Novra S300
Central Management and Control Software (CMCS) Users Manual

Subject to change without notification

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

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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):
    - Gentoo (Linux Kernel: 2.6.31)
    - Red Hat (Linux Kernel: 2.4.20-8)

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

1.2 Applicable Models

This manual is applicable to the following Novra Receiver models:

- Novra S300 (D/E) – Enhanced DVB-S/DVB-S2 satellite data receiver capable of receiving IP data,
- Novra S300VS2 – Enhanced DVB-S/DVB-S2 satellite data receiver capable of receiving IP data and MPEG Video data, and
- Novra S300VS2CA – Same functionality as the S300VS2, but with a conditional access Common Interface (CI) slot, making it compatible with many commercially available conditional access encryption systems

1.3 Model Naming Convention

This manual uses the S300 naming convention when referring to any one of the applicable S300 models (see Section 1.2 above).

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 S300 receivers. Figures 1 and 2 below illustrate 2 possible configuration scenarios.
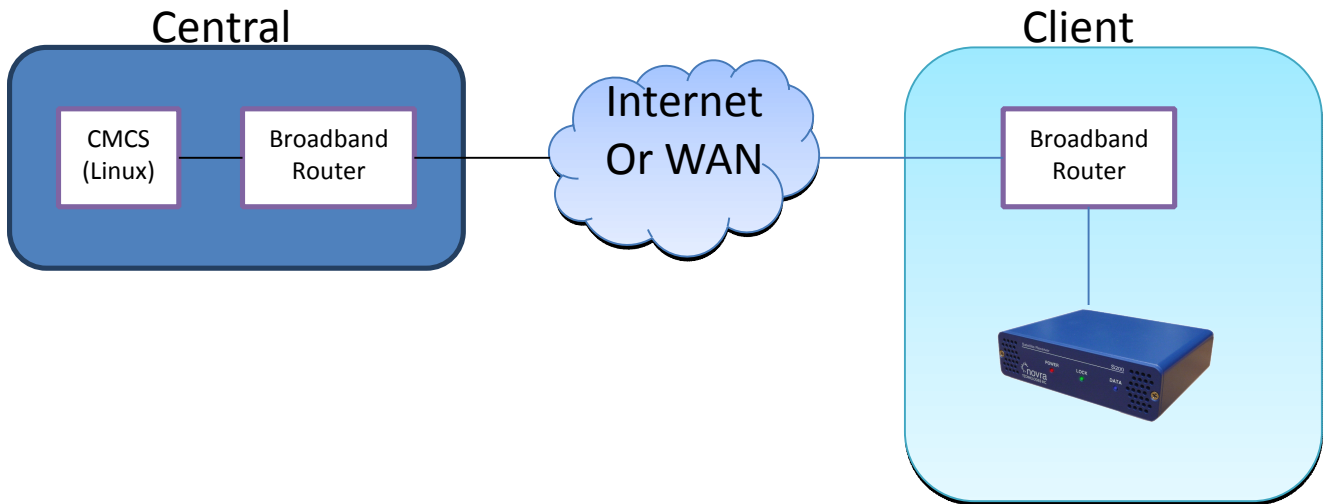
Figure 1 – S300 Mgmt over Internet
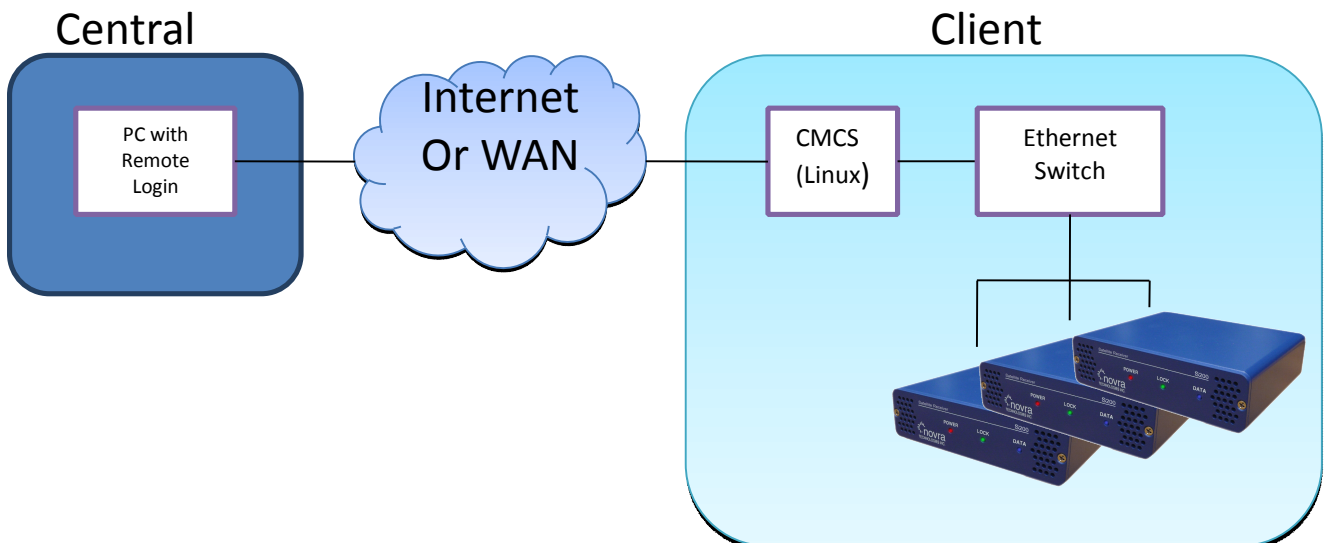
Figure 2 - Remote Management of an S300 Network

CMCS300 Version 1.0.4

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 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 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 S300 that resides on the network.

2 INSTALLATION

The CMCS300 program is a Linux-based executable file (CMCS300). 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. CMCS300 can be installed at the recommended location using the following command run as a super user: install CMCS300 /usr/bin.

3 Interactive Mode

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

3.1 Running CMCS

To run CMCS300, at the linux prompt Type:

        Linux > ./CMCS300 <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 CMCS300MAC for MAC OS 10), for example.
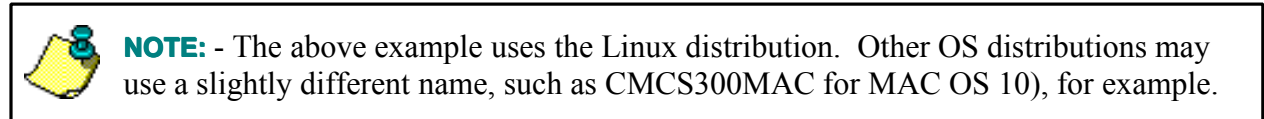
3.2 Logging into an S300 Receiver

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 <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 S300 being accessed. At this point, the interactive commands may be used to manage and configure the S300 (see Section 3.5)

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>
```

3.3 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>  ./CMCS300 -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 >  ./CMCS300 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>
```

3.4 S300 Discovery

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

```
CMCS>List
1.  S300  IP address: 192.168.254.250      MAC: 00-06-76-04-10-33

Select receiver by number to connect or 0 to exit.
```

3.5 Interactive Commands

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

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

3.5.1 General Commands

3.5.1.1   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 S300 to 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.

