to 13V (horizontal/vertical) and 18V (left/right). The default setting is 13-18V.

5.2.4.11 **-lnbpol**

Command Syntax: -lnbpol <pol>
Input Variables: *pol:* a text string that is either "horizontal", "vertical", "left or "right"
Description: Sets the LNB polarization as horizontal/left or vertical /right.

5.2.4.12 **-lnblc**

Command Syntax: -lnblc <on-off>
Input Variables: *on-off:* a text string that is either “on” or “off”
Description: Turns on or off the LNB long line compensation which adds 1 VDC to the LNB voltage. This is to compensate for the DC voltage drop in cable runs between the receiver and the satellite dish.

5.2.4.13 **-lnbt**

Command Syntax: -lnbt <on-off>
Input Variables: *on-off:* a text string that is either “on” or “off”
Description: Turns on or off the LNB band-select tone.

5.2.4.14 **-lnbtf**

Command Syntax: -lnbtf <tone>
Input Variables: *tone:* an integer variable representing the tone frequency in KHz.
Description: The LNB tone may be set to 44 KHz or 22 KHz. The default is 22 KHz.

5.2.4.15 **-shlnb**

Command Syntax: -shlnb
Input Variables:
Description: This command displays the LNB settings

5.2.5 Data Content Commands (All Receivers)

5.2.5.1 **-add**

Syntax	-add <PID 1> | <PID 2> | <PID 3> …
Input variables:	P*ID 1…PID n*: enables the operator to input a list of integer PID values. Up to 16 variables may be added. PID values may range from 1 to 8191
Description:	Specifies a list of DVB packet stream identifiers (PID) to be processed by the S75. Up to 16 PID values may be processed by the receiver at one time

5.2.5.2 **-del**

Command Syntax:	-del <PID 1> | <PID 2> | <PID 3> …
Input variables:	*PID 1…PID n*: enables the operator to input a list of integer PID values to do be deleted. Up to 16 variables may be used. PID values may range from 1 to 8191
Description:	Specifies a list of up to 16 DVB packet stream identifiers (PID's) to be no longer processed by the S75.

5.2.5.3 **-shpid**

Command Syntax:	-shpid
Description:	Displays the list of PIDs currently configured in the receiver.

5.2.6 Video Content Commands (S75-Pro/S75-CA/S200-Pro/S200CA)

5.2.6.1 **-mpid**

Command Syntax	mpid <ip-address> <port> <PID>
Input variables:	*ip-address*: Character string representing the IP addresses (e.g. 192.168.250.200) of the map-to destination of the associated PID *port*: enables the operator to input an integer of the IP address port number of the map-to destination of the associated PID. *PID*: enables the operator to input a list of integer PID values. PID values may range from 1 to 8191

Description: Specifies a DVB packet stream identifier (PID) that is to be mapped to an IP address/port. This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

5.2.6.2 **-umpid**

Command Syntax -umpid <ip-address> <port> <PID>
Input variables: *ip-address:* Character string representing the IP address (e.g. 192.168.250.200) that the associated PID will be mapped to.
port: enables the operator to input an integer of the IP address port number The port number provides further definition of the map-to IP address.
PID: enables the operator to input a list of integer PID values.
Up to 16 variables may be added. PID values may range from 1 to 8191

Description: Specifies a DVB packet stream identifiers (PID) that is to be mapped to an IP address/port. This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

5.2.6.3 **-shmap**

Command Syntax: -shmap
Description: Displays the list of PIDs currently mapped to a given IP address/Port. This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

5.2.6.4 **-addvid**

Command Syntax -addvid <ip-address> <port> <prog no.> <[S]crambled/[C]lear> <PMT PID> <Video PID> <Audio PID> <PCR PID> [<Teletext PID>]
Input variables: *ip-address:* Character string representing the IP address (e.g. 192.168.250.200) that the associated PIDs will be mapped to.
port: enables the operator to input an integer of the IP address port number
Prog no.: is an integer representing the program number or SID of the video stream
[S]crambled/[C]lear: is a character string that represents a scrambled flag. Is set to "S" if the stream is to be descrambled by the receiver and is set to "C" if the stream is a clear or Free-to-Air (TFA).
Video PID: is an integer representing the stream video PID. PID values may range from 1 to 8191
Audio PID: is an integer representing the stream audio PID. PID values may range from 1 to 8191

