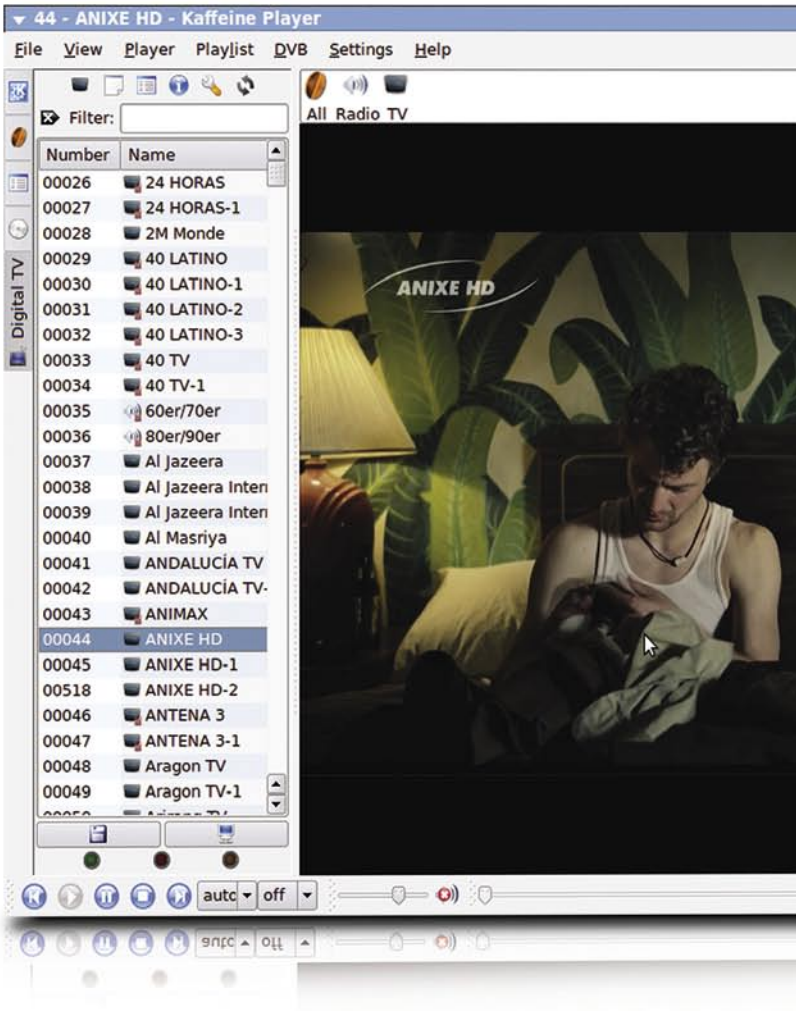
NetUP Dual DVB-S2-CI

Two Tuners in HDTV in one PC Card

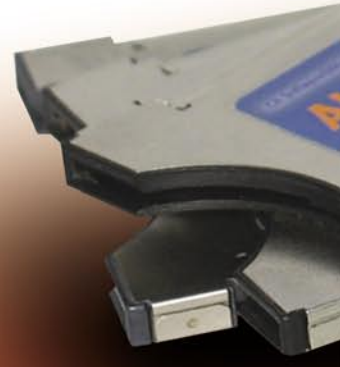
A specialist company in the area of IPTV is NetUP from Moscow, Russia. They offer all kinds of products for the distribution of IPTV signals including DVB Gateways, Conditional Access Systems and even Billing Systems for IPTV networks. Their latest development is a professional high-density satellite reception card, which is mainly targeted at the professional market in DVB-IP gateways, home theaters and satellite Internet systems. Their card not only comes equipped with two DVB-S2 tuners, but also with two Common Interface slots, and all this packed into one single card fitting in a PCIe slot. Since it's a card aimed at the professional market it's running on Linux. Mainly this card will be used in rack mounts. Usually, these can house two cards. With a regular PC Card this would mean handling 2 channels. But using this new two-tuner card a single rack can manage 4 channels in one rack.



