HP8516T 8 CH Mux DVB-T Modulator

User's Manual

Web-NMS Version: 1.10

Software: 4.11

Hardware:1.00

Catcast Technology Co., Ltd. (Chengdu)

DIRECTORY

Chapter 1 Product Outline

1.1 Outline

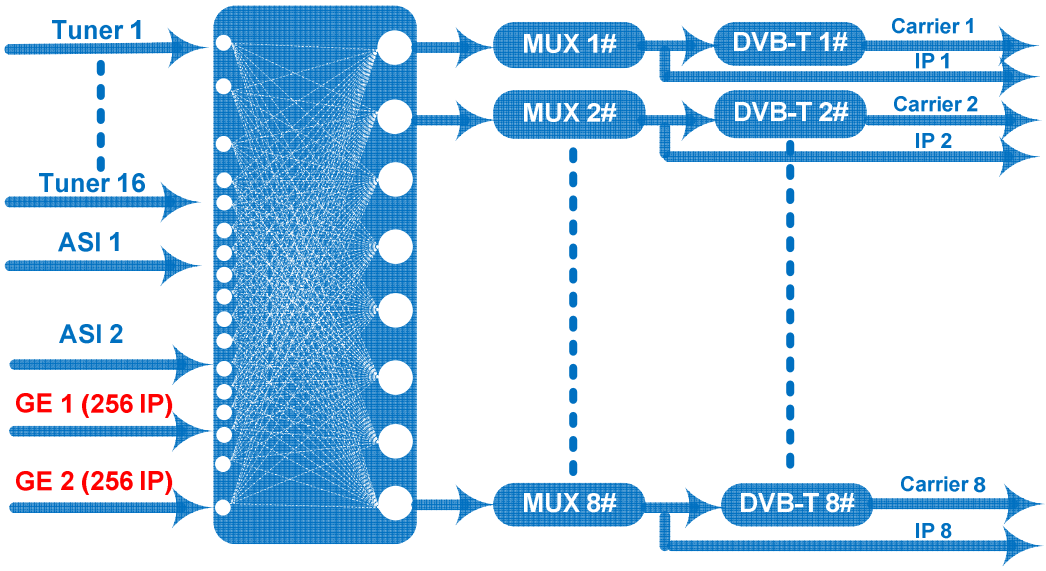
HP8516T is a high performance and cost-effective DVB-T modulator designed by Catcast. It has 16 DVB-S/S2 FTA tuner input, 8 groups multiplexing and 8 groups modulating, and supports maximum 512 IP input through GE1 and GE2 port and 8 IP (MPTS) output through GE1 port and 8 non-adjacent carriers (50MHz~960MHz) output through the RF output interface. To meet customers' various requirements, this device is also equipped with 2 ASI input ports.

HP8516T is also characterized with high integrated level, high performance and low cost. It supports dual power supply (optional). This is very adaptable to newly generation broadcasting system.

1.2 Features

- 16 DVB-S/S2 FTA Tuner + 2 ASI input+512 IP (GE1 and GE2) input over UDP and RTP protocol
- 8*DVB-T RF output
- Excellent RF output performance index, MER≥40db
- Support 8 groups multiplexing + 8 groups DVB-T modulating
- Support accurate PCR adjusting
- Support PSI/SI editing and inserting
- Support Web management, Updates via web
- Redundancy Power Supply (optional)

1.3 Principle Chart



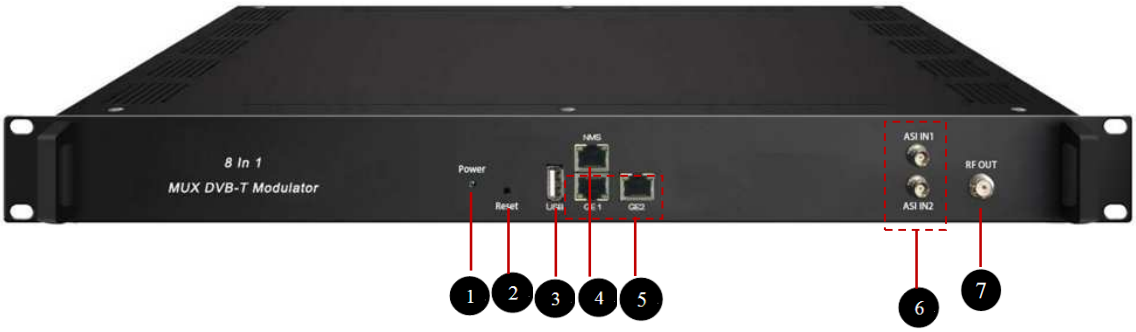
1.4 Technical Specifications

Input	16 DVB-S/S2 FTA Tuner		
	512 IP (GE1 and GE2)input over UDP and RTP protocol		
	2 ASI input, BNC interface		
Tuner Section	DVB-S	Input Frequency	950-2150MHz
		Symbol rate	2-45Msps
		Signal Strength	-65~-25dBm
		FEC Demodulation	1/2, 2/3, 3/4, 5/6, 7/8 QPSK
	DVB-S2	Input Frequency	950-2150MHz
		Symbol rate	QPSK 1~45Mbauds 8PSK 2~30Mbauds
		Code rate	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
		Demodulation Mode	QPSK, 8PSK
Multiplexing	Maximum PID Remapping	128per input channel	
	Function	PID remapping (automatically or manually)	
		Accurate PCR adjusting	
		Generate PSI/SI table automatically	
Modulation	Standard: EN300 744 FFT: 2K 8K Bandwidth: 6M, 7M, 8M Constellation: QPSK, 16QAM, 64QAM		

	Guard interval: 1/4, 1/8, 1/16, 1/32 FEC: 1/2, 2/3, 3/4, 5/6, 7/8	
Stream output	8 IP(MPTS) output over UDP /RTP, 100M/1000M self-adaption	
	8 DVB-T RF output	
	Remote management	Web NMS（10M/100M）
	Language	English and Chinese
	Software Upgrading	Web
General	Dimension (W*D*H)	482mm×300mm×44.5mm
	Weight	3.7kg
	Temperature	0~45℃(Operation) ; -20~80℃(Storage)
	Power	AC 100V±1050/60Hz; AC 220V±10%, 50/60HZ
	Consumption	25W