PCR PID: is an integer representing the PCR PID. PID values may range from 1 to 8191. Note: often the PCR is sent in the video PID. In this case, simply enter the video PID value in this field.
[Teletext PID]: is an optional integer value representing the teletext PID. PID values may range from 1 to 8191. Note: often teletext information is not required or sent with the video stream and therefore this PID is optional. This field may also be used to send other stream PID's that are not defined above.

Description: This command specifies all the information needed to define a video program in the receiver. This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

NOTE: - It is assumed that a program (SID) may be mapped to multiple IP addresses, but that multiple programs (SID's) may NOT be mapped to a single IP address.

5.2.6.5 -delvid

Command Syntax -del video <prog no.>
Input variables: *Prog no.:* is an integer representing the program number of SID of the video stream
Description: This command specifies all the information needed to remove a video program in the receiver. This command will do the following:

- Use the Program Number to determine which PID's need to be unmapped from their corresponding IP address,
- Remove the program from the CAM table, and
- Remove the program from the PAT table

This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

NOTE: - The -delvid command will only remove entries in the CAM table and the PAT table if the given PMT PID is no longer mapped to an IP address. In the case where a particular program is mapped to several different IP address, then the all of the video programs must be removed before the program is removed from the CAM and PAT tables.

5.2.6.6 -shvid

Command Syntax -shvid
Input variables:

Description: This command will display all the configuration parameters associated with each video program. This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

5.2.7 PAT Commands (S75-Pro/S75-CA/S200-Pro/S200CA)

5.2.7.1 -addpat

-a

Syntax -addpat < Prog No> <PMT PID>

Input variables: *Prog No.*: enables the operator to input a integer value that corresponds to a Program Number for a given PMT.
PMT PID: enables the operator to input a list of integer values that represent the PMT PID number for a given program. This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

Description: Associates a program number with a PMT that the receiver uses to generate a program specific mini-PAT. This command is only applicable to the S75-Pro, S75CA, S200-Pro or S200CA receivers.

5.2.7.2 -delpat

Command Syntax: -delpat < Prog No.1> | < Prog No.3> | < Prog No.3> …

Input variables: *Prog No. 1…Prog No. n*: enables the operator to input a list of integer program numbers to do be deleted. Up to 16 variables may be used.

Description: Specifies a list of Program Number that will be no longer used to generate the mini PAT's. This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

5.2.7.3 -shpat

Command Syntax: -shpat

Description: Displays the list of PAT entries (PMT/Program Number pairs) currently configured in the receiver. This command is only valid for the S75-Pro, S75CA, S200-Pro or S200CA receivers.

5.2.8 CAM Commands (S75-CA/S200CA)

5.2.8.1 -addcam

Syntax -addcam <value 1> | <value 2> | <value 3> …
Input variables: *value 1…value n*: enables the operator to input a list of integer program numbers to be descrambled by the Conditional Access Module (CAM). Up to 16 variables may be added.
Description: Specifies a list of DVB program numbers to be descrambled by the S75/S200/S300 CAM. This command is only applicable to the S75CA or the S200CA receivers.

5.2.8.2 -delcam

Command Syntax: -delcam <value 1> | <value 2> | <value 3> …
Input variables: *value 1…value n*: enables the operator to input a list of integer program numbers to do be removed from the list of programs that are to be descrambled by the CAM.
Description: Specifies a list of up to 16 DVB program numbers that are to be removed from the S75/S200/S300 list of programs to be descrambled by the CAM. This command is only applicable to the S75CA or the S200CA receivers.