3.5.1.2   list

Command Syntax:	list lis
Description:	Provides a listing of all S300 receivers present on the LAN. Allows one of the receivers to be selected for login.

3.5.1.3   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 S300 through CMCS may be interrupted. The Password Recover Tool may be required to locally reset the receiver password to a known value. Please contact Novra Support if you need the Password Recovery Tool.

3.5.1.4   exit

Command Syntax: exit
                        quit
                        e
                        q

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

3.5.1.5   logout

Command Syntax: logout
                        logo

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

3.5.1.6   show version

Command Syntax: show version
                        sh ve

Description: Displays the CMCS version

Example:

      CMCS 192.168.250.250> show version

      CMCS Version 2.1.0

3.5.1.7   help

Command Syntax: help
                        he
                        ?

Description: Displays one line summaries of each 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 ?

3.5.1.8   history

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

Example:

CMCS 192.168.250.250> history

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

3.5.1.9   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.

3.5.1.10   list

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

3.5.1.11   save

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

3.5.1.12 **load**

Command Syntax:	load <filename>
	loa
Input Variables:	*filename:* a text string containing the configuration filename.
Description:	Loads the 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.

3.5.1.13 **show device**

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

Example:

CMCS 192.168.250.250> show device

Device Type:	S300CAVS2
MAC Address:	00-06-76-04-10-33
DSP Firmware:	Ver. 1 Rel. 4 Minor Rev. 0
CAM Firmware:	Ver. 6 Rel. 7
FPGA Firmware:	Ver. 2 Rel. 0

3.5.1.14 **show traffic**

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

Example:

CMCS 192.168.250.250> 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

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

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

3.5.2 Network Commands

3.5.2.1 **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.

3.5.2.2 **show lan**

Command Syntax: show lan
                     sh la
Description: Displays the receiver ip route settings (see example
                     below).
Example:

        CMCS 192.168.250.250> show lan

        Network Interface Settings:

        Receiver MAC Address: 00-06-76-05-00-2f
        Receiver IP: 192.168.250.250
        Receiver Subnet Mask: 255.255.255.0
        Default Gateway IP address: 192.168.250.100
        Command Port: 2048
        DHCP: Off
        IGMP: OFF

        Ethernet Packets out since boot: 790123

3.5.2.3 **gateway**

Command Syntax:	gateway <ip-address>
	ga <ip-address>
Input Variables:	*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.

3.5.2.4   **dhcp**

Command Syntax:	dhcp <on-off>
	dh <on-off>
Input Variables:	*on-off:* a text string that is either "on" or "off"
Description:	Turns DHCP functionality (on) or (off).

3.5.2.5   **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).

3.5.3 Satellite Commands

3.5.3.1 symbolrate

Command Syntax:	symbolrate <MSPS>
	sy <MSPS>
Input variables:	*MSPS:* a real number representing the tuner symbol rate in mega-symbols/second. 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.

3.5.3.2 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)

3.5.3.3 mode

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

3.5.3.4 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.

3.5.3.5 modcod

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.

3.5.3.6 isi

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.

3.5.3.7 set isi

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.

3.5.3.8   **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 (S300 DVB-S):

    CMCS 192.168.250.250> show satellite

    Satellite Interface Settings:

    Receiver MAC Address: 00-06-76-05-00-2f
    Receive Mode   DVBS
    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 (S300 DVB-S2):

    CMCS 192.168.250.250> show satellite

    Satellite Interface Settings:

    Receiver MAC Address: 00-06-76-05-00-2f
    Receive Mode   DVBS2
    Frequency: 1000.0 MHz
    Symbol Rate: 30.000 Msps
    ModCod: 8PSK ¾
    Gold Code   0
    Input Stream Filter   On

Input Stream ID   4

Signal Lock: On
Data Lock: On
Uncorrectable Rate: 0/Second
Packet Error Rate: 0.000e+00

Carrier to Noise C/N   >20 dB
Signal Strength   -38 dBm

3.5.3.9   **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.

3.5.3.10   **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.

3.5.3.11   **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).

3.5.3.12   **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.

3.5.3.13   **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.

3.5.3.14   **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.

3.5.3.15   **show lnb**

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

Example:

    CMCS 192.168.250.250> show lnb

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

3.5.4 Data Content Commands

3.5.4.1   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.

3.5.4.2   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.

3.5.4.3   show pid

Command Syntax: show pid
                        sh pi
Description: Displays the all the PID's that are configured in the receiver. Both data and
                        raw pids are displayed in the lsting.
Example:

      CMCS 192.168.250.250> show map

         MPE PIDs being processed: 1000   1001

         PIDs being forwarded raw: Destination: 225.0.0.101:2000
                                            413   513   2120   8190

                                            Destination: 225.0.0.101:2000
                                            412   512   2125   8190

3.5.5 Video Commands (S300V and S300CA receivers only)

3.5.5.1   add pid raw

Command Syntax	add pid raw \<ip-address> \<port> \<PID>
	add p r \<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:	Configures the S300 to send or map an MPEG packet stream identifiers (PID) to an IP address/port.

3.5.5.2   del pid raw

Command Syntax	del pid raw \<PID> \<ip-address> \<port>
	del p r \<PID > \<ip-address> \<port>
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 an MPEG packet stream identifiers (PID) from being sent to an IP address/port by the S300.

3.5.5.3   show pid

Command Syntax:	show pid
	sh pi
Description:	Displays the all the PID's that are configured in the receiver. Both data and raw pids are displayed in the lsting.
Example:	

CMCS 192.168.250.250> show pid

MPE PIDs being processed: 1000   1001

PIDs being forwarded raw: Destination: 225.0.0.101:2000
                                   413   513   2120   8190

Destination: 225.0.0.101:2000
412   512   2125   8190

3.5.5.4   **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.