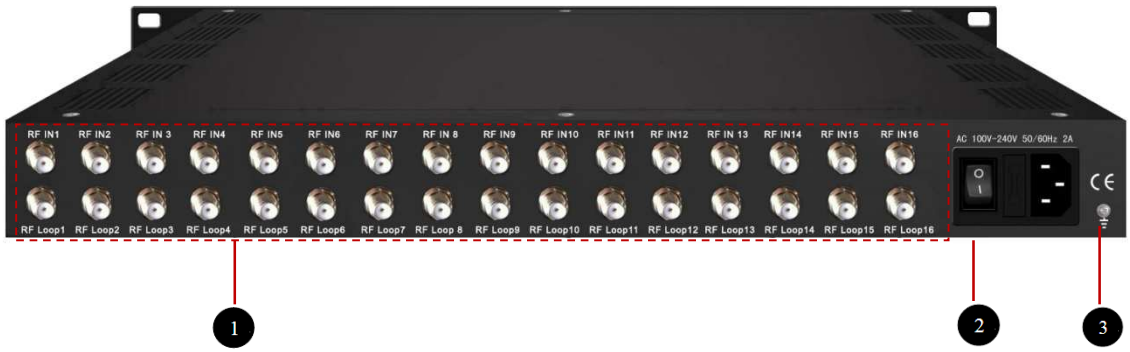
1.5 Appearance and description

Front Panel Illustration:



1	Power indicator
2	Reset: Reset webmaster IP address, recover it to default IP address
3	USB port for upgrade
4	NMS port: Network management interface
5	Data port（GE1&GE2）: IP out port
6	ASI input port
7	RF output port

Rear Panel Illustration



1	16 channels RF IN Interface
2	Integrated power switch and socket
3	Grounding Wire

Chapter 2 Installation Guide

2.1 Acquisition Check

When user opens the package of the device, it is necessary to check items according to packing list. Normally it should include the following items:

- HP8516T 8 CH Mux DVB-T Modulator 1pcs
- User's Manual 1pcs
- RF/Loopout Cables 7pcs
- Power Cord 1pcs

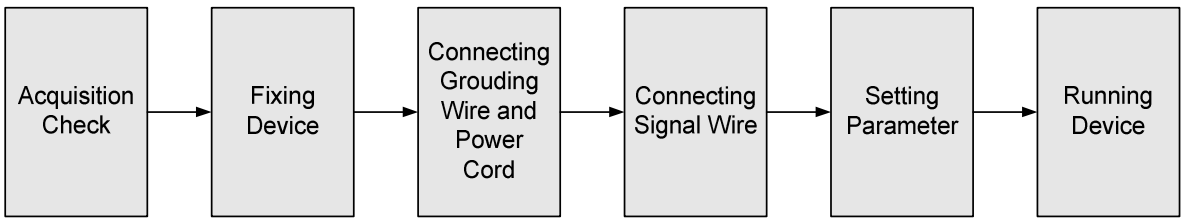
2.2 Installation Preparation

When users install device, please follow the below steps. The details of installation will be described at the rest part of this chapter. Users can also refer rear panel chart during the installation.

The main content of this chapter including:

- Checking the possible device missing or damage during the transportation
- Preparing relevant environment for installation
- Installing modulator
- Connecting signal cables
- Connecting communication port (if it is necessary)

2.2.1 Device's Installation Flow Chart Illustrated as following:



2.2.2 Environment Requirement

Item	Requirement
Machine Hall Space	When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.
Machine Hall Floor	Electric Isolation, Dust Free Volume resistivity of ground anti-static material: $1X10^{7}$~$1X10^{10}\Omega$, Grounding current limiting resistance: 1M (Floor bearing should be greater than 450Kg/㎡)
Environment Temperature	5~40℃(sustainable), 0~45℃(short time), installing air-conditioning is recommended
Relative Humidity	20%~80% sustainable 10%~90% short time
Pressure	86~105KPa
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires AC power 100-240V 50-60Hz. Please carefully check before running.

2.2.3 Grounding Requirement

- All function modules' good grounding is the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- Coaxial cables outer conductor and isolation layer should keep proper electric conducting with the metal housing of device.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- Users should make sure the 2 ends of grounding wire well electric conducted and

be antirust.

- It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than 25mm^2.

2.2.4 Frame Grounding

All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than 25mm^2.

2.2.5 Device Grounding

Connecting the device's grounding rod to frame's grounding pole with copper wire.

2.3 Wire's Connection

The grounding wire conductive screw is located at the right end of rear panel, and the power switch, fuse, power supply socket is just beside ,whose order goes like this, power switch is on the left ,power supply socket is on the right and the fuse is just between them.

- Connecting Power Cord

  User can insert one end into power supply socket, while insert the other end to AC power.

- Connecting Grounding Wire

  When the device solely connects to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be smaller than 1Ω.

☞Caution:

Before connecting power cord to HP8516T 8 CH Mux DVB-T Modulator, user should set the power switch to "OFF".

2.4 Signal Cable Connection

The signal connections include the connection of input signal cable and the connection

of output signal cable. The details are as follows:

HP8516T 8 CH Mux DVB-T Modulator Cable Illustration:

- **NMS Cable illustration (CAT5):**

- **RF Input/Loop Cable Illustration:**

Chapter 3 Web-based NMS Management

Users can only control and set the configuration with the web Brower in the PC.

4.1 login

The default IP address of this device is 192.168.0.136. (We can modify the IP through the front panel.)

Connect the PC (Personal Computer) and the device with net cable, and use ping command to confirm they are on the same network segment.

I.G. the PC IP address is 192.168.99.252, we then change the device IP to 192.168.99.xxx (xxx can be 1 to 254 except 252 to avoid IP conflict).

Use web browser to connect the device with PC by inputting the Encoder & Modulator's IP address in the browser's address bar and press Enter.

It will display the Login interface as Figure-1. Input the Username and Password (Both are defaulted as "admin".) and then click "LOGIN" to start the device setting.