5.2.8.3 -camwatchdog

Syntax -camwatchdog <Timeout> …
Input variables: *Timeout*: Integer value representing the amount of time in seconds the CAM watchdog waits before resetting the CAM
Description: If the CAM you are using with the receiver is initialized and receiving an authorized stream, but does not properly descramble the stream then the receiver will automatically reset the CAM after the configured timeout interval has elapsed. This feature can be disabled by setting the Watchdog Timeout to 0 seconds.
Note: free-to-air traffic passing thru the CAM may prevent the watchdog from resetting the CAM

5.2.8.4 **-shcam**

Command Syntax: -shcam

Description: Display the list of program numbers to be descrambled by the S75/S200/S300 CAM. Also shows the CA status for each. This command is only applicable to the S75CA or the S200CA receivers.

5.2.9 Video Commands (S200V/S200VCA)

5.2.9.1 –addvprog

Command Syntax: -addvprog <prog no.><IP address><port>
Input variables: P*rog no.*: is an integer representing the program number (or SID) of the video stream
ip-address: Character string representing the IP address (e.g. 225.0.250.200) that the associated PIDs will be mapped to.
port: enables the operator to input an integer of the IP address port number
Description: Configures a program to be forwarded to a specified destination (IP Address/Port). This command is only valid for the S200V or S200VCA receivers.

5.2.9.2 –adddprog

Command Syntax: -adddprog <prog no.>
Input variables: P*rog no.*: is an integer representing the program number (or SID) of the video stream
Description: Configures a data (MPE) program to be forwarded the receiver. This command is only valid for the S200V or S200VCA receivers.

5.2.9.3 –delvprog

Command Syntax: -delvprog <prog no.><IP address><port>
Input variables: P*rog no.*: is an integer representing the program number (or SID) of the video stream
ip-address: Character string representing the IP address (e.g. 225.0.250.200) that the associated PIDs will be mapped to.
port: enables the operator to input an integer of the IP address port number
Description: Removes a video program from being forwarded to a specified destination (IP Address/Port). This command is only valid for the S200V or S200VCA receivers.

5.2.9.4 –deldprog

Command Syntax: -deldprog <prog no.>
Input variables: P*rog no.*: is an integer representing the program number (or SID) of the video stream

ip-address: Character string representing the IP address (e.g. 225.0.250.200) that the associated PIDs will be mapped to.
port: enables the operator to input an integer of the IP address port number

Description: Removes a video program from being forwarded to a specified destination (IP Address/Port). This command is only valid for the S200V or S200VCA receivers.

5.2.9.5 **-shguide**

Command Syntax: -shguide
Description: Display the list of all available programs to be viewed. This command is used to see what programs are available on the received transport stream. This command is only valid for the S200V or S200VCA receivers.

Examples

CMCS 192.168.250.205> show guide

5.2.9.6 **-shvprog**

Command Syntax: -shvprog
Description: Display the list of all the video and programs that are being forwarded by the receiver. This command is only valid for the S200V or S200VCA receivers.

5.2.10 Cipher commands (S200CA-CS/S200CA-CS2)

5.2.10.1 -setcipherkey (S200CA-CS/S200CA-CS2)

Command Syntax: -setcipherkey <key>
Input variables: *key*: an character string representing cipher saber key
Description: imports the encrypted cipher saber key into an S200CA-CS or S200CA-CS2 receiver

5.2.10.2 -setcipheriter (S200CA-CS/S200CA-CS2)

Command Syntax: -setcipheriter <count>
Input variables: *count*: an integer value representing the iteration count
Description: sets the cipher saber iteration count of an S200CA-CS or S200CA-CS2 receiver. Note iteration count only goes 1-5 in v1 and goes 1-99 in v2.

5.2.10.3 -setcipherversion (S200CA-CS/S200CA-CS2)

Command Syntax: -setcipherversion <v1-v2>
Input variables: *v1-v2*: a character string of either "v1" or "v2"
Description: selects encryption version, for S200CA-CS receiver the only option is version 1 (v1). The S200CA-CS2 receiver can handle either version 1 (v1) or version 2 (v2).