3.5.5.5   **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

3.5.5.6   **add vprogram**

Command Syntax:	add vprogram \<prog no.\>\<IP address\>\<port\> [\<SI Table\> \<Audio PID 1\> | \<Audio PID 2 \>| \<Audio PID 3\> …]
	a vp \<prog no.\>\<IP address\>\<port\> [\<SI Table\> \<Audio PID 1\> | \<Audio PID 2 \>| \<Audio PID 3\> …]
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.
Optional Input Var:	The following optional input variables may be used. They must be input in the following order. *SI Table* parameters, then *Audio PIDs.*
	SI Table: An optional 3 character text string tag that instructs the receiver on how to handle some of the System Information (SI) tables contained within the MPEG-2 transport stream. The following describes each of the commands tags available:

- "SDT" – instructs the S300 to pass the Service Definition Table (SDT), PID 0x0011. If this command tag is not present, the SDT will not be passed.
- "NIT" – instructs the S300 to pass the Network Interface Table (NIT), PID 0x0010. If this command tag is not present, the NIT will not be passed.

- "TDT" – instructs the S300 to pass the Time & Date Table (TDT), PID 0x0014. If this commond tag is not present, the CAT will not be passed.
- "CAT" – instructions the S300 to pass the Conditional Access Table (CAT), PID 0x0001. If this command tag is not present, the CAT will not be passed.
- "RCA" – instructs the S300 to remove the CA descriptors from the PMT. This command may be required by some set top boxes to properly play out the video. If this command tag is not present, all the CA descriptors will be passed in the PMT.
- "TXT" – instructs the S300 to pass all Teletex PID's associated with the video stream. If this command is not present, no Teletex PID's will be forwarded. This command tag must be included if the FULL command tag is used.
- "PMT" – instructs the S300 to pass the full PMT associated with the video stream to the LAN. This command tag requires the following conditions:
  - The Teletex PID must be forwarded using the TXT tag, AND
  - No Audio PID's are manually specified (i.e. all available Audio PIDs are passed), AND
  - The CA descriptors are not removed from the PMT (i.e the RCA tag is NOT specified)

    If this command is not present, the S300 will manually regenerate the PMT for the specified video program.

Audio PID 1…Audio PID n: an optional list of up to 8 integer PID values that specify the audio PID's that are to be forwarded with the video stream. This optional command allows the operator to override streaming all program audio PID's and to manually select which audio PID's are forwarded. This command cannot be used with the PMT command tag above (since manually specifying the Audio PIDs requires that the PMT be re-generated). PID values used may range from 1 to 8191.

NOTE: -. Manually adding audio PIDs is useful if the operator wishes to send a particular video stream out on several different multicasts, each with a different audio PID. For example, an English broadcast on IP multicast 1, a French broadcast on IP multicast 2, a Spanish broadcast on IP multicast 3, etc.

Description: Forwards a video program to a specified destination (IP Address/Port). Optional command tags allow the video stream to be customized as described above.

For each configured video stream, the S300 re-generates the PAT so it

references only the stream PMT. Each program is therefore sent as a Single Program Transport Stream (SPTS).

Example 1

        CMCS 192.168.250.250> add vprogram 306 225.0.0.100 2000

        Add program 306 to 225.0.0.100:2000 with default settings

Example 2

        CMCS 192.168.250.250> add vprogram 310 225.0.0.101 2000 std cat txt 81 82

        Add program 310 to 225.0.0.101:2000. Program stream includes the SDT, CAT and any associated Teletex PID's. Audio PID's 81 and 82 are passed and the PMT is re-generated.

Example 3

        CMCS 192.168.250.250> add vprogram 311 225.0.0.102 2000 pmt txt

        Add program 311 to 225.0.0.102:2000. Program stream includes the original full stream PMT and any associated Teletex PID's. All Audio PID's are passed.

3.5.5.7   **mod vprogram**

Command Syntax:	mod vprogram <prog no.><IP address><port> [<SI Table> <Audio PID 1> | <Audio PID 2 >| <Audio PID 3> …] mod vp <prog no.><IP address><port> [<SI Table> <Audio PID 1> | <Audio PID 2 >| <Audio PID 3> …]
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.
Optional Input Var:	The following optional input variables may be used. They must be input in the following order. *SI Table* parameters, then *Audio PIDs.* *SI Table:* An optional 3 character text string tag that instructs the receiver on how to handle some of the System Information (SI) tables contained within the MPEG-2 transport stream. The following describes each of the commands tags available: • "SDT" – instructs the S300 to pass the Service Definition Table (SDT), PID 0x0011. If this command tag is not present, the SDT will not be passed.

- "NIT" – instructs the S300 to pass the Network Interface Table (NIT), PID 0x0010. If this command tag is not present, the NIT will not be passed.
- "TDT" – instructs the S300 to pass the Time & Date Table (TDT), PID 0x0014. If this commond tag is not present, the CAT will not be passed.
- "CAT" – instructions the S300 to pass the Conditional Access Table (CAT), PID 0x0001. If this command tag is not present, the CAT will not be passed.
- "RCA" – instructs the S300 to remove the CA descriptors from the PMT. This command may be required by some set top boxes to properly play out the video. If this command tag is not present, all the CA descriptors will be passed in the PMT.
- "TXT" – instructs the S300 to pass all Teletex PID's associated with the video stream. If this command is not present, no Teletex PID's will be forwarded. This command tag must be included if the FULL command tag is used.
- "PMT" – instructs the S300 to pass the full PMT associated with the video stream to the LAN. This command tag requires the following conditions:
  - The Teletex PID must be forwarded using the TXT tag, AND
  - No Audio PID's are manually specified (i.e. all available Audio PIDs are passed), AND
  - The CA descriptors are not removed from the PMT (i.e the RCA tag is NOT specified)

  If this command is not present, the S300 will manually regenerate the PMT for the specified video program.

Audio PID 1…Audio PID n: an optional list of up to 8 integer PID values that specify the audio PID's that are to be forwarded with the video stream. This optional command allows the operator to override streaming all program audio PID's and to manually select which audio PID's are forwarded. This command cannot be used with the PMT command tag above (since manually specifying the Audio PIDs requires that the PMT be re-generated). PID values used may range from 1 to 8191.

NOTE: -. Manually adding audio PIDs is useful if the operator wishes to send a particular video stream out on several different multicasts, each with a different audio PID. For example, an English broadcast on IP multicast 1, a French broadcast on IP multicast 2, a Spanish broadcast on IP multicast 3, etc.

Description: Enables the operator to modify an existing video program by re-specifying the optional input variables. When the Modify Vprogram command is executed the existing input variables associated with the program are removed and the new variables are subsequently applied.

For each configured video stream, the S300 re-generates the PAT so it references only the stream PMT. Each program is therefore sent as a Single Program Transport Stream (SPTS).