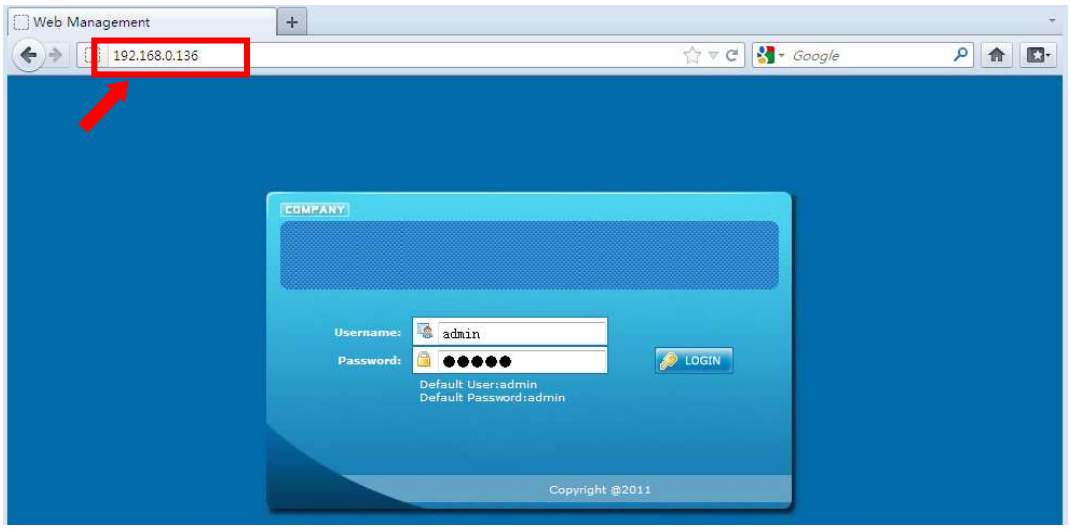


Figure-1

4.2 Operation

Summary:

When we confirm the login, it displays the WELCOME interface as Figure-2 where users can have an overview of the device's system information and working status.

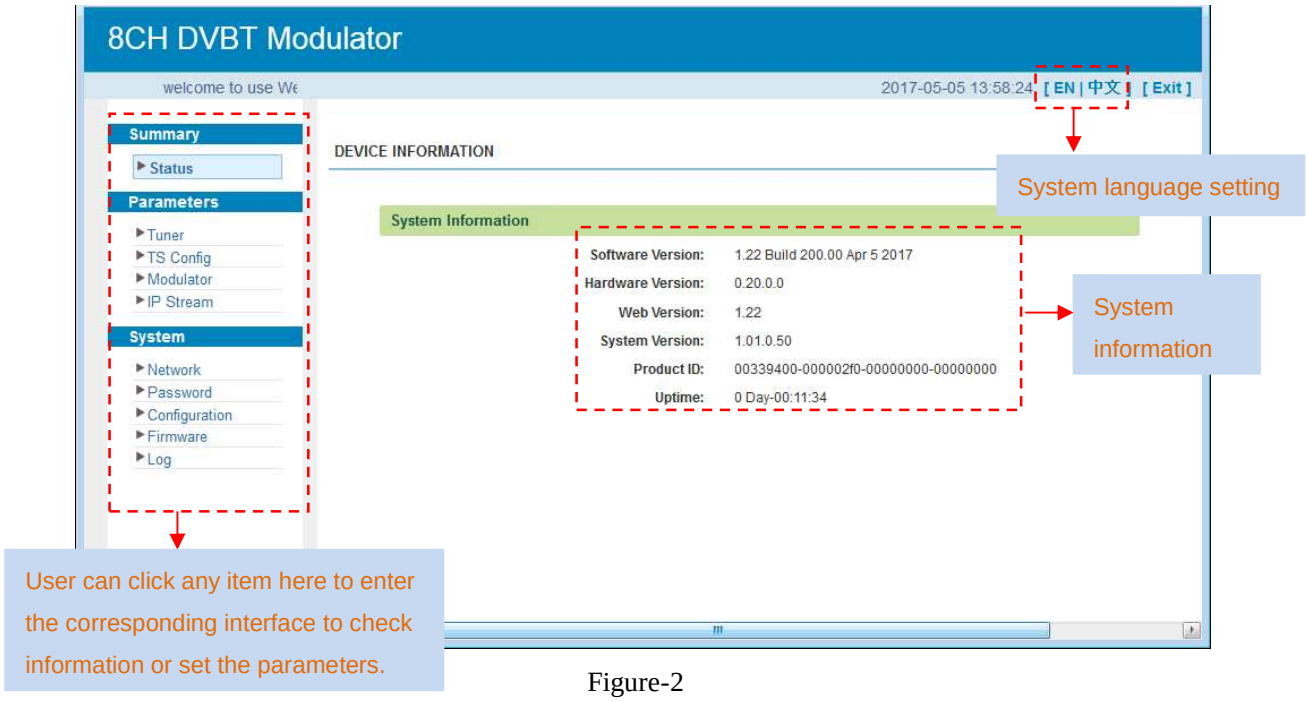


Figure-2

Parameters → Tuner 1-16

HP8516T support 16 DVB-S/S2 Tuner input. From the menu on left side of the webpage, clicking "Tuner1-16", it displays the information of each encoding channel as Figure-3.

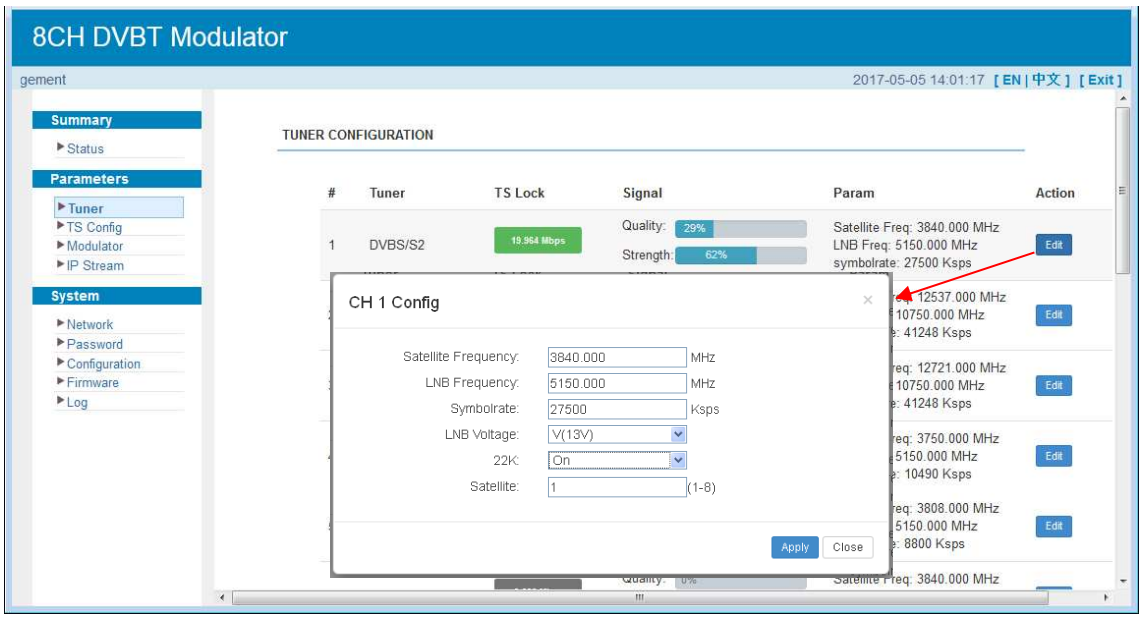


Figure-3

Parameters → TS Config:

From the menu on left side of the webpage, clicking "TS Config", it displays the interface where users can configure the TS output parameters.