Even though this is a professional card, it is as well very attractive for the satellite watcher, who would like to watch his local football team grabbing the European cup in full-screen HD while at same time keeping an eye on what happens in the latest episode of his favorite show. The satellite enthusiast hunting satellite feeds might even have more fun with this card, now that he can track two different DVB-S2 feeds at same time. There are many ways how this card can be of good use for the real enthusiast as well as for the real professional. To be really happy with the card, I recommend using a high-end PC, because the card does not include a dedicated H.264/MPEG2 hardware decoder.

Installation

The card comes without any software or installation instructions. On NetUP's support page (http://www.netup.tv/en-EN/dual_dvb-s2-ci_card.php) it's stated that this card has "drivers for Linux OS". My next step was to check the chipset used on board: it is a Conexant CX23885. Armed with this piece of information I checked if the card is supported by video4linux (v4l for short). To do this, I went to



the main source for DVB-S(2) cards, which is the LinuxTV Wiki at http://www.linuxtv.org. After two mouse clicks

I found what I searched for: the card is indeed supported! http://www.linuxtv.org/wiki/index.php/NetUP_Dual_DVB_S2_CI

Having finished these preliminaries, I switched on my spare PC, which runs on Ubuntu 9.04. After power on and logging in, I would have expected the card to be automatically detected. But dmesg said: No (Pic.1). So it seems that the default version of v4l bundled with Ubuntu 9.04 is not able to use the card. Luckily, in the card's page on LinuxTV Wiki there's a hint on how to make it work: you need to check the latest source from v4l repository. The repository is based on mercurial source control system. Naturally, in order to be able to check out the source you need to install it. Under my Ubuntu installation only one command was needed:

$ sudo apt-get install mercurial meld (Pic.2).

After this I entered the commands suggested in LinuxTV Wiki, which resulted in the required kernel modules and programs to be built:

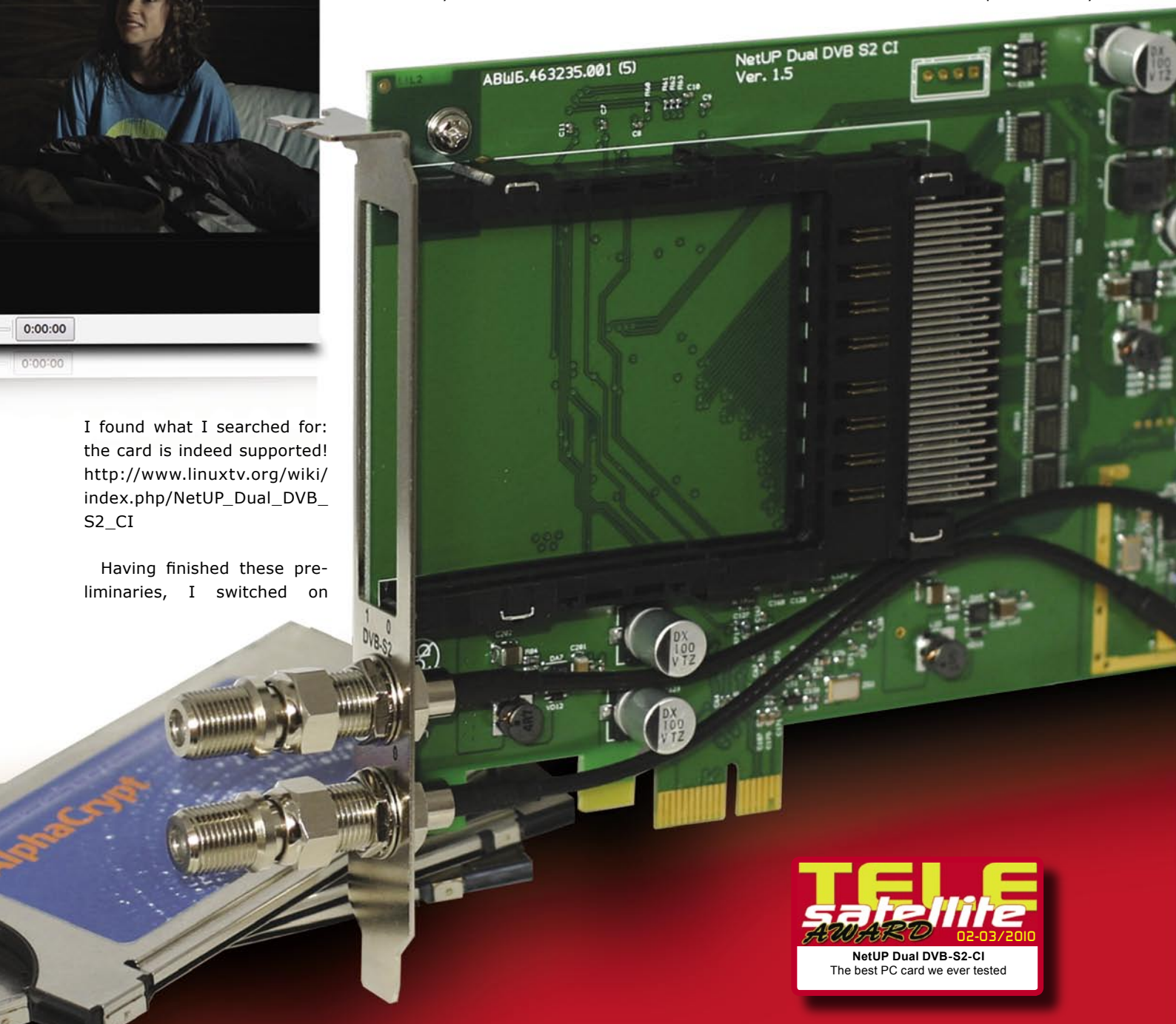
```
$ hg clone http://linuxtv.org/hg/v4l-dvb/
$ cd v4l-dvb
$ make > /dev/null 2>&1
$ sudo make install > /dev/null 2>&1
```