> **NOTE:** -. The Modify Vprogram command may not be used to change the selected program IP address, Port number of Program number. It may only be used to change the optional input variables.

Example 1

CMCS 192.168.250.250> mod vprogram 306 225.0.0.100 2000

Modify program 306 with default settings.

Example 2

CMCS 192.168.250.250> mod vprogram 310 225.0.0.101 2000 std cat txt 81 82

Modify program 310 to include the SDT, CAT and any associated Teletex PID's. Audio PID's 81 and 82 are passed and the PMT is re-generated.

Example 3

CMCS 192.168.250.250> mod vprogram 311 225.0.0.102 2000 pmt txt

Modify program 311 include the original full stream PMT and any associated Teletex PID's. All Audio PID's are passed.

3.5.5.8   **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 optional character string representing the IP address (e.g. 225.0.250.200). If the program is only being sent to 1 IP address/Port, then IP Address does not need to be specified (see examples below).

port: an integer value of the IP address port number. If the program is only being sent to 1 IP address/Port, then port number does not need to be specified (see examples below).

Description: Stops a video program from being forwarded to a specified destination (IP Address/Port).

Examples:

      CMCS 192.168.250.250> del vprog 306 225.0.0.100 2000
      CMCS 192.168.250.250> del vprog 301

3.5.5.9   show program

Command Syntax: show progam [<prog no.> <IP address> <port>]
               sh pr [<prog no.> <IP address> <port>]

Input Variables: p*rog no.*: an optional integer value representing the program number (or SID) of the video stream

ip-address: an optional character string representing the IP address (e.g. 225.0.250.200). If the program that is to be shown is only being sent to 1 IP address/Port, then IP Address does not need to be specified (see examples below).

port: an integer value of the IP address port number. If the program that is to be shown is only being sent to 1 IP address/Port, then port number does not need to be specified (see examples below).

being sent to 1 IP address/Port, then port number does not need to be specified (see examples below).

Description: If no *prog no.* is provided, then this command displays a list of all the video programs that are being forwarded by the S300 receiver.

If a *prog no.* is provided with this command, then a detailed summary of the stream is provided.

Example 1:

      CMCS 192.168.250.250> show program

Destination	Program	Type	CS Status
225.0.0.100:2000	306	Video Stream	Scrambled
225.0.0.101:2000	310	Video Stream	Clear
Data	895	Data Stream	Clear

Example 2

      CMCS 192.168.250.250> show program 310 225.0.0.101 2000

Video Program: 310 (0x136)
   Destination: 225.0.0.101:2000
     CA Status: Clear

Audio PIDs Selected: None

Teletex: Off

Service Information Tables
     PTM (Sel. Audio) (No Teletex)

     SDT   N
     NIT   N
     CAT   N
     TDT   N

PIDS:

     PMT: 700 (0x2bc)
     PCR: 701 (0x2bd)
     Video: 701 (0x2bd)
     Audio: 701 (0x2be) fra
           703 (0x2bf) eng

Example 3

     CMCS 192.168.250.250> show program 310

Video Program: 310 (0x136)
   Destination: 225.0.0.101:2000
     CA Status: Clear

Audio PIDs Selected: None

Teletex: Off

Service Information Tables
     PTM (Sel. Audio) (No Teletex)

     SDT   N
     NIT   N
     CAT   N
     TDT   N

PIDS:

       PMT: 700 (0x2bc)
       PCR: 701 (0x2bd)
       Video: 701 (0x2bd)
       Audio: 701 (0x2be) fra
                703 (0x2bf) eng

3.5.5.10   show guide

Command Syntax:	show guide sh g
Description:	Displays the listing of all available programs that are being received by the S300. Typically this will be a listing of all the programs that are available on the currently received satellite transponders. The listing provides the SID number (or Program Number) listed in decimal and hex formats. It also provides the program description and an indication if the program is scrambled or not. If scrambled, the program title will be followed by a (CA) designation. Finally, the guide will provide information on the type of service each program is.
Example:	

CMCS 192.168.250.250> show guide

     Program Guide Contents

306 (0x132)	EUTELSAT – M6 9CA)	Digital Television
310 (0x136)	EUTELSAT – TMC (CA)	Digital Television
311 (0x137)	EUTELSAT - NT1 (CA)	Digital Television
:	:	:

NOTE: One small note of caution - the Program Guide is parsed from the Service Descriptor Table (SDT) and may not always correspond accurately with the received programs.

---

4 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 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 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

    ./CMCS300[<-ip [IP-ADDRESS]> | <-pw [PW-PASSWORD]> | <Optional Command Switches>]

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

SYNOPSIS
./CMCS300 [-ip ipAddress] [-pw login Password] [-timeout timeout] [-list] [-save filename]
[-load filenam] [-help] [-setip newIPAddress] [-gway gateway] [-dhcp OnOff] [-igmp OnOff] [-shdev] [-shlan] [-shsat] [-shtraf] [-shlnb] [-shpid] [-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] [-addpidraw ipaddr_port_pid] [-delpidraw ipaddr_port_pid]
[-setpassword newpassword] [-addvprog progno ipaddr port si_table audio_pid]]
 [-modvprog progno ipaddr port si_table audio_pid] [-delvprog progno ipaddr port]
[-adddprog progno] [-deldprog progno] [-shvprog] [-shguide] [-xmlstatus]

4.1 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 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 > ./CMCS300 –ip 192.168.0.23 –pw abcde -add 1000

> OR to log into the interactive mode:

> Linux > ./CMCS300 –ip 192.168.0.23 –pw abcde

> CMCS S300 Configuration Utility

> CMCS 192.168.0.23>

4.2 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.

4.2.1 General Commands

4.2.1.1   –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.

4.2.1.2   -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 S300 through CMCS may be interrupted. The Password Recover Tool may be required to locally reset the receiver password to a known value.

4.2.1.3   -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.

4.2.1.4   -help

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

4.2.1.5   **-list**

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

4.2.1.6   **-save**

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

4.2.1.7   **-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.

