

# The New Super Receiver



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- *Can be started in three different user interfaces*
- *Comes with an extremely sensitive tuner*
- *Already a fully functional multimedia box*
- *Very low heat generation guarantees long hardware life*
- *Includes learning remote control and reset button in case of unsuitable images*



What's the difference between a super receiver and a normal receiver?

If it's a Linux receiver you're talking about, then the answer is clear: it's when it can boot in more than just one Linux image. For the Linux operating system there are a number of very sophisticated user interfaces that each have their own special highlights.

TELE-satellite has already reported on Linux receivers that can boot in two different images. But the brand new AZBox ME can actually start with three different images and that for us makes it a super receiver. Naturally the AZBox ME can do a lot more than just start with three different user interfaces.

This surprising receiver makes quite an impression. The housing is made of black metal while the front visor is

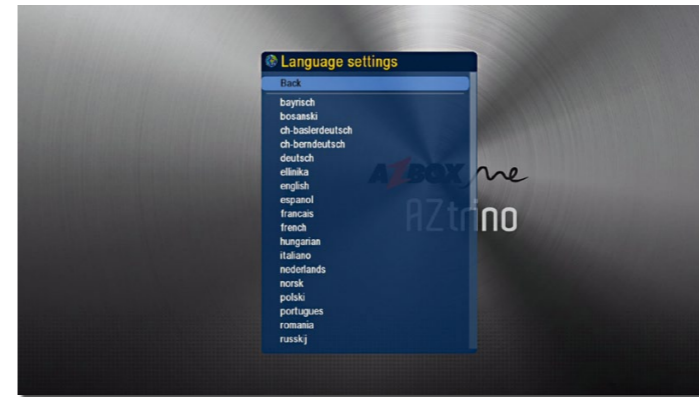
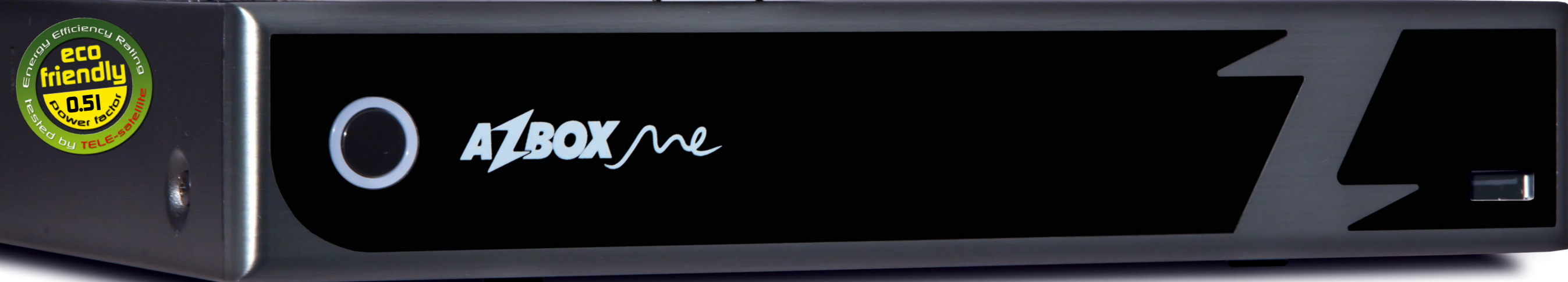
a mix of brushed aluminum and a black acrylic visor behind which can be found a VFD display. The shape of the receiver is easy to describe: it is perfectly square all around (25cm x 24 cm x 4 cm).

The simple design of the receiver was also carried over to the front visor which is just as minimalistic in design. You can only see a single button surrounded by an LED ring the color of which indicates the operational status of the receiver, as well as a VFD display that can show alphanumeric characters in blue and a USB port.

It was nice to see that the AZBox designers installed the USB port in the proper orientation so that a USB stick won't face down when it's inserted. It's a minor detail but, nevertheless, we can't quite understand



why some manufacturers don't install the USB port the proper way. A stylish „Z" made out of brushed aluminum, the logo of the AZBox family, rounds out the front panel of the receiver. We ap-



preciated the simple design; it doesn't always have to be a complex geometric shape. Sometimes less is more. Since the housing isn't coated in a glossy paint, you can handle the receiver as much as you want without having to worry about getting fingerprints on the surface.