- **TS Config→Output TS:**

From the menu on top side of the webpage, clicking "Output TS X", it displays the

interface where users can check output TS of each channel. (Figure-4)

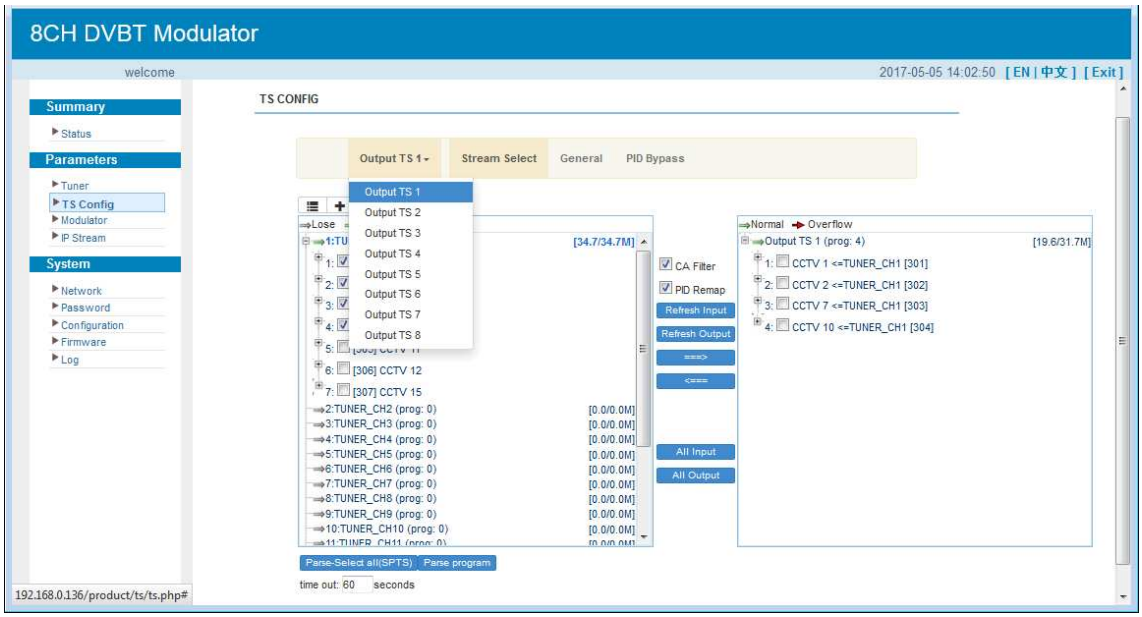


Figure-4

➢ **TS Config→Stream select:**

From the menu on up side of the webpage, clicking "Stream select", it displays the interface where users can select program(s) to multiplex out and modify program info. (Figure-5)

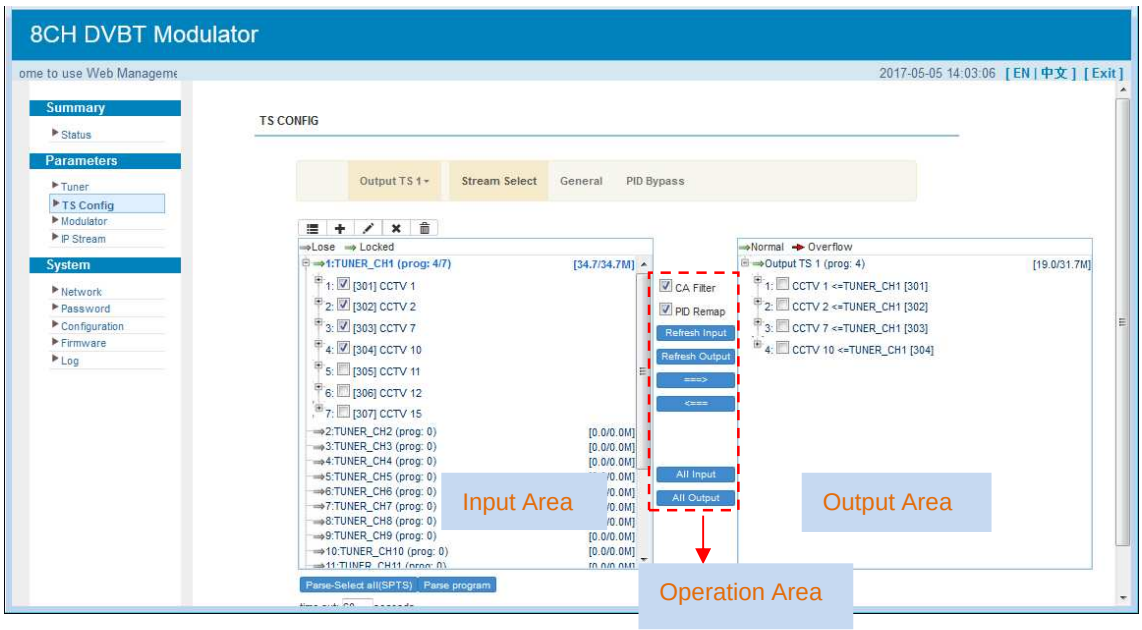


Figure-5

Configure 'Input Area' and 'Output Area' with buttons in 'Operation Area'. Instructions are as below:

Lose Locked : To check input IP lock or not, green means current IP locked

Normal Overflow : To check current TS overflow or not, red color means current TS

overflow, need reduce program

CA Filter : To filter/not filter the source CA information

PidRemap : To enable/disable the PID remapping

Refresh Input To refresh the input program information

Refresh Output To refresh the output program information

===> Select one input program first and click this button to transfer the selected program to the right box to output.

<=== Similarly, user can cancel the multiplexed programs from the right box.

All Input To select all the input programs

All Output To select all the output programs

Parse program To parse programs time out: 60 seconds time limitation of parsing input programs

- **Program Modification:**

The multiplexed program information can be modified by clicking the program in the 'output' area. For example, when clicking TV-201 <=CH2_Module 2 [201] , it triggers a dialog box (Figure 6) where users can input new information.