4.2.2 Monitoring/Status/Info Commands

4.2.2.1   **-shdev**

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

4.2.2.2   **-shtraf**

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

4.2.2.3   **-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

4.2.2.4   -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

4.2.2.5   -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) S300VS2 (DVB-S Mode)


```
<RECEIVER_STATUS TIME_STAMP="2012/12/07 21:42:39.008">
```

```
<DEVICE_TYPE>S300VS2</DEVICE_TYPE>
<RECEIVER_MAC>00-06-76-00-00-10</RECEIVER_MAC>
<RECEIVER_IP>192.168.254.250</RECEIVER_IP>
<STATUS_TIMESTAMP>2012/12/07 21:42:38.999</STATUS_TIMESTAMP>
<CARRIER_FREQUENCY>0 MHz (-5 kHz)</CARRIER_FREQUENCY>
<DVB_SIGNAL_TYPE>DVBS</DVB_SIGNAL_TYPE>
<MODULATION>QPSK</MODULATION>
<VITERBI_RATE>7/8 QPSK</VITERBI_RATE>
<MODCOD>Unknown</MODCOD>
<SIGNAL_STRENGTH_AS_DBM>-63</SIGNAL_STRENGTH_AS_DBM>
<SIGNAL_STRENGTH_AS_PERCENTAGE>24.000000</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>
<LDPC_BER>1.150e+01</LDPC_BER>
<CARRIER_TO_NOISE>22.600000</CARRIER_TO_NOISE>
<FREQUENCY_OFFSET>-5</FREQUENCY_OFFSET>
<LOCKED_SYMBOL_RATE>29949</LOCKED_SYMBOL_RATE>
<SPECTRAL_INVERSION_FLAG>Inverted</SPECTRAL_INVERSION_FLAG>
<PILOT_SYMBOL_FLAG>On</PILOT_SYMBOL_FLAG>
<FRAME_LENGTH>Short</FRAME_LENGTH>
<VPROGRAM_COUNT>0</VPROGRAM_COUNT>
<TOTAL_DVB_PACKETS_ACCEPTED>77899</TOTAL_DVB_PACKETS_ACCEPTED>
<TOTAL_UNCORRECTABLE_TS_PACKETS>224</TOTAL_UNCORRECTABLE_TS_PACKETS>
<TOTAL_MPE_PACKETS>0</TOTAL_MPE_PACKETS>
<TOTAL_ETHERNET_PACKETS_OUT>2381</TOTAL_ETHERNET_PACKETS_OUT>
<TOTAL_ETHERNET_PACKETS_IN>44886</TOTAL_ETHERNET_PACKETS_IN>
<TOTAL_ETHERNET_RECEIVE_ERRORS>3</TOTAL_ETHERNET_RECEIVE_ERRORS>
<SYMBOL_RATE>29950</SYMBOL_RATE>
</RECEIVER_STATUS>
```

2) S300VS2 (DVB-S2 Mode)

```
<RECEIVER_STATUS TIME_STAMP="2012/12/07 21:39:58.137">
<DEVICE_TYPE>S300VS2</DEVICE_TYPE>
<RECEIVER_MAC>00-06-76-00-00-10</RECEIVER_MAC>
<RECEIVER_IP>192.168.254.250</RECEIVER_IP>
<STATUS_TIMESTAMP>2012/12/07 21:39:58.124</STATUS_TIMESTAMP>
<CARRIER_FREQUENCY>0 MHz (-5 kHz)</CARRIER_FREQUENCY>
<DVB_SIGNAL_TYPE>DVBS2</DVB_SIGNAL_TYPE>
<MODULATION>8PSK</MODULATION>
<VITERBI_RATE>Unknown</VITERBI_RATE>
<MODCOD>3/4 8PSK</MODCOD>
<SIGNAL_STRENGTH_AS_DBM>-63</SIGNAL_STRENGTH_AS_DBM>
<SIGNAL_STRENGTH_AS_PERCENTAGE>24.000000</SIGNAL_STRENGTH_AS_PERCENTAGE>
<SIGNAL_LOCK>Locked</SIGNAL_LOCK>
<DATA_LOCK>Locked</DATA_LOCK>
<LNB_FAULT>No Fault</LNB_FAULT>
<VBER>1.00e+00</VBER>
<LDPC_BER>1.225e+01</LDPC_BER>
<CARRIER_TO_NOISE>22.600000</CARRIER_TO_NOISE>
<FREQUENCY_OFFSET>-5</FREQUENCY_OFFSET>
<LOCKED_SYMBOL_RATE>29949</LOCKED_SYMBOL_RATE>
<SPECTRAL_INVERSION_FLAG>Inverted</SPECTRAL_INVERSION_FLAG>
```

```
    <PILOT_SYMBOL_FLAG>Off</PILOT_SYMBOL_FLAG>
    <FRAME_LENGTH>Long</FRAME_LENGTH>
    <VPROGRAM_COUNT>0</VPROGRAM_COUNT>
    <TOTAL_DVB_PACKETS_ACCEPTED>55667</TOTAL_DVB_PACKETS_ACCEPTED>
    <TOTAL_UNCORRECTABLE_TS_PACKETS>224</TOTAL_UNCORRECTABLE_TS_PACKETS>
    <TOTAL_MPE_PACKETS>4505</TOTAL_MPE_PACKETS>
    <TOTAL_ETHERNET_PACKETS_OUT>2224</TOTAL_ETHERNET_PACKETS_OUT>
    <TOTAL_ETHERNET_PACKETS_IN>42729</TOTAL_ETHERNET_PACKETS_IN>
    <TOTAL_ETHERNET_RECEIVE_ERRORS>2</TOTAL_ETHERNET_RECEIVE_ERRORS>
    <SYMBOL_RATE>29950</SYMBOL_RATE>
</RECEIVER_STATUS>
```

4.2.3 Network Commands

4.2.3.1 -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.

4.2.3.2 -shlan

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

4.2.3.3 -gway

Command Syntax:	-gway <ip-address>
Input Variables:	*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.

4.2.3.4   **–dhcp**

Command Syntax: -dhcp <on-off>
Input Variables: *on-off:* a text string that is either "on" or "off"
Description: Enables (on) or disables (off) the DHCP functionality in the receiver.

4.2.3.5   **–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.

4.2.4 Satellite Commands

4.2.4.1   **-sym**

Command Syntax: -sym <MSPS>
Input Variables: *MSPS:* real variable representing the tuner symbol rate in
                    Mega-symbols/second. A value of "0" or "auto" will set the symbol rate to
                    auto detection.

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

4.2.4.2   **–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)

4.2.4.3　　　-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 mode as follows: "DVB-S" for DVB-S, and "DVB-S2" for DVB-S2 or "auto" for both. "Auto" will set the S300 to automatically detect the DVB mode (S or S2) and set the receiver appropriately.

4.2.4.4　　　–goldcode

Command Syntax:　　　-goldcode <code>
Input Variables:　　　 *code:* integerl variable representing the receiver gold code setting. The code range is 0-262141.
Description:　　　　　Enables the operator to set the receiver 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.

4.2.4.5　　　-modcod

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"

4.2.4.6 -isi

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.

4.2.4.7 -setisi

Command Syntax:	-setisi <isi-value>
Input Variables:	*isi-value:* integer variable representing received stream isi value. The value range is 0-255.
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.