Time to check if everything is in order. I rebooted the computer and checked again the status of the card detection by using dmesg. Bingo! The card was detected this time with both of its tuners, as can be seen in (Pic.3).

Now, after the card was detected, all that was left to do is to install a player that's able to open a DVB device and play the corresponding stream. The easiest software to use is Kaffeine, which can be fastly installed by using this command:

$ sudo apt-get install kaffeine

Kaffeine depends heavily on



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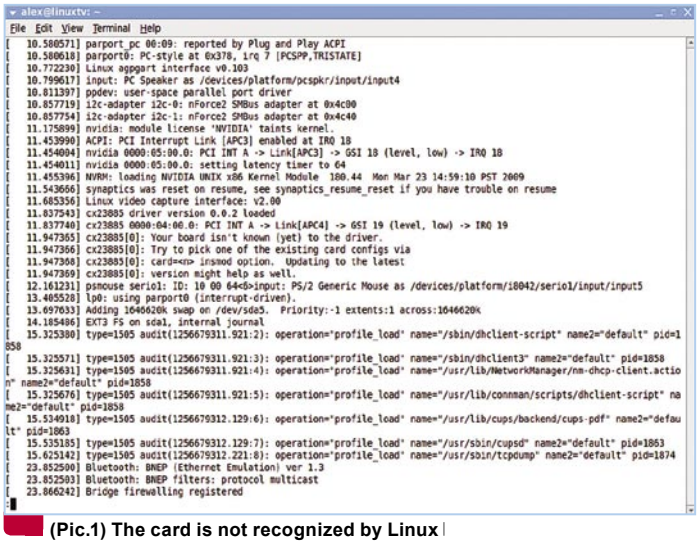
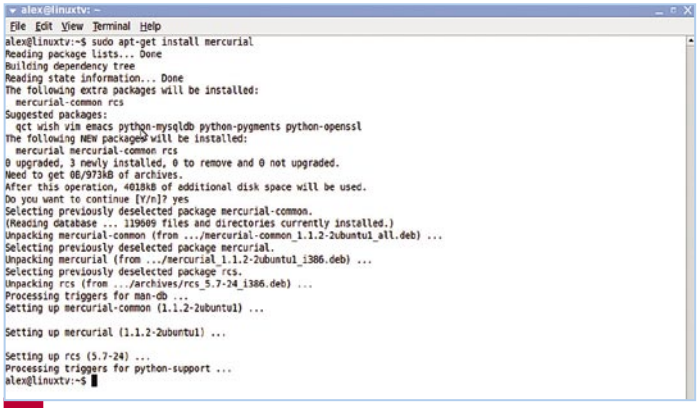
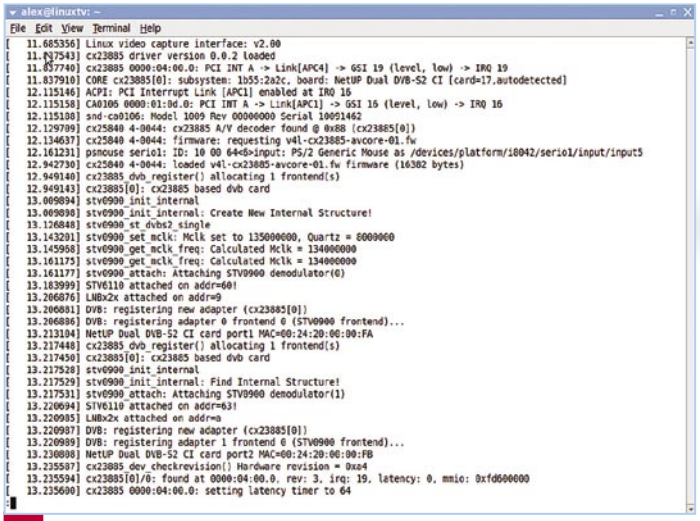


(Pic.1) The card is not recognized by Linux



(Pic.2) Mercurial gets installed



(Pic.3) The NetUP card is successfully detected

some KDE libraries and it will install more packages than expected. But one is missing, which I selected manually: libxine1-ffmpeg This is needed for software decoding of H.264. After the installation is done (which takes a couple of minutes) I went to the "Application" menu and to "Sound and Video". I clicked on "Kaffeine" and was greeted with the welcome screen in (Pic.4).

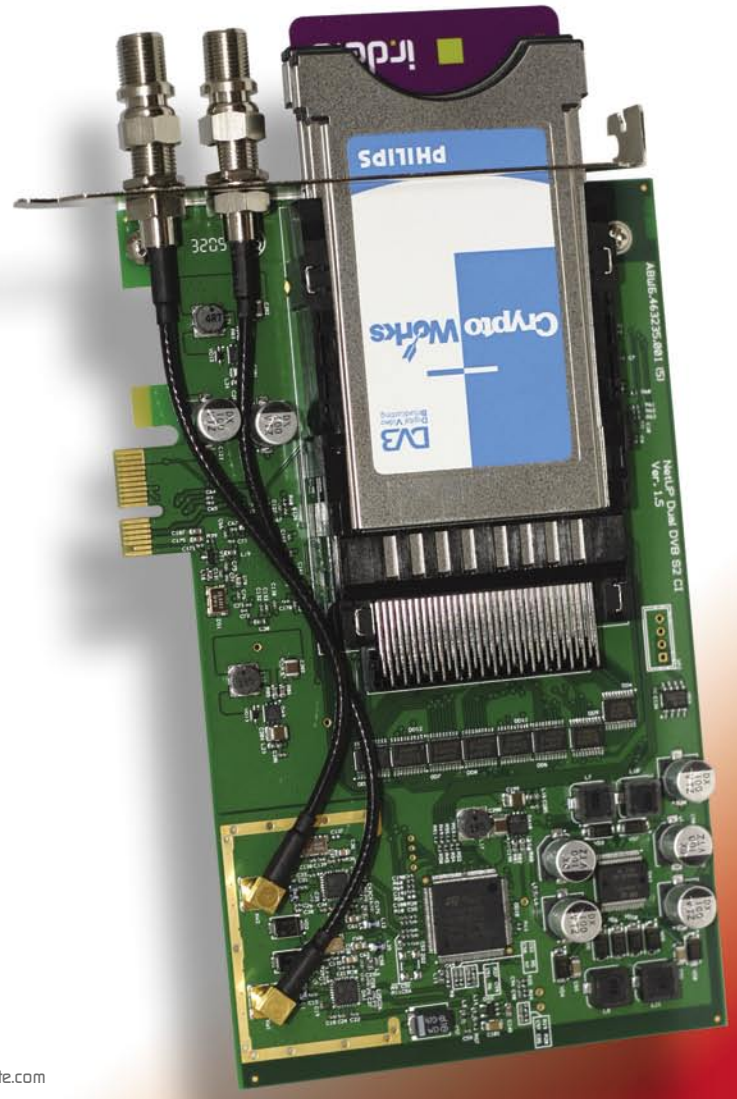
Watching TV

In the Kaffeine menue I clicked on "Digital TV" which resulted in an interface resembling ProgDVB under Windows (albeit with less features). The next step is to scan for all the receivable channels. This can be done by pressing "C" or going to the "DVB" menu and then to "Channels". The interface for channel scanning is pretty intuitive and Kaffeine is able to scan a whole satellite by using the NIT information contained on some transponders. Doing this, after a couple of minutes the complete list of channels is displayed (Pic.5).

However, Kaffeine can not display two tuners and is therefore of not much use with this sophisticated card. The solution is to use a more advanced piece of software, like for instance MythTV, VLC or MPlayer. But before to switch to another DVB viewer I checked the quality/signal strength indicator in Kaffeine. Though it is not really accurate (it reports either 3% or 98%) I managed to correlate these two figures by using a satellite signal meter and was able to determine that the SNR for Anixe HD is 6 dB. To put this into persepctive: it means that the power of the useful signal is twice the power of the noise, thus making the tuner in the NetUP card one of the most sensitive available.

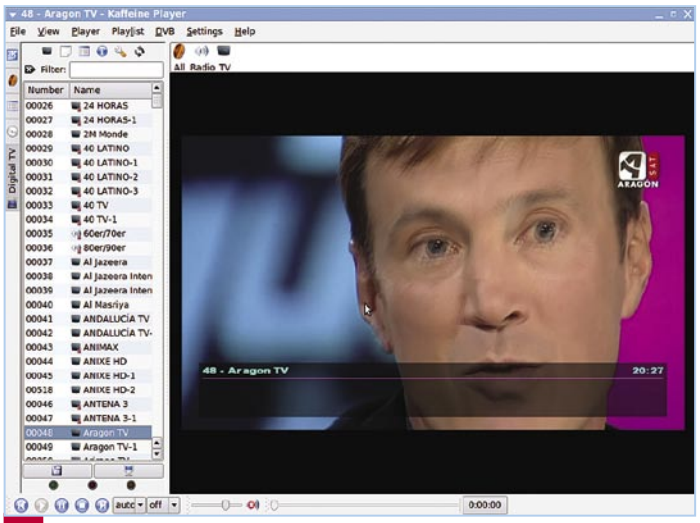
In practice

The lock time for the card is pretty good, averaging 4minutes and 47 seconds for a full scan of HOTBIRD at 13E. This card even offers a hidden highlight: it can receive 16APSK DVB-S2 channels! This modulation is used by some channels to hide themselves away from regular viewers. Unfortunately, my 90cm dish is too small to get a decent signal at my location for HOTBIRD but I was still able to get at least some macroblocks from these transponders. If you are closer to main beam of HOTBIRD try 11.334H, 11.373H and 11.432V for such transmissions, which trade off error correction for quality (Pic.6).

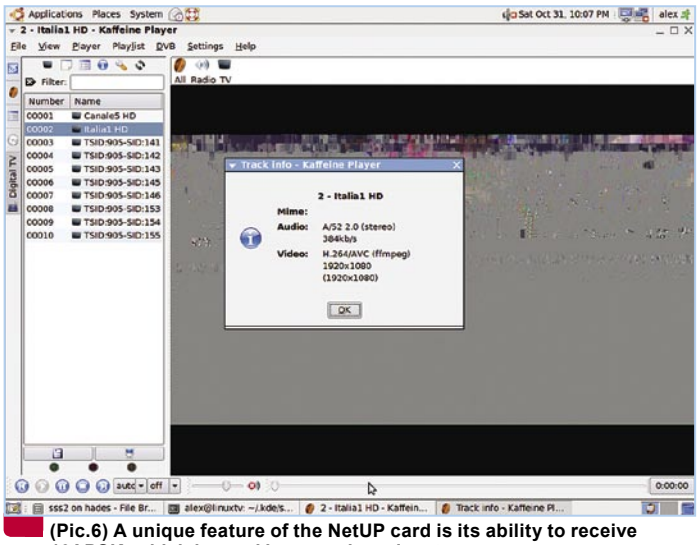


The NetUP two tuner card is highly interesting for the serious satellite enthusiast and is a must for the professional user of satellite signals in DVB-S2. It's tuner sensitivy is exceptional. It requires Linux and needs some software background for the one who installs it, but after this hurdle is overcome performance of the NetUP card is as perfect as a satellite PC card can be.

(Pic.4) Welcome screen of Kaffeine, a DVB viewer program



(Pic.5) After a couple of minutes the menu shows all channels received



(Pic.6) A unique feature of the NetUP card is its ability to receive 16APSK, which is used by some broadcasters, like Italia 1 HD from Italy on HOTBIRD 13E

Expert Opinion

Alexandru Porosanu
TELE-satellite
Test Center
Romania

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Two independent tuners on same board.
Very stable performance due to Linux.
Exceptional good tuner sensitivity.
Dual standard DVB-S and DVB-S2.

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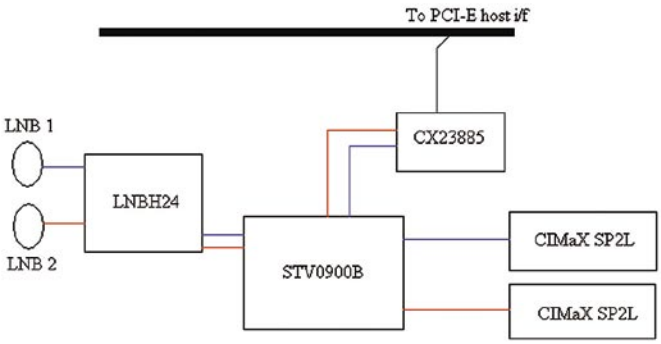
Card comes with no software support from manufacturer.
No hardware acceleration for MPEG2 or H.264.

TECHNICAL DATA

Manufacturer	NetUP, Olof Palme Str. 1, Sect. 7, Moscow, Russia
Phone	+7 495 510 1025 (ext 0) - general questions +7 495 510 1025 (ext 1) - technical support
Fax	+7 499 143 5521
Email	info@netup.tv
Website	www.netup.tv
Model	NetUP Dual DVB-S2-CI
Function	Two Tuners DVB-S2 PCIe card
Frequency Range	950 - 2150 MHz
Systems	DVB-S, DVB-S2
Transmission Modes	MPEG-2, MPEG-4 (software)
Demodulator DVB-S	QPSK
Demodulator DVB-S2	QPSK, 8PSK, 16APSK, 32APSK
DiSEqC	up to 2.0
CI Slots	2 for any professional CA modules (PowerCAM Pro, Aston Pro Solutions, etc.)
Connectors	2 x F
Software	Linux

Technical Information



General Overview

*** 4 Layer PCB**
*** 2 x CI slots**
*** Long PCI-E board**

Components Overview

*** 1 x STM STV 0900B – Dual demodulator that can handle DVB-S QPSK, DVB-S2 QPSK, 8PSK, 16APSK (all the standards currently used for broadcast in Digital Television, both in Europe and USA); also employs a lower voltage requirement (3.3V)**

*** 1 x STM LNBH24 – Dual LNB supply and control; compatible with DiSEqC 2.0 feedback signal specification by employing a 22 KHz tone detection; supports unfiltered DiSEqC signal output**

*** 2 x SCM Microsystems' CIMaX SP2L – CI interface driver**

*** 1 x Conexant - PCI Express Broadcast Audio/Video Decoder, supporting two MPEG transport streams**