5.2.10.4 -shcipherversion (S200CA-CS/S200CA-CS2)

Command Syntax: -shcipherversion
Description: Displays the encryption version number of an S200CA-CS or S200CA-CS2 receiver.

5.2.10.5 -shcipher (S200CA-CS/S200CA-CS2)

Command Syntax: -shcipher
Description: Displays the iteration count of an S200CA-CS or S200CA-CS2 receiver.

6 Appendix A

Appendix A provides a Quick Configure command summary for several of the different receiver types. These single-sheet Quick Configure guides are intended to show the novice user how to quickly get the receiver up and running using CMCS for several different operational scenarios. The following Quick Configure guides are provided

1. Loging into a receiver (applicable to all receivers)
2. Configuring a receiver for Signal Lock (applicable to all receivers)
3. Configuring for the reception of MPE data (applicable to S75+, S75-Pro, or S75CA, S200, or S200-Pro, or S200CA receivers)
4. Configuring for the reception of Video data (applicable to S75-Pro, or S75CA, or S200-Pro, or S200CA receivers)
5. Configuring for the reception of Video Data (applicable to S200V or S200 VCA receivers)

6.1 Receiver Login (All receivers)

There are a couple of different methods to login into a receiver once CMCS has been initiated. The first method allows you to list out the available receivers on your LAN and then select the receiver to configure. The second method allows you to login into a particular receiver (where the IP address of the receiver is already known)

CMCS>List
1. S200CA Pro IP address: 192.168.254.205 MAC: 00-06-76-04-10-33

Select receiver by number to connect or 0 to exit: 1
Password: abcdef

CMCS 192.168.254.205>

OR

CMCS> login 192.168.254.205
Password: abcdef

CMCS 192.168.254.205>

6.2 RF Lock (All receivers)

This guide describes the basic commands needed to configure all Novra DVB Data receiver(s) to lock onto a satellite transponder. To achieve RF data lock, you will need to set your LNB up correctly and configure the correct RF parameters. It is assumed that the user has already logged onto the receiver (refer to Section 6.1 above).

To configure the receiver for RF lock you will first need to know the following information:

- LNB Parameters
  - What is the LNB DC voltage level (typically 13v-18V)
  - What is the LNB polarization setting (Horizontal, Vertical, Left or Right)
  - Is the LNB tone frequency on or off (typically off),
  - Will the receiver power on the LNB (typically Power On)
- L-Band frequency (in MHz)
  - Where the L-band frequency is equal to the absolute value of the RF frequency (in Mhz) less the LO Frequency (in Mhz). This should be a value in the range of 950 Mhz - 2150 Mhz.
- Symbol Rate (in Msps)
- Mode (DVB-S, DVB-S2 or Auto)

To set the receiver to lock to the satellite transponder then, the following CMCS commands would be run:

```
CMCS 192.168.254.205> lnb vol 13-18V
CMCS 192.168.254.205> lnb pol horizontal
CMCS 192.168.254.205> lnb tone off
CMCS 192.168.254.205> lnb pow on
CMCS 192.168.254.205> sh lnb
                LNB Power:              On
                LNB Status              Normal
                LNB Voltage:            13-18V
                Long Line:              Off
                Polarization:           Horizontal/Left
                22Khz Tone:             Off
CMCS 192.168.254.205> freq 1000
CMCS 192.168.254.205> sym 27.5
CMCS 192.168.254.205> mode DVB-S
CMCS 192.168.254.205> sh tun
                Satellite Interface Settings:
                Receiver  MAC Address:  00-06-76-00-00-11
                Frequency:              1000.000 MHz
                Symbol Rate:            30.000 Msps
                Viterbi Rate:           ¾
                Receive Mode            DVB-S
                Signal Lock:            On
                Data Lock:              On
```

Uncorrectable Rate:	0/Second
Viterbi bit Error Rate:	0.000e+00
Carrier to Noise C/N	>20 dB
Signal Strength	70 percent