4.2.4.8 -shsat

Command Syntax:	-shsat [filename]
Input Variables:	*Filename:* an optional character string that specifies the name of a file that is used to store the shdat parameters. If the command is run multiple times, each entry will be appended onto the end of the file.
Description:	Displays the current settings for the receiver RF satellite interface
Example:	./cmcs300 –ip 192.168.254.251 –pw abcde –shsat temp.txt
	./cmcs300 –ip 192.168.254.251 –pw abcde –shsat temp.txt
	Contents of temp.txt:

```
02/21/2013 15:01,Receiver MAC Address:,00-06-76-00-00-13,Receiver Mode:,DVBS2
(Auto),Frequency:,1000.0 MHz,Symbol Rate:,29.950 Msps,ModCod:,3/4 8PSK
(ANY),Input Stream Filter:,Off,Input Stream ID:,0,Signal Lock:,On,Data
Lock:,On,Uncorrectable Rate:,0/Second,Packet Error Rate:,0.0000e+00,Carrier
to Noise C/N:,26.4dB,Signal Strength:,-52 dBm,
```

```
02/21/2013 15:02,Receiver MAC Address:,00-06-76-00-00-13,Receiver Mode:,DVBS2
(Auto),Frequency:,1000.0 MHz,Symbol Rate:,29.950 Msps,ModCod:,3/4 8PSK
(ANY),Input Stream Filter:,Off,Input Stream ID:,0,Signal Lock:,On,Data
Lock:,On,Uncorrectable Rate:,0/Second,Packet Error Rate:,0.0000e+00,Carrier
to Noise C/N:,26.9dB,Signal Strength:,-52 dBm,
```

4.2.4.9   -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.

4.2.4.10   -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.

4.2.4.11   -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.

4.2.4.12   -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.

4.2.4.13   -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 tones

4.2.4.14   **-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.

4.2.4.15   **-shlnb**

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

4.2.5 Data Content Commands

4.2.5.1   -add

Syntax	-apid <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 S300. Up to 16 PID values may be processed by the receiver at one time

4.2.5.2   -del

Command Syntax:	-dpid <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 S300.

4.2.5.3   -shpid

Command Syntax:	-shpid
Description:	Displays the list of PIDs (includes data and raw PID's) currently configured in the S300.

Example:

    ./cmcs300 –ip 192.168.254.250 –pw password -shpid

        MPE PIDs being processed: 1000   1001

        PIDs being forwarded raw: Destination: 225.0.0.101:2000
                                            413   513   2120   8190

                                            Destination: 225.0.0.101:2000
                                          412   512   2125   8190

4.2.6 Video Commands (S300V and S300CA receivers only)

4.2.6.1   -addpidraw

Command Syntax   -addpidraw <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. .

4.2.6.2   -delpidraw

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.

4.2.6.3   –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.

4.2.6.4   –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).

4.2.6.5   –addvprog

Command Syntax: -addvprog <prog no.><IP address><port> [<SI Table> <Audio PID 1> | <Audio PID 2 >| <Audio PID 3> …]

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.

Optional Input Var: The following optional input variables may be used. They must be input in the following order. *SI Table* parameters, then *Audio PIDs.*

SI Table: An optional 3 character text string tag that instructs the receiver on how to handle some of the System Information (SI) tables contained within the MPEG-2 transport stream. The following describes each of the commands tags available:

- "SDT" – instructs the S300 to pass the Service Definition Table (SDT), PID 0x0011. If this command tag is not present, the SDT will not be passed.
- "NIT" – instructs the S300 to pass the Network Interface Table (NIT), PID 0x0010. If this command tag is not present, the NIT will not be passed.
- "TDT" – instructs the S300 to pass the Time & Date Table (TDT), PID 0x0014. If this commond tag is not present, the CAT will not be passed.
- "CAT" – instructions the S300 to pass the Conditional Access Table (CAT), PID 0x0001. If this command tag is not present, the CAT will not be passed.
- "RCA" – instructs the S300 to remove the CA descriptors from the PMT. This command may be required by some set top boxes to properly play out the video. If this command tag is not present, all the CA descriptors will be passed in the PMT.
- "TXT" – instructs the S300 to pass all Teletex PID's associated with the video stream. If this command is not present, no Teletex PID's will be forwarded. This command tag must be included if the FULL command tag is used.
- "PMT" – instructs the S300 to pass the full PMT associated with the video stream to the LAN. This command tag requires the following conditions:
  - o The Teletex PID must be forwarded using the TXT tag, AND

- o No Audio PID's are manually specified (i.e. all available Audio PIDs are passed), AND
- o The CA descriptors are not removed from the PMT (i.e the RCA tag is NOT specified)

  If this command is not present, the S300 will manually regenerate the PMT for the specified video program.

Audio PID 1…Audio PID n: an optional list of up to 8 integer PID values that specify the audio PID's that are to be forwarded with the video stream. This optional command allows the operator to override streaming all program audio PID's and to manually select which audio PID's are forwarded. This command cannot be used with the PMT command tag above (since manually specifying the Audio PIDs requires that the PMT be re-generated). PID values used may range from 1 to 8191.

NOTE: -. Manually adding audio PIDs is useful if the operator wishes to send a particular video stream out on several different multicasts, each with a different audio PID. For example, an English broadcast on IP multicast 1, a French broadcast on IP multicast 2, a Spanish broadcast on IP multicast 3, etc.

Description: Forwards a video program to a specified destination (IP Address/Port). Optional command tags allow the video stream to be customized as described above.

For each configured video stream, the S300 re-generates the PAT so it references only the stream PMT. Each program is therefore sent as a Single Program Transport Stream (SPTS).

Example 1

./CMCS300 –ip 192.168.254.250 –pw Novra-S2 -addvprog 306 225.0.0.100 2000

Add program 306 to 225.0.0.100:2000 with default settings

Example 2

./ CMCS300 –ip 192.168.254.250 –pw Novra-S2 -addvprog 310 225.0.0.101 2000 std cat txt 81 82

Add program 310 to 225.0.0.101:2000. Program stream includes the SDT, CAT and any associated Teletex PID's. Audio PID's 81 and 82 are passed and the PMT is re-generated.

Example 3

./CMCS300 –ip 192.168.254.250 –pw Novra-S2 -addvprog 311 225.0.0.102 2000 pmt txt

Add program 311 to 225.0.0.102:2000. Program stream includes the original full stream PMT and any associated Teletex PID's. All Audio PID's are passed.