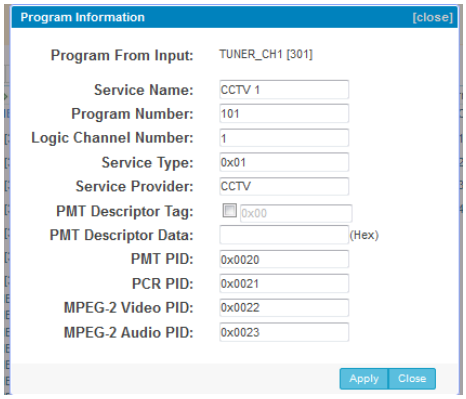


Figure-6

- **TS Config→General:**

From the TS Config menu on up side of the webpage, clicking "General", it displays the interface where users can set output mode, enable PSI/SI table out, NIT insert/VCT insert, PCR correction. (Figure-7)

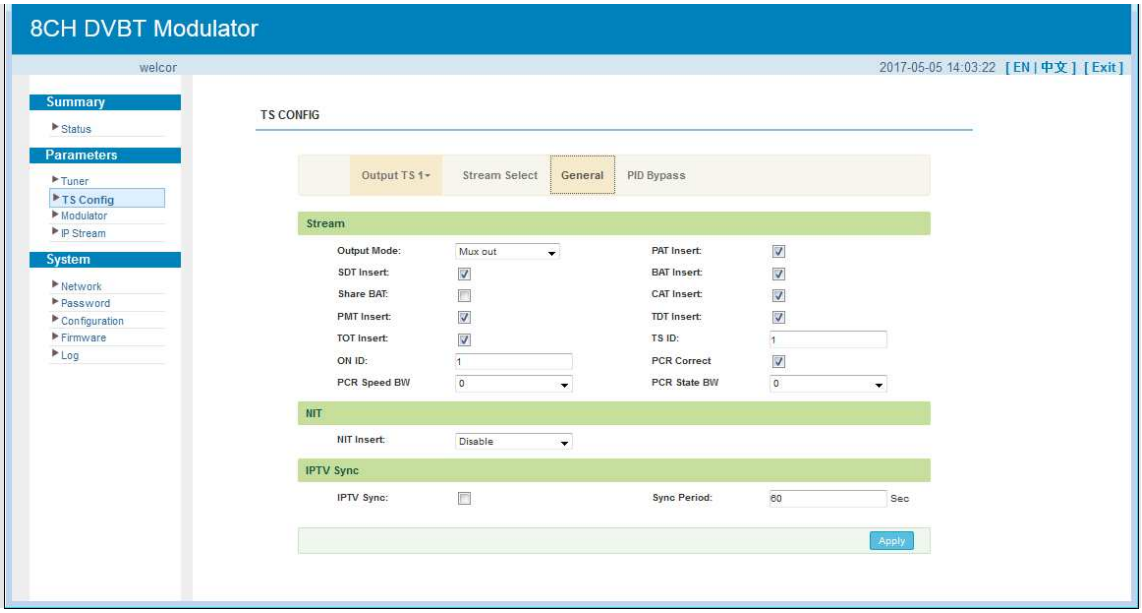


Figure-7

➢ **TS Config→PID Bypass:**

From the TS Config menu on up side of the webpage, clicking "PID Bypass", it displays the interface as Figure-8 where user can add PIDs to be passed, click the "+" symbol, input current IP channel number, then input current IP source Pid and output Pid which is customer needed , then click "set"

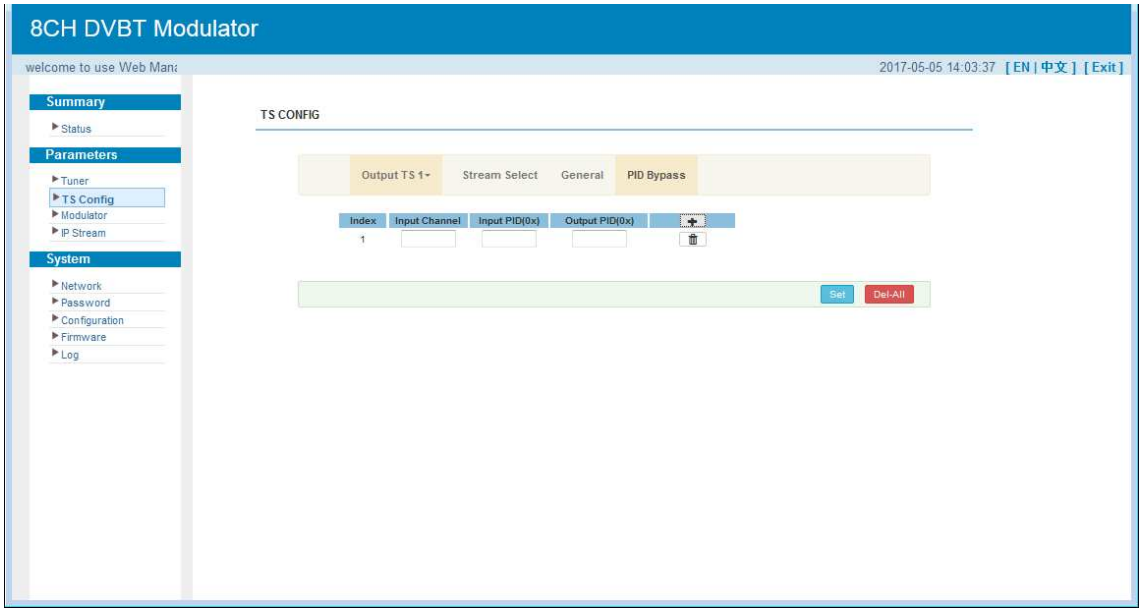


Figure-8

Parameters → Modulator:

From the menu on left side of the webpage, clicking "Modulator", it will display the Modulator Configuration screen as Figure-9. Here user can set modulation parameters.