6.3 Reception of MPE Data (S75, S75-Pro, S75CA, S200, S200-Pro, S200CA, or S300)

6.3.1 Addition of MPE PID(s)

To receive MPE data PID's (1000, 1001, and 1002) that are not defined in the SI tables, the PID's must be configured into the receiver as shown below:

```
CMCS 192.168.254.250> add pid mpe 1000 1001 1002
CMCS 192.168.254.250> sh pid
        MPE PIDs being processed:          1000   1001   1002
        PIDs being forwarded raw:
```

6.3.2 MPE PID Removal

Removal of the MPE can be performed using the "del mpe pid" command as shown below:

```
CMCS 192.168.254.205> del pid mpe 1000 1001 1002
CMCS 192.168.254.205> sh pid
        MPE PIDs being processed:
        PIDs being forwarded raw:
```

6.4 Reception of Video Programs (S75-Pro, S75CA, S200-Pro, or S200CA)

The Novra receiver (S75-Pro, S75CA, S200-Pro, S200CA) requires the following information to correctly process a video program:

- PMT PID (2120)
- Video PID (413)
- Audio PID (513)
- Telext PID (optional)
- PCR PID (optional - 8190)
- IP Address and Port (225.0.0.101 2000)
- Scrambled or clear signal (S)
- Program number (or SID - 2020)

CMCS allows the operator to add this information individually, but also provides a single command to simplify the addition (or removal) of a video program. It is shown below:

```
CMCS 192.168.254.225> add vid 225.0.0.101 2000 2020 S 2120 413 513
CMCS 192.168.254.225> sh vid
```

Program	Destination	PIDs	CA	Status
2020	225.0.0.101:2000	413 513 2120	Y	Decoding

To remove the video program, the “del vid” command is used as shown below:

```
CMCS 192.168.254.225> del vid 225.0.0.101 2000 2020
CMCS 192.168.254.225> sh vid
```

Program	Destination	PIDs	CA	Status

It is also possible to map raw pids to and from a given video program. This is useful, if you need to add a raw pid(s) to a video program (such as the PCR pid or a teletex pid), or remove raw pids from your video stream. For the video program above, we can add pids 514 and 8190 to the program stream as follows:

```
CMCS 192.168.254.225> map pid 225.0.0.101 2000 514 8190
CMCS 192.168.254.225> sh vid
```

Program	Destination	PIDs	CA	Status
2020	225.0.0.101:2000	413 513 514 2120 8190	Y	Decoding

Likewise we can remove the added raw pids as follows:

```
CMCS 192.168.254.225> unmap pid 225.0.0.101 2000 514 8190
CMCS 192.168.254.225> sh vid
```

Program	Destination	PIDs	CA	Status
2020	225.0.0.101:2000	413 513 2120	Y	Decoding

CAUTION: The removal of a video program using the “unmap pid” command is NOT recommended. Use of the “unmap pid’ command will remove the pid’s, but will not properly remove your program from the receiver. It will leave entries in the CAM PAT tables.

6.5 Reception of Video Programs (S200V or S200VCA)

The Novra S200V and S200VCA receiver has special video processing firmware that simplifies the configuration of receiver when trying to receive video programs. Internally, the receiver parses out the received SI tables and determines all the PID's associated with a particular program. The commands to add, show and delete a video program are provided below. Also, you can view all the available programs in the stream using the "show guide" command as shown below.

```
CMCS 192.168.254.245> show guide

        Program
        200     AB SAT – RTL9 (CA)
        201     AB SAT – AB1 (CA)
        202     AB SAT – AB MOTEURS (CA)
                        :
                        :

CMCS 192.168.254.245> add vprog 200 225.0.0.100
CMCS 192.168.254.245> sh prog

        Destination             Program         CS Status
        225.0.0.100:2000        200             Scrambled

CMCS 192.168.254.245> del vprog 200 225.0.0.100 2000
CMCS 192.168.254.245> sh prog

        Destination             Program         CS Status
```