4.2.6.6　　　**-modvprog**

Command Syntax:	-modvprog <prog no.><IP address><port> [<SI Table> <Audio PID 1> | <Audio PID 2 >| <Audio PID 3> …]
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.
Optional Input Var:	The following optional input variables may be used. They must be input in the following order. *SI Table* parameters, then *Audio PIDs.*
	SI Table: An optional 3 character text string tag that instructs the receiver on how to handle some of the System Information (SI) tables contained within the MPEG-2 transport stream. The following describes each of the commands tags available:

- "SDT" – instructs the S300 to pass the Service Definition Table (SDT), PID 0x0011.   If this command tag is not present, the SDT will not be passed.
- "NIT" – instructs the S300 to pass the Network Interface Table (NIT), PID 0x0010. If this command tag is not present, the NIT will not be passed.
- "TDT" – instructs the S300 to pass the Time & Date Table (TDT), PID 0x0014. If this commond tag is not present, the CAT will not be passed.
- "CAT" – instructions the S300 to pass the Conditional Access Table (CAT), PID 0x0001. If this command tag is not present, the CAT will not be passed.
- "RCA" – instructs the S300 to remove the CA descriptors from the PMT. This command may be required by some set top boxes to properly play out the video. If this command tag is not present, all the CA descriptors will be passed in the PMT.
- "TXT" – instructs the S300 to pass all Teletex PID's associated with the video stream. If this command is not present, no Teletex PID's

will be forwarded. This command tag must be included if the FULL command tag is used.

- "PMT" – instructs the S300 to pass the full PMT associated with the video stream to the LAN. This command tag requires the following conditions:
  - o The Teletex PID must be forwarded using the TXT tag, AND
  - o No Audio PID's are manually specified (i.e. all available Audio PIDs are passed), AND
  - o The CA descriptors are not removed from the PMT (i.e the RCA tag is NOT specified)

    If this command is not present, the S300 will manually regenerate the PMT for the specified video program.

Audio PID 1…Audio PID n: an optional list of up to 8 integer PID values that specify the audio PID's that are to be forwarded with the video stream. This optional command allows the operator to override streaming all program audio PID's and to manually select which audio PID's are forwarded. This command cannot be used with the PMT command tag above (since manually specifying the Audio PIDs requires that the PMT be re-generated). PID values used may range from 1 to 8191.

NOTE: -. Manually adding audio PIDs is useful if the operator wishes to send a particular video stream out on several different multicasts, each with a different audio PID. For example, an English broadcast on IP multicast 1, a French broadcast on IP multicast 2, a Spanish broadcast on IP multicast 3, etc.

Description: Enables the operator to modify an existing video program by re-specifying the optional input variables. When the Modify Vprogram command is executed the existing input variables associated with the program are removed and the new variables are subsequently applied.

For each configured video stream, the S300 re-generates the PAT so it references only the stream PMT. Each program is therefore sent as a Single Program Transport Stream (SPTS).

NOTE: -. The Modify Vprogram command may NOT be used to change the selected program IP address, Port number of Program number. It may only be used to change the optional input variables.

Example 1

./CMCS300 –ip 192.168.254.250 –pw Novra-S2 -modvprog 306 225.0.0.100 2000

Modify program 306 with default settings.

Example 2

./CMCS300 –ip 192.168.254.250 –pw Novra-S2 -modvprog 310 225.0.0.101 2000 std cat txt 81 82

Modify program 310 to include the SDT, CAT and any associated Teletex PID's. Audio PID's 81 and 82 are passed and the PMT is re-generated.

Example 3

./CMCS300 –ip 192.168.254.250 –pw Novra-S2 -modvprog 311 225.0.0.102 2000 pmt txt

Modify program 311 include the original full stream PMT and any associated Teletex PID's. All Audio PID's are passed.

4.2.6.7 –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:* a optional character string representing the IP address (e.g. 225.0.250.200). If the program is only being sent to 1 IP address/Port, then IP Address does not need to be specified. *port:* an integer value of the IP address port number. If the program is only being sent to 1 IP address/Port, then port number does not need to be specified.
Description:	Removes a video program from being forwarded to a specified destination (IP Address/Port).

4.2.6.8 -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.
Example:	

CMCS 192.168.250.250> show guide

Program Guide Contents

306 (0x132)	EUTELSAT – M6 9CA)	Digital Television
310 (0x136)	EUTELSAT – TMC (CA)	Digital Television
311 (0x137)	EUTELSAT - NT1 (CA)	Digital Television
:	:	:

4.2.6.9   **-shprog**

Command Syntax: -shvprog [<prog no.> <IP address> <port>]
Input Variables: p*rog no.*: an optional integer value representing the program number (or SID) of the video stream
ip-address: an optional character string representing the IP address (e.g. 225.0.250.200). If the program that is to be shown is only being sent to 1 IP address/Port, then IP Address does not need to be specified (see examples below).
port: an integer value of the IP address port number. If the program that is to be shown is only being sent to 1 IP address/Port, then port number does not need to be specified (see examples below).
being sent to 1 IP address/Port, then port number does not need to be specified (see examples below).
Description: If no *prog no.* is provided, then this command displays a list of all the video programs that are being forwarded by the S300 receiver.
If a *prog no.* is provided with this command, then a detailed summary of the program stream is provided.
Example 1:

    ./cmcs300 –ip 192.168.254.250 –pw Novra-S2 -shprog

Destination	Program	Type	CS Status
225.0.0.100:2000	306	Video Stream	Scrambled
225.0.0.101:2000	310	Video Stream	Clear
Data	895	Data Stream	Clear

Example 2

    ./cmcs300 –ip 192.168.254.250 –pw Novra-S2 310 225.0.0.101 2000

Video Program:	310 (0x136)
Destination:	225.0.0.101:2000

CA Status: Clear

Audio PIDs Selected: None

Teletex: Off

Service Information Tables
PTM (Sel. Audio) (No Teletex)

      SDT   N
      NIT   N
      CAT   N
      TDT   N

PIDS:

      PMT: 700 (0x2bc)
      PCR: 701 (0x2bd)
      Video: 701 (0x2bd)
      Audio: 701 (0x2be) fra
              703 (0x2bf) eng

Example 3

./cmcs300 –ip 192.168.254.250 –pw Novra-S2 310

Video Program: 310 (0x136)
  Destination: 225.0.0.101:2000
   CA Status: Clear

Audio PIDs Selected: None

Teletex: Off

Service Information Tables
PTM (Sel. Audio) (No Teletex)

      SDT   N
      NIT   N
      CAT   N
      TDT   N

PIDS:

      PMT: 700 (0x2bc)

```
PCR:   701 (0x2bd)
Video: 701 (0x2bd)
Audio: 701 (0x2be)  fra
       703 (0x2bf)  eng
```