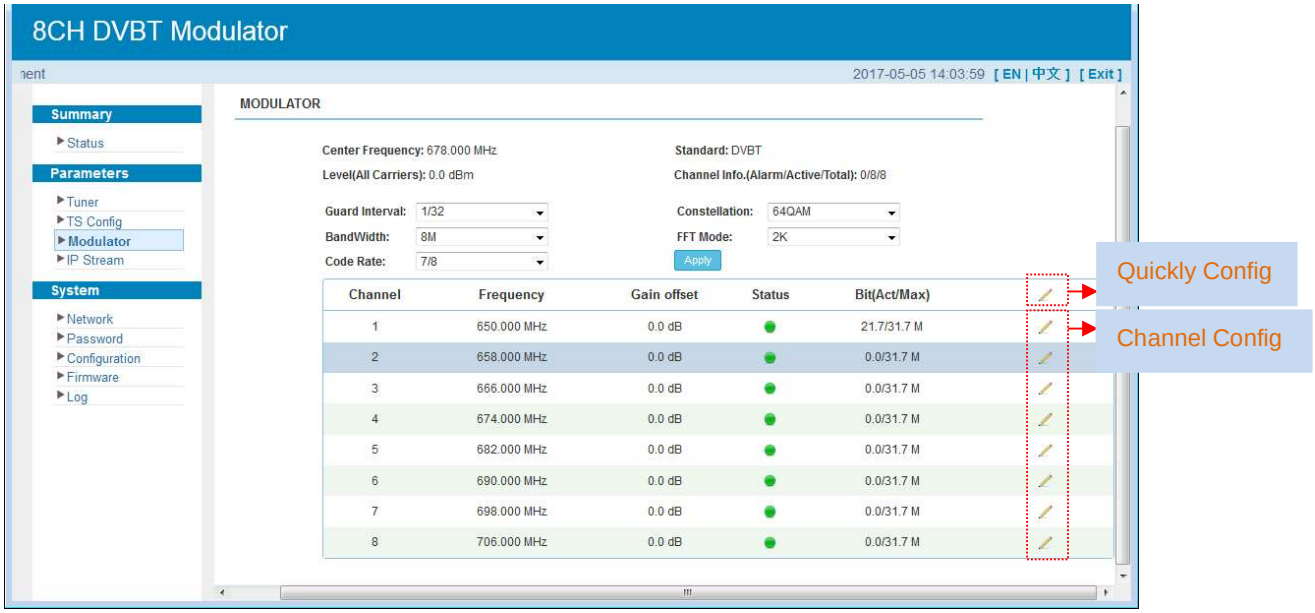


Figure-9

Parameters → IP Stream:

HP8516T supports TS to output in IP (8*MPTS) format through the DATA port.

Click 'IP Stream', it will display the interface where to set IP out parameters (Figure-10).

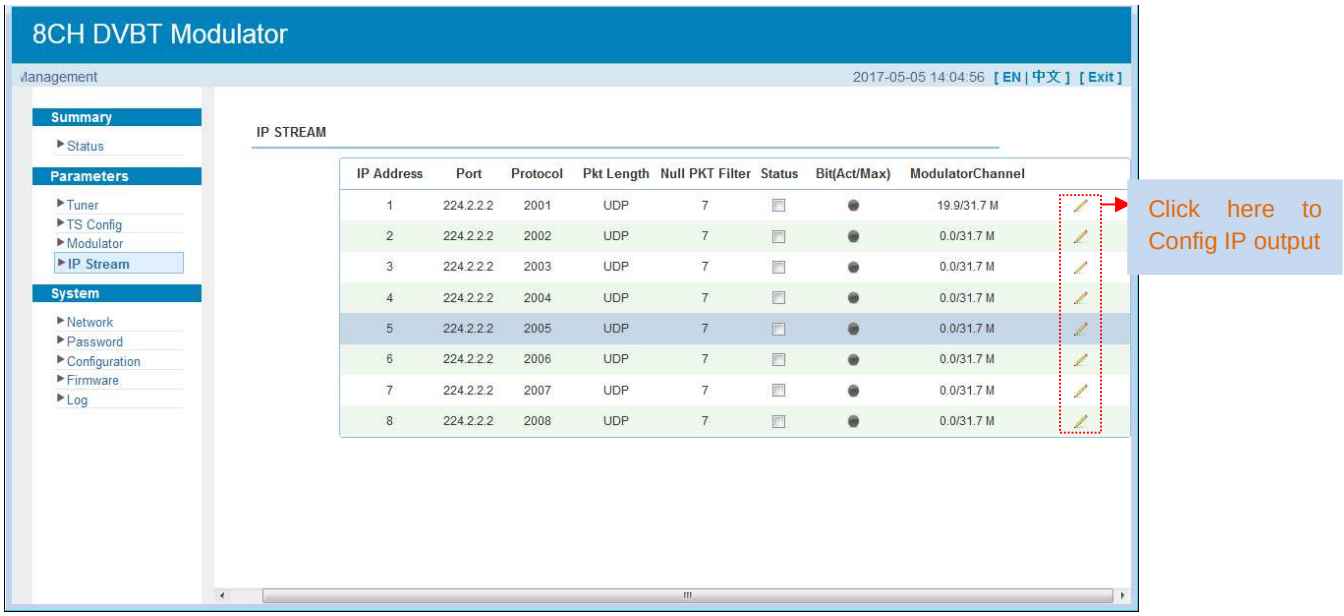


Figure-10

System → Network:

Click 'Network', it will display the interface as Figure-11 where to set network parameters.

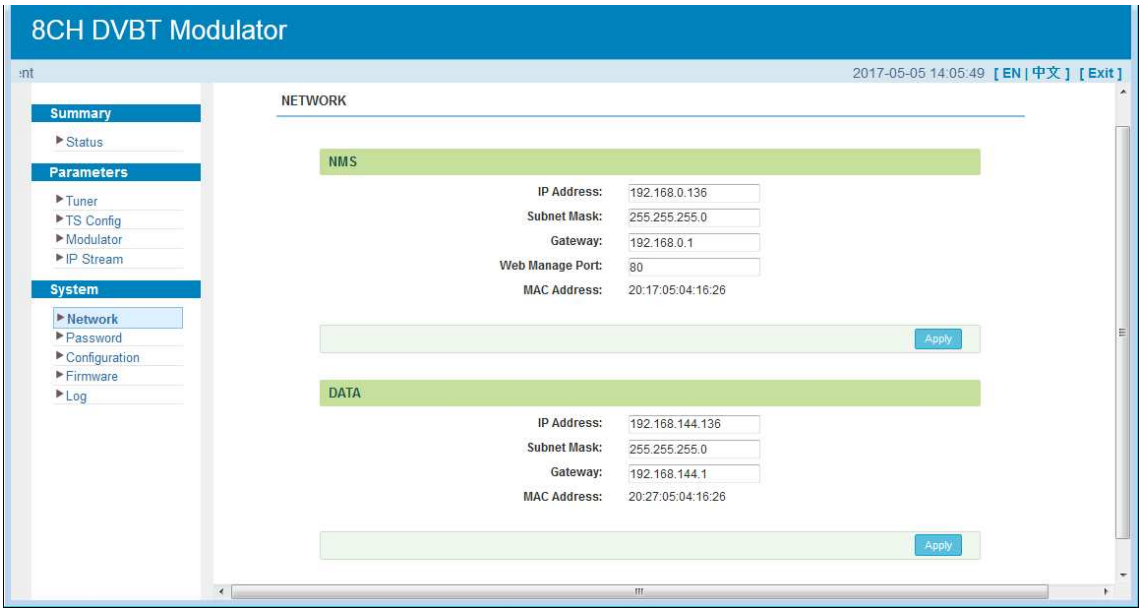


Figure-11

System → password

From the menu on left side of the webpage, clicking "Password", it will display the screen as Figure-12 where to set the login account and password for the web NMS.