It was at this point that a question came to mind: shouldn't this receiver have a card reader? We checked the back of the box and didn't find one there. Only when we looked at the right side did we find a slit in the housing. Yep, that must be it. The card reader supports Conax SmartCards. If you want to use this card reader, keep in mind that the SmartCard will stick out about 2cm so you have to make sure there is enough room on the side of the receiver.

When we took a closer look at the receiver's rear panel, we instantly noticed an inconspicuous switch:

BOOT Normal/Recovery. If a problem ever occurs during a firmware flash, there's no need to panic! Simply move the switch over to Recovery and load new firmware via the network. For the user this means no more worrying about accidentally uploading the wrong firmware or having the power go out during a flash process.

And while we're talking about flashing, the AZBox ME has the largest capacity memory that we know of. A fat 512MB lets us install three firmware images in parallel. During the boot process, Bank 0, 1 or 2 can be selected. These banks can be flashed however the user likes so that there's really no excuse not to try every available image!

The receiver comes shipped with two different Linux images (Bank 0 and 1). Actually, Android should also be part of this but at the last moment chip manufacturer

Sigma backed out of the OpenMIPS project. That's too bad. Although it's not that big a tragedy; it would still have been a MIPS processor based Android which means it couldn't have been used to access the Google Market not to mention the thousands of apps that can be found there - these are all laid out for ARM processors. But since AZBox manufacturer OpenSAT makes the source codes available to any interested developer, there's still hope that something will happen with Android.

The rear panel also sports an HDMI port and RCA jacks for component outputs (YUV) as well as composite video and audio (L+R). In addition there's e-SATA, USB 2.0 and an optical audio output.

We also liked the main power switch that can be used to turn the receiver completely off. Many manufacturers omit this switch

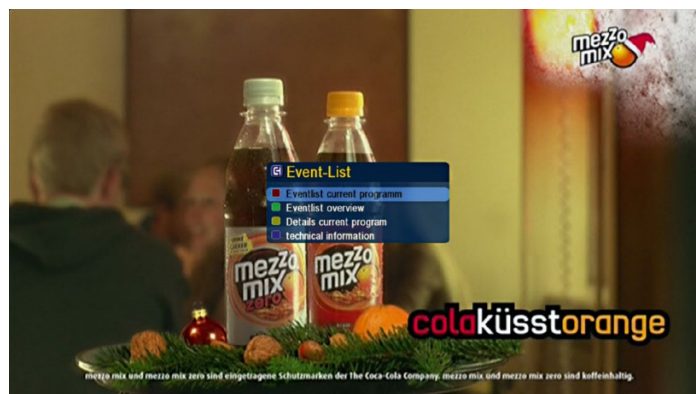
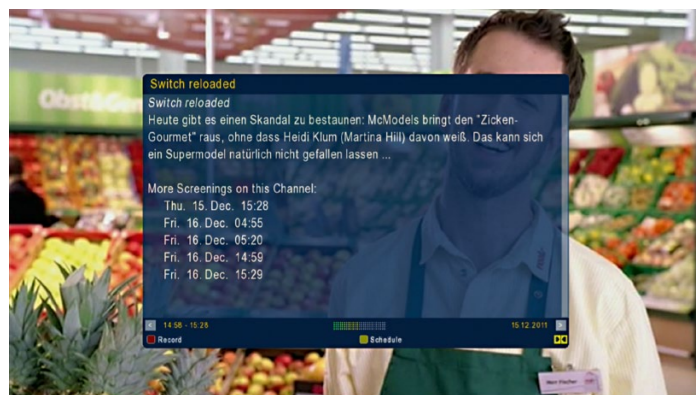
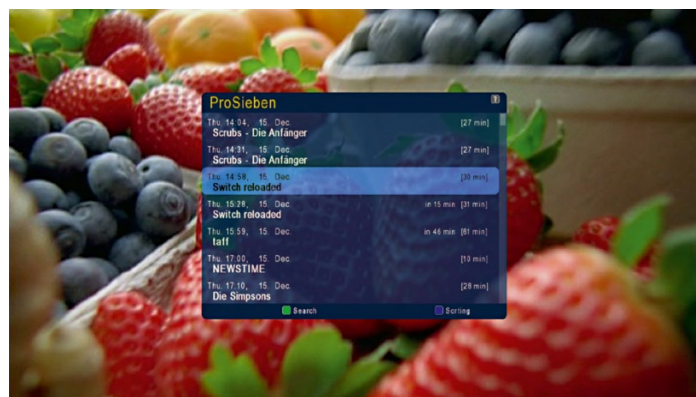
even though it does make sense to be able to turn the receiver completely off if it won't be used for a while. Pulling the plug out is not the best way to kill power to the receiver especially if the cables are all nicely placed behind a cabinet.