5 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. Log into a receiver
2. Configure a receiver for Signal Lock
3. Configure for the reception of MPE
4. Configure for the reception of Video Programs/PID's (Applicable to S300V and S300CA Receivers)

Receiver Login

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. S300VS2   IP address: 192.168.254.250   MAC: 00-06-76-04-10-33

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

    CMCS 192.168.254.250>

    OR

    CMCS> login 192.168.254.250
    Password: abcdef

    CMCS 192.168.254.250>

5.1 RF Lock

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 192.168.254.250> lnb vol 13-18V
CMCS 192.168.254.250> lnb pol horizontal
CMCS 192.168.254.250> lnb tone off
CMCS 192.168.254.250> lnb pow on
CMCS 192.168.254.250> sh lnb
        LNB Power:                      On
        LNB Status                      Normal
        LNB Voltage:                    13-18V
        Long Line:                      Off
        Polarization:                   Horizontal/Left
        22Khz Tone:                     Off
CMCS 192.168.254.250> freq 1000
CMCS 192.168.254.250> sym 27.5
CMCS 192.168.254.250> mode DVB-S
CMCS 192.168.254.250> 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

5.2 Reception of MPE Data

5.2.1 Addition of MPE PID(s) that ARE Defined in the PMT

If the data PID's (1000, 10001, and 1002) that are to be received are defined in the Program Mapping Table (PMT), then only the PMT SID or Program Number (55) is needed to receive all the PID(s). An example is provided below:

CMCS 192.168.254.250> add dprogram 55
CMCS 192.168.254.250> sh pid
    MPE PIDs being processed: 1000 1001 1002

    PIDs being forwarded raw:

5.2.2 Addition of MPE PID(s) that are NOT Defined in the PMT

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:

5.2.3 Removal of MPE PID(s) that ARE Defined in the PMT

If the data PID's (1000, 10001, and 1002) that are to be removed are defined in the Program Mapping Table (PMT), then only the PMT SID or Program Number (55) is needed to remove all the PID(s). An example is provided below:

CMCS 192.168.254.250> sh pid
    MPE PIDs being processed: 1000 1001 1002

    PIDs being forwarded raw:
CMCS 192.168.254.250> del dprogram 55
CMCS 192.168.254.250> sh pid
    MPE PIDs being processed:
    PIDs being forwarded raw:

5.2.4 Removal of MPE PID(s) that are NOT Defined in the PMT

Removal of the MPE PID's(1000, 1001, and 1002) can be performed using the "del mpe pid" command as shown below:

CMCS 192.168.254.250> sh pid
        MPE PIDs being processed: 1000 1001 1002

        PIDs being forwarded raw:

CMCS 192.168.254.250> del pid mpe 1000 1001 1002
CMCS 192.168.254.250> sh pid
        MPE PIDs being processed:

        PIDs being forwarded raw:

5.3 Reception of Video Programs

The Novra S300V and S300CA receivers have 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 along with an examples.

The S300 provides a Program Guide based on the received System Descriptor Table (SDT) PID. This gives you a listing of all the available programs on your satellite transponder. Some of these programs may be scrambled, so you will need a PCMCIA-based Conditional Access Module (CAM) and an authorized Smart Card to decrypt and view these programs. This section shows you how to display the Program Guide and set up your S300 to receive a particular program

5.3.1 Program Guide

Displaying the program Guide simple. You must first make sure you are locked you're your intended satellite. Refer to Section 5.1 for further details on RF Lock.

Now, to call up the program guide in CMCS, type the following:"

CMCS 192.168.254.245> show guide

   Program Guide Contents

  200 (0xC8) AB SAT – RTL9 (CA)   Digital Television
  201 (0xC9) AB SAT – AB1 (CA)   Digital Television
  202 (0xCA) AB SAT – AB MOTEURS (CA) Digital Television

The guide listing above will provide you with the information you need to configure the S300 for a basic program addition.

5.3.2 Basic Video Program Addition

From the Program Guide listing above, you will need to take note of the Program Number of the program you wish to receive. In this example, we want to receive Program 201 (AB SAT – AB1). In addition to the Program Number, we will also need to define what IP address (225.0.0.101) and port

number (2000) we wish to send this video program to. Once we have this information, we can do a basic program add to our stream using the "add vprogram" command, as shown below.

CMCS 192.168.254.250> add vprog 225.0.0.101 2000 201
CMCS 192.168.254.250> sh prog

Destination	Program	Type	CS Status
225.0.0.101:2000	201	Video Stream	Scrambled

In this case, the Program Guide indicates with the "(CA)" designation that program is scrambled. Since we do not have an authorized smart card for this program, our CS Status (in the "show prog" command) also tells us that the program has not been properly descrambled.

When a video program is added in this manner, the receiver makes several assumptions about the stream, including:
- All audio PID's associated with the stream will be passed onto the LAN
- Any Teletex PID's associated with the stream will be passed onto the LAN
- If the PCR PID is a separate PID (i.e. the PCR data is NOT sent on the Video PID), then the PCR PID will be passed onto the LAN
- SI Table PID's including TDT, NIT, CAT, and SDT will NOT be pass onto the LAN
- The receiver will create a new PMT based on the program selected and will pass this PMT onto the LAN.

This section provides basic information on how to add a video program to a multicast stream. For more detailed information on how to customize your multicast video stream, please refer to Section 3.5.5.6 in this manual.

5.3.3 Video Program Removal

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

CMCS 192.168.254.250> sh prog

Destination	Program	Type	CS Status
225.0.0.101:2000	2020	Video Stream	Scrambled

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

Program	Destination	PIDs	CA	Status

5.4 Raw MPEG PID(s)

5.4.1 Reception of Raw MPEG PID(s)

It is also possible to map raw MPEG PID(s) to a given ip address and port. This may be useful, if you need to add a raw pid(s) to a currently configured video program, or simply wish to pass MPEG PID(s) (413, 514, 8190) to a particular IP address (225.0.0.101:2000).

```
CMCS 192.168.254.250> add pid raw 225.0.0.101 2000 8190
CMCS 192.168.254.250> sh pid
          MPE PIDs being processed:        1000   1001   1002

          PIDs being forwarded raw:        225.0.0.101   2000
                                           413     513    8190
```

5.4.2 Removal of Raw MPEG PID(s)

Likewise we can remove the added raw PID(s) (413, 513) as follows:

```
CMCS 192.168.254.225> del pid raw 225.0.0.101 2000 413 513
CMCS 192.168.254.250> sh pid
          MPE PIDs being processed:        1000   1001   1002

          PIDs being forwarded raw:        225.0.0.101 2000
                                           8190
```