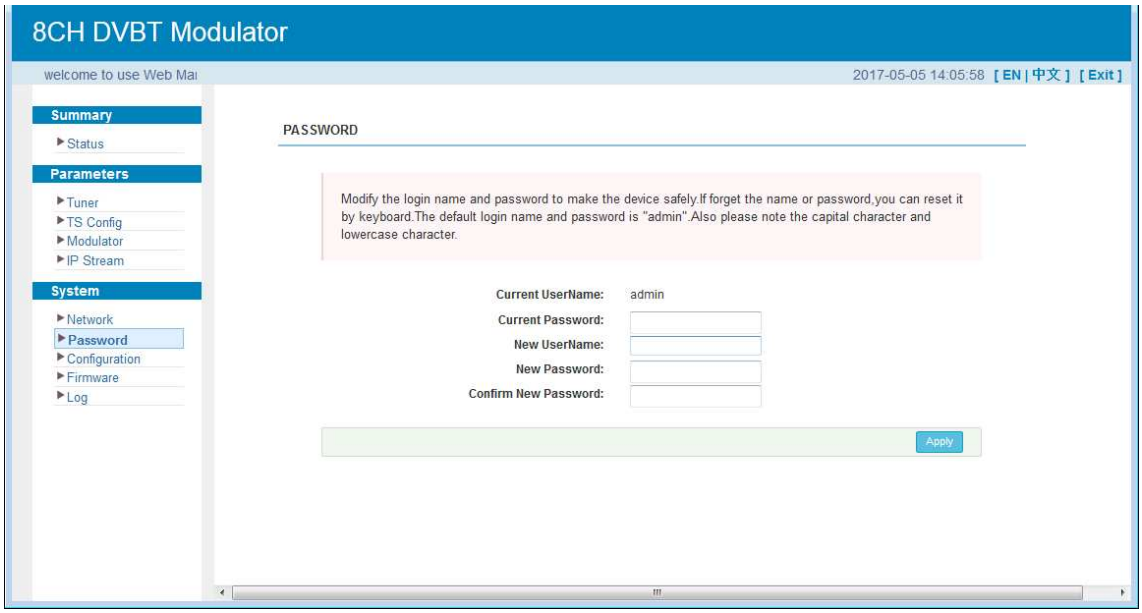


Figure-12

System → Configuration:

From the menu on left side of the webpage, clicking "Configuration", it will display the screen as Figure-13 where to save/ restore/factory setting/ backup/ load your configurations.

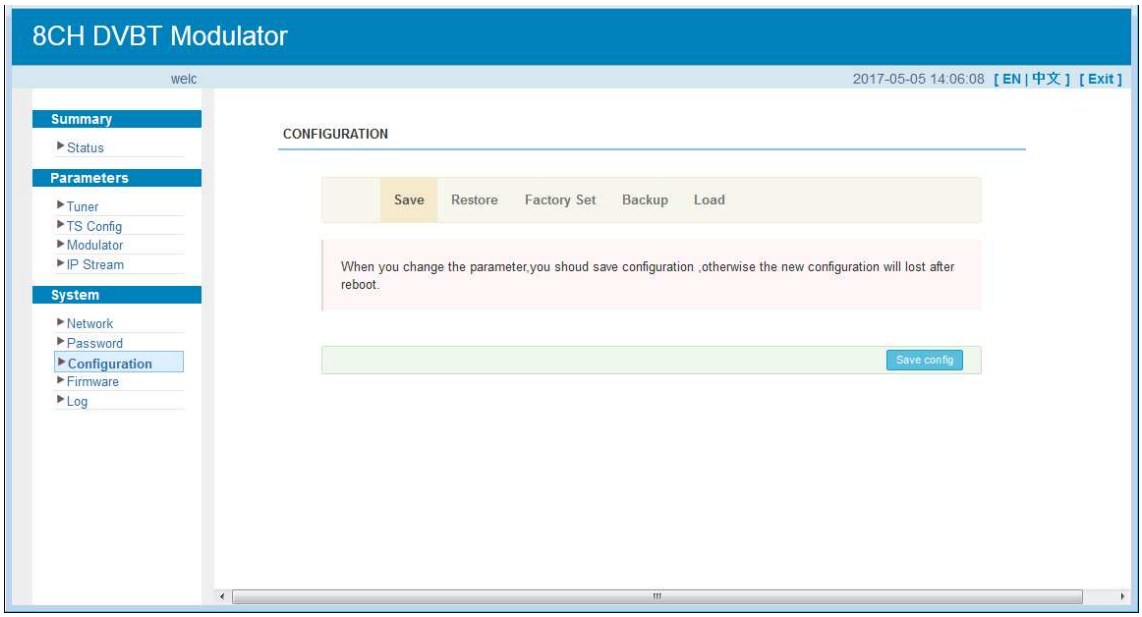


Figure-13

System → Firmware:

From the menu on left side of the webpage, clicking "Firmware", it will display the screen as Figure-14 where to update firmware for the modulator.