The available YUV jacks are perfect for those who have, for example, a video projector, that still don't have their own digital inputs. The component outputs provide a way to enjoy HDTV using an analog pathway.

The AZBox ME only comes with one tuner but it has a looped-through output so that additional receivers can be connected. In addition to instructions for programming the three flash positions and a pocket guide, there's also a remote control and a SATA cable as well as a set of screws.

Since a Linux receiver can only reach its full potential with a hard drive, we acquired a 2.5" SATA hard drive. You could, of course, also use an external hard drive via the USB port or e-SATA interface, but this would disturb the harmony in the living room by adding more visible components and cables.

Installing the hard drive is easy. A total of seven screws need to be removed from the receiver housing in order to get the top cover off. The designers of the AZBox ME came through once again: a sheet metal box is mount-



ed to the housing with four screws; it can hold a 2.5" as well as 3.5" hard drive. We never expected that this little receiver would also be able to hold a 3.5" hard drive! Another plus point!

Once everything was screwed back together, the hard drive was automatically recognized. It was formatted through the Hard Drive menu. Included were all of the typical PVR functions such as Timeshift and timer recordings.

The AZBox ME remote control is ideal. Even though it's rather unremarkable and not all that luxurious, it does sit nicely in your hands with all of the buttons easily reachable with your thumb.

The arrow buttons are surrounded by a ring of six additional buttons. This arrangement might take a little getting used to in that, for example, you could accidentally press the EPG button instead of the down-arrow button. But it won't take long before you get used to the setup and are able to keep the buttons separate from one another.

The highlight of the remote control can actually be found inside the battery compartment: there you'll find a button that activates the learning function. This makes it possible to reprogram the right button in the first row to, say, turn your TV on and off. But, of course, you can reprogram this button to handle every other possible function.

The AZBox ME is delivered with two pre-installed Linux images; the user is immediately given a choice between the two images. Even though both of them are Linux images, they both use completely different user interfaces. We selected „Boot (0)“ to start with. An assistant recognized the first-time use and guided us through the vari-

ous steps. First on the list was selecting the language. It's interesting to note that you can also choose „Bavarian“ as one of the languages.

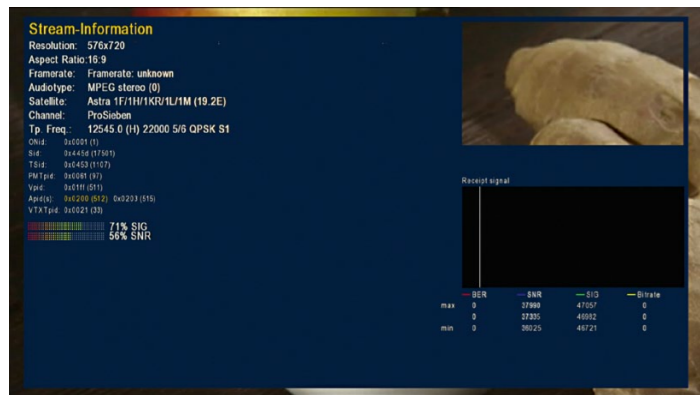
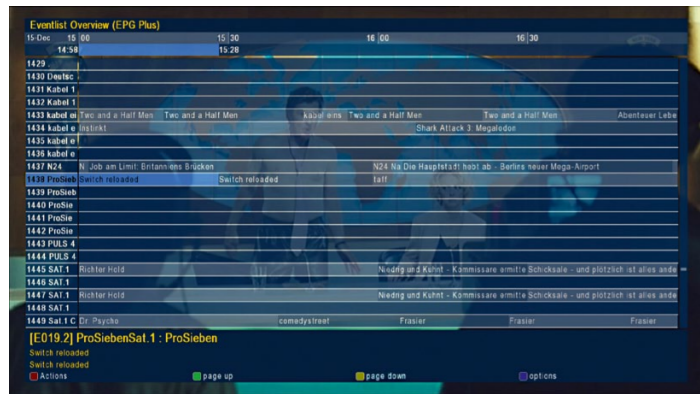
Next come the video settings. Lastly comes the tuner configuration and the start of a channel scan. We tested the firmware with our DiSEqC 1.0 antenna system that consists of four antennas pointed to ASTRA 28.2E, ASTRA 19.2E, HOTBIRD 13.0E and HISPASAT 30W. The channel scan revealed the expected number of channels and did so in a speedy fashion.

With a freshly generated and therefore unsorted channel list it might not be much fun channel surfing; it would probably take quite a few button pushes to wade through the thousands of channels before you'd find a channel you like.

This Linux operating system functions in a beautifully different way: the up/down buttons as expected switch between one channel at a time forwards or backwards while the left/right buttons switch between providers. They are automatically arranged by satellite. Once you get used to this simple logic, you can switch amazingly fast between channels.

Naturally you can use a variety of settings editors to modify the settings. We recommend the excellent freeware „DreamSet“ ([www.dreamset-editor.com](http://www.dreamset-editor.com)) since it's compatible with the different firmware versions of the AZBox ME so that you only need one editor for both images.

Operating the Boot (0) image is for the most part logical and self-explanatory. The Boot (0) firmware left us with an overall good impression. It's easy to see that we're dealing with a mature operating system in which every function has been perfectly



integrated. We quickly became acclimated to the EPG and the Videotext feature also functioned lightning fast with its unlimited page memory. It's curious though: while watching a channel, a push of the red button displays a small „Event List“ menu from which EPG information can be accessed. A fourth menu point is labeled „Technical Information“ and makes it possible to display a variety of relevant information on the currently running program. All the PIDs are shown as is information on resolution and reception plus there's a black box on the right side that is supposed to display a graphic with BER, SNR, signal and bitrate. Although these values are also shown numerically, the graphic was not displayed.

Hopefully this will be corrected in a future version of the firmware; a satellite DXers heart beats faster with this kind of information and if it's displayed graphically, it then makes it possible to observe this data over time.

We entered the IP address of the AZBox ME into the PCs Mozilla Firefox browser to test if it would be presented in the web frontend. And sure enough, a page was opened with an abundance of functions.

You can access the EPG information for all channels, switch between channels and stream them into the browser and display them using the browser's VLC plug-in.

You don't have to sit in front of the TV; you can access the receiver through the network. You can also completely configure the AZBox ME through the web frontend, set up timer recordings - you can even call up a virtual remote control. It's unbelievable how far the integration between the receiver and browser has gone.

After spending some time with this image, our curiosity got the better of us and we couldn't wait any longer; we had to try the image at „Boot (1)“. To accomplish this we had to perform a reset and then while restarting the receiver we had to hold down the „1“ button on the remote control until the receiver confirmed our selection. The receiver's boot loader recognizes the last selected image and boots it automatically so that when switching images the user simply needs to select 0, 1 or 2 during the boot process.

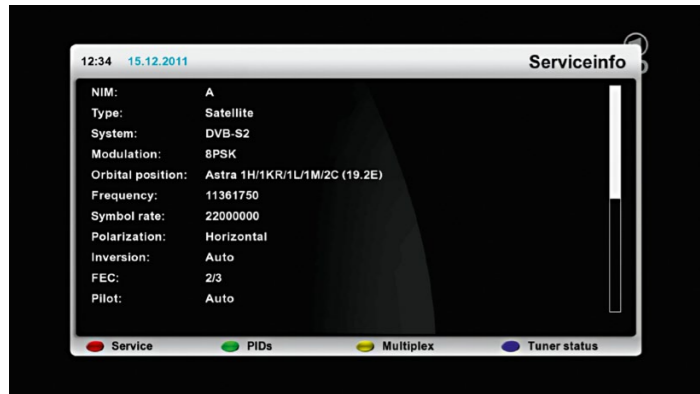
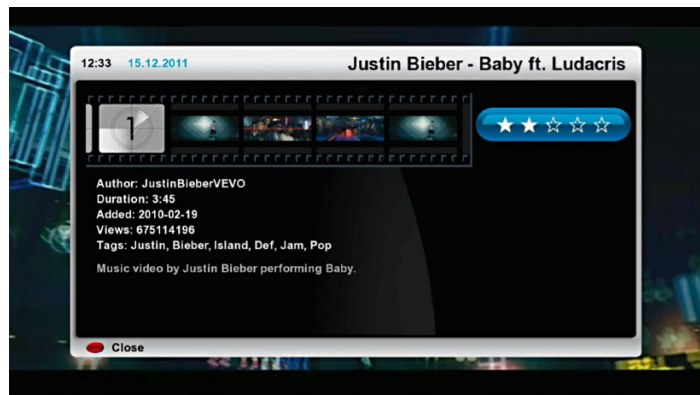
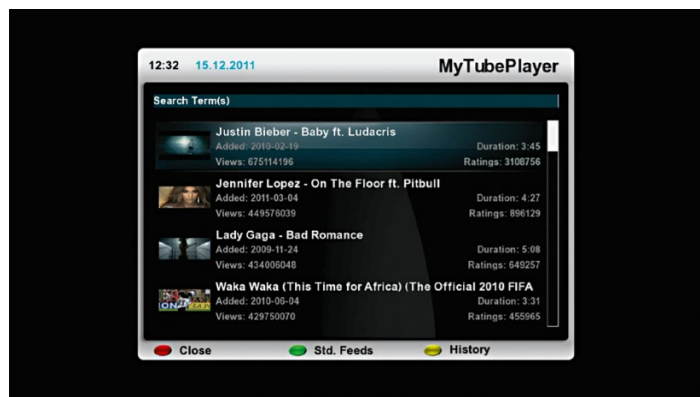
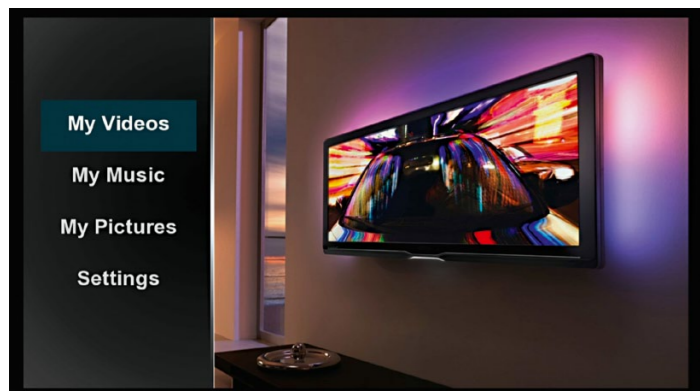
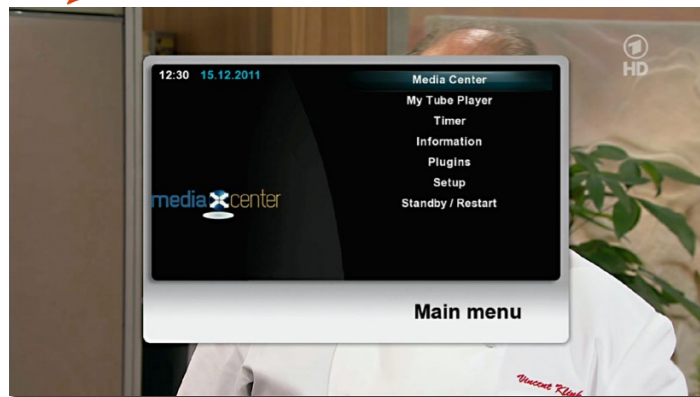
A totally different greeting image appeared and after only a short loading time we could clearly see that a completely different user interface was loaded. Even though the skin of the interface was adapted to the AZBox ME, we instantly recognized one of the most popular operating systems of Linux satellite receivers.

As before, an assistant once again guided us through the initial setup. In the first step the video output and resolution are selected.

Next the user selects from a list of many different languages whereby a small flag is shown next to the language name. It's a small but useful element if you can't read the English spelling of each language.

After a short introduction to navigating with the remote control, the next step was the configuration of the tuner. You can choose between a simplified automatic configuration or an expanded configuration for more complex satellite systems. We opted with the simple configuration for DiSeqC 1.0 with four inputs (A, B, C and D).

The last step was starting an automatic channel scan. After just a few minutes it was complete and we could



check out the functions. Channel surfing was clocked at 2-3 seconds between FTA HD channels and 1-2 seconds for FTA SD channels. The EPG information was displayed very nicely; you can select from different display modes and even lengthier program descriptions are totally readable. The PVR functions are also available with this image as they were with the Boot (0) image.

The Timeshift function can be activated at any time - all you have to do is push the Pause button. Oddly enough, the real Pause function was programmed into the yellow button.

Recordings are not started with the Record button (this switched the receiver over to radio mode) but rather with the red button. We're dealing here with a contradiction in the keyboard layout that is due to the OpenSource Linux operating system. Nevertheless, it didn't take long to get used to this arrangement.

Recordings can be started at any time, although we were much more interested

in how easy it would be to program a recording and if the receiver could correctly handle this programmed recording coming out of standby mode. We came up with the following situations:

- Recording from Standby with the antenna already pointed at the correct satellite. *Result: the recording was handled without any problems.*

- Recording while watching another channel in which the antenna was pointed at a different satellite. *Result: no problems here either. The AZBox ME promptly displayed a message on the screen that because of a timer recording the satellite has to be changed. It then switched to the programmed channel. Outstanding!*

- Attempt to timer record two overlapping programs on two different transponders. *Result: in this case the receiver displayed a message that involved two overlapping programs. The user needs to select recordings in*

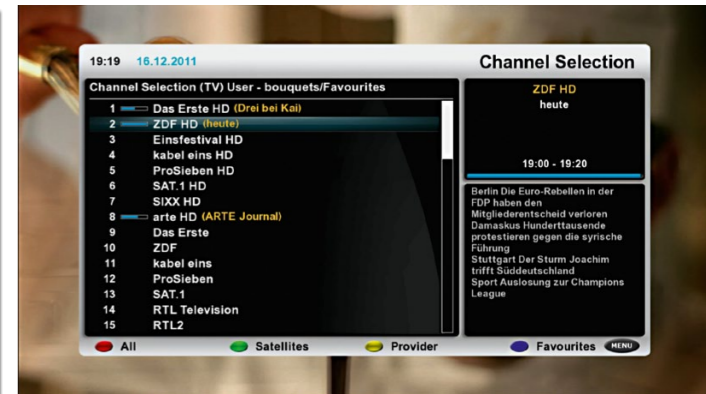
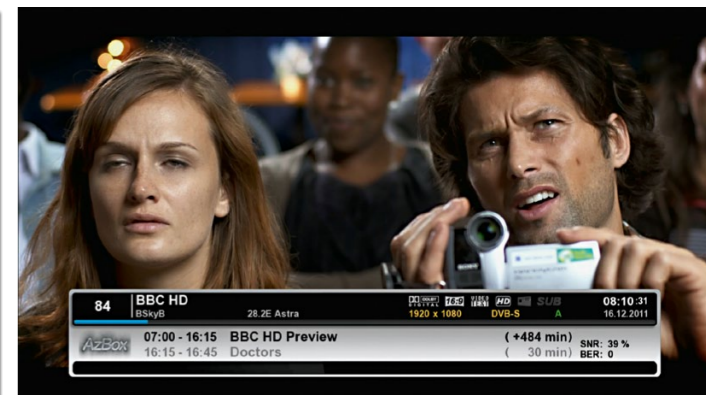
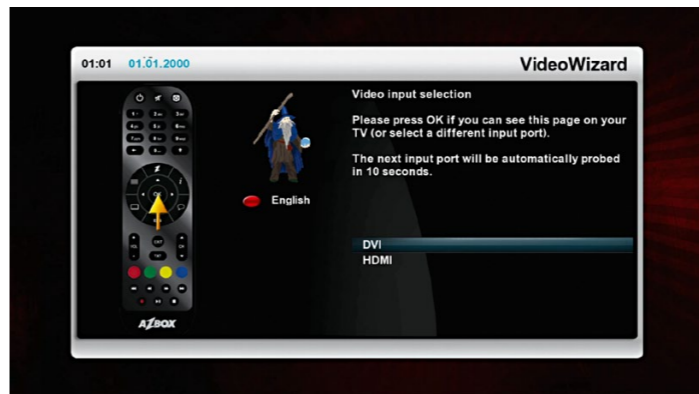
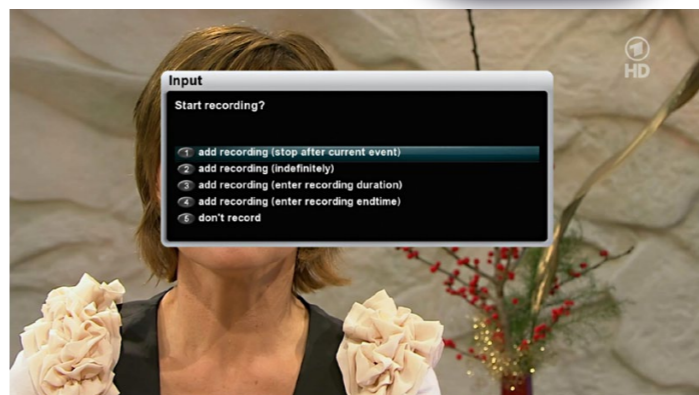
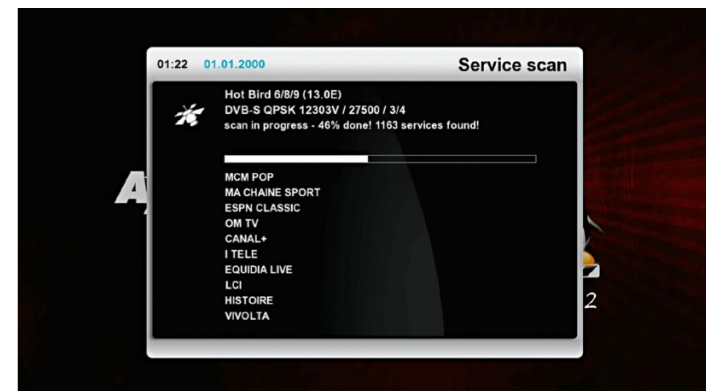
such a way that there is no conflict between them.

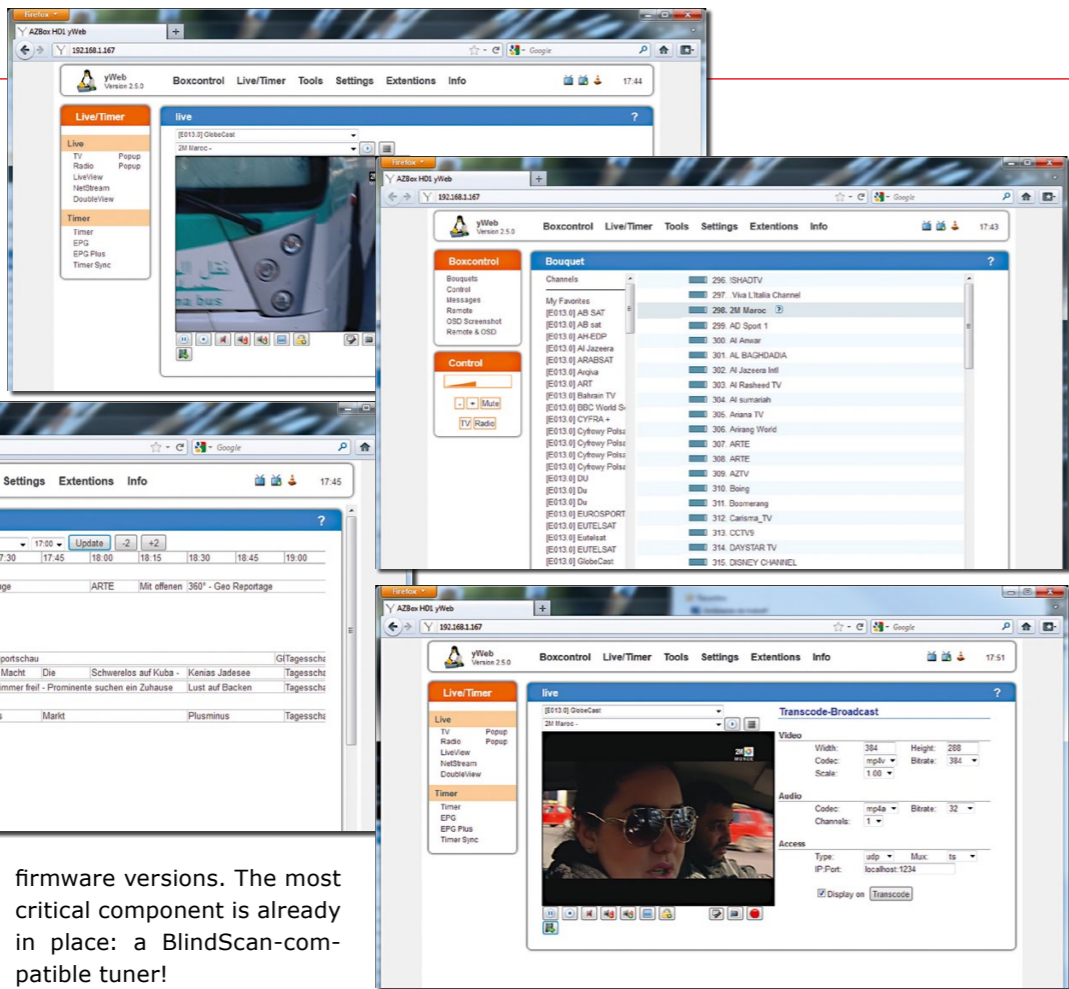
- Attempt to timer record two overlapping programs on the same transponder. *Result: the receiver didn't have any problems here; it can handle multiple recordings on the same transponder.*

At this point we wanted to test how well suited the AZ-Box ME would be for satellite DXers. Somewhat different criteria are important here. Satellite DXers want to be able to receive rare or weak signals. Most of the time this involves feeds, that is, brief transmissions such as with live broadcasts.

In many cases these transmissions are unedited, something that can be very entertaining especially if you happen to catch a blooper or some other mishap that would normally not make it to the regular transmission.

Many feeds are encrypted, but luckily not all of them. But often enough the MPEG 4:2:2 format is used which can handle a larger color





space so that an acceptable picture can be displayed even after it has been edited several times over.

Standard receivers can't do anything with this format and therefore can't display

this type of transmission. But this makes the AZBox ME amazing in that it can play back this format without any lag! This fact alone would be a great selling point in feed hunter circles.

To test it we found several transponders with MPEG 4:2:2 feeds. We had luck with the first transponder and were able to watch a live broadcast. To verify that this was indeed a transmission with MPEG compression in 4:2:2, we recorded the transponder stream (TS) and copied it to our PC using FTP. The Open Source tool „Mediainfo“ (mediainfo.sourceforge.net/en) offers the necessary assistance in that in addition to the Codec, the Chrome Profile is also shown.

Feedhunters love to use a function called BlindScan in which the entire frequency range of an LNB is scanned in a very short time for active transponders without having to enter in additional parameters such as symbol rate or FEC.

Although the AZBox ME currently doesn't have a BlindScan feature, the addition of this function has been promised for one of the next

firmware versions. The most critical component is already in place: a BlindScan-compatible tuner!

To see how well the AZ-Box ME works with motorized antennas, we hooked up the receiver to our 1.0-meter offset antenna with DiS-EqC 1.2 motor. We asked the receiver to perform an automatic channel scan on 14 different satellites. Since this task would take some time, we let the receiver run overnight.

We woke up the next morning anxious to see if the receiver was successfully able to handle the job or if it crashed, something that happens all too often with other receivers.

To our relief we found that the receiver was still running and that it had found a total of 6136 services (TV, radio and data). This was impressive especially because a storm passed through during the test that knocked our antenna slightly out of alignment and therefore was no longer optimally aligned.

Instead of trying to perfectly realign the antenna, which was not possible because of the ongoing storm, we turned the antenna to

ASTRA 2D to see if we could receive BBC HD. Well, how about that! The tuner, despite a small antenna, a misaligned motor and bad weather was able to receive the problem transponder 50 (10847 V 23000, 8/9) on ASTRA 2D and display it without any interference.

Additional traits of a good tuner include the ability to receive small symbol rates and also to display a picture even if the signal is weak. With that in mind we turned our dish to TELSTAR 12 at 15W and called up the 11566H transponder. This uses a symbol rate/FEC of 5625 1/2. BYU TV was displayed without any hesitation worth mentioning.

We also attempted the Russian INTER+ channel on the same satellite that was broadcasting on 10988H with a symbol rate/FEC of 2180 3/4. This transponder had already been found during our overnight channel scan.

Thus far we've been very impressed with the capabili-

ties of this receiver but we still hadn't checked out the multimedia side of this box. So, we decided to copy a number of movies from the AVI container via FTP onto the receiver's hard drive and in a second test we connected an external USB 2.0 hard drive that contained multimedia content.

All of the movies were played back without any problems; even DivX coded movies were handled without any difficulties. We weren't, however, able to display subtitles in SRT format; but this is normal: we don't know of any receiver that can do this.

The AZBox ME surprised us once again when we inadvertently tried to open an AVI file that originated from our Fuji S9000 camera. These videos normally can only be opened under Windows and quite often a Codec from the camera manufacturer would also have to be installed. Before we realized what we had done, the receiver played the video back without any difficulties at all.

Playing movies back from a hard drive is all by itself a beautiful thing, but it would be far better to be able to have direct access to our multimedia server on which can be found a nicely organized library of music, pictures and movies. The server allows via SAMBA free access to this data.

We spent a few moments with the AZBox's network settings and were able to establish a connection rather quickly. Instantly a new hard drive appeared in the multimedia player from which we could access our server through the network. We tested a variety of media

types and confirmed to our satisfaction that it was no bother for the AZBox ME to play back DivX data via the network.

Another great feature is the integrated YouTube client. This lets you watch YouTube videos through the AZBox ME