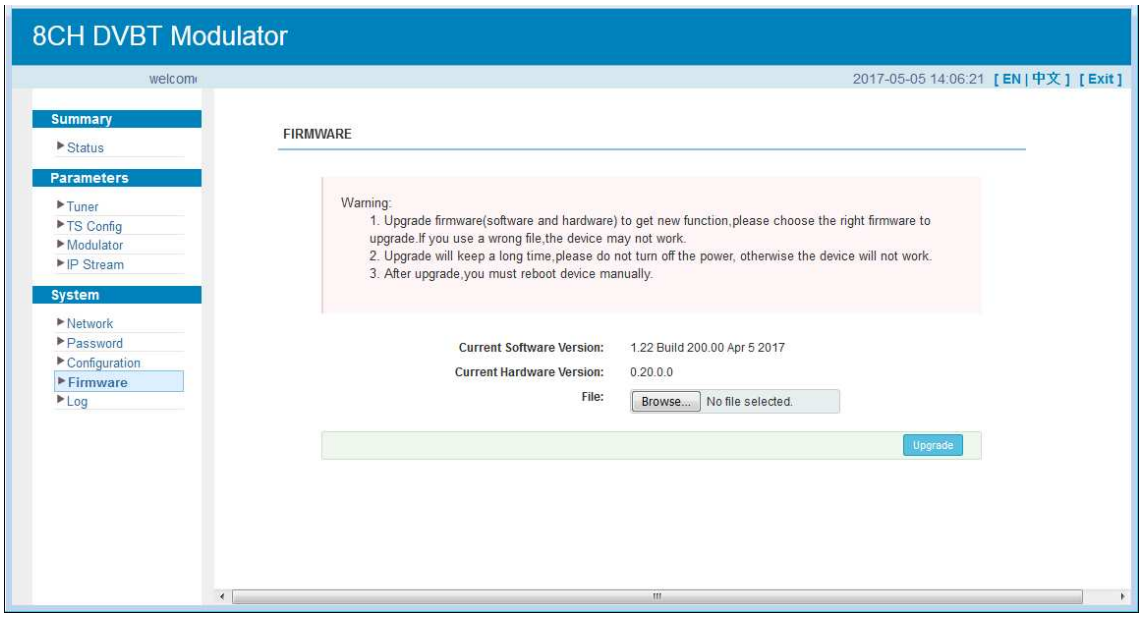


Figure-14

System→ Log:

From the menu on left side of the webpage, clicking "Log", it will display the log interface as Figure-15 where to check or export the Kernel/System log.

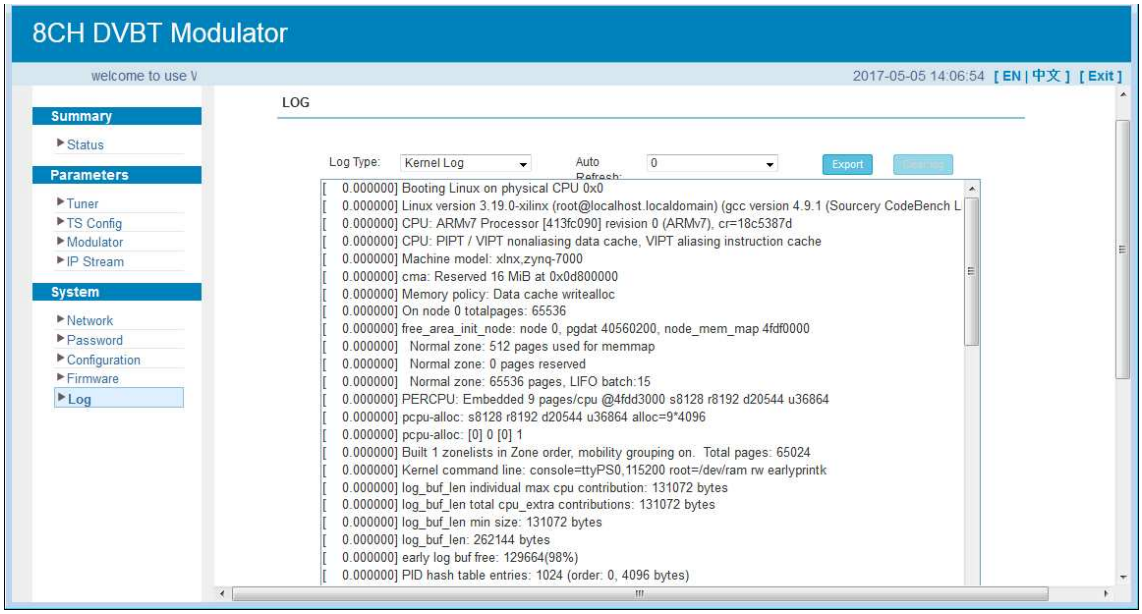

8CH DVBT Modulator
welcome to use V
2017-05-05 14:06:54 [EN | 中文] [Exit]
Summary
Status
Parameters
Tuner
TS Config
Modulator
IP Stream
System
Network
Password
Configuration
Firmware
Log
LOG
Log Type: Kernel Log
Auto Refresh:
0
Export
[0.000000] Booting Linux on physical CPU 0x0
[0.000000] Linux version 3.19.0-xilinx (root@localhost.localdomain) (gcc version 4.9.1 (Sourcery CodeBench L
[0.000000] CPU: ARMv7 Processor [413fc090] revision 0 (ARMv7), cr=18c5387d
[0.000000] CPU: PIPT / VIPT nonaliasing data cache, VIPT aliasing instruction cache
[0.000000] Machine model: xlnx,zynq-7000
[0.000000] cma: Reserved 16 MiB at 0x0d800000
[0.000000] Memory policy: Data cache writealloc
[0.000000] On node 0 totalpages: 65536
[0.000000] free_area_init_node: node 0, pgdat 40560200, node_mem_map 4fdf0000
[0.000000] Normal zone: 512 pages used for memmap
[0.000000] Normal zone: 0 pages reserved
[0.000000] Normal zone: 65536 pages, LIFO batch:15
[0.000000] PERCPU: Embedded 9 pages/cpu @4fdd3000 s8128 r8192 d20544 u36864
[0.000000] pcpu-alloc: s8128 r8192 d20544 u36864 alloc=9*4096
[0.000000] pcpu-alloc: [0] 0 [0] 1
[0.000000] Built 1 zonelists in Zone order, mobility grouping on. Total pages: 65024
[0.000000] Kernel command line: console=ttyPS0,115200 root=/dev/ram rw earlyprintk
[0.000000] log_buf_len individual max cpu contribution: 131072 bytes
[0.000000] log_buf_len total cpu_extra contributions: 131072 bytes
[0.000000] log_buf_len min size: 131072 bytes
[0.000000] log_buf_len: 262144 bytes
[0.000000] early log buf free: 129664(98%)
[0.000000] PID hash table entries: 1024 (order: 0, 4096 bytes)

Figure-15

Chapter 4 Troubleshooting

Catcast's ISO9001 quality assurance system has been approved by CQC organization. For guarantee the products' quality, reliability and stability. All Catcast products have been passed the testing and inspection before ship out factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by Catcast. To prevent potential hazard, please strictly follow the operation conditions.

Prevention Measure

- Installing the device at the place in which environment temperature between 0 to 45 °C
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
- Checking the input AC voltage within the power supply working range and the connection is correct before switching on device
- Checking the RF output level varies within tolerant range if it is necessary
- Checking all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must greater than 10 seconds.

Conditions need to unplug power cord

- Power cord or socket damaged.
- Any liquid flowed into device.
- Any stuff causes circuit short
- Device in damp environment
- Device was suffered from physical damage
- Longtime idle.
- After switching on and restoring to factory setting, device still cannot work properly.
- Maintenance needed

Chapter 5 Packing List

- HP8516T 8 CH Mux DVB-T Modulator 1pcs
- User's Manual 1pcs
- RF/Loopout Cables 7pcs
- Power Cord 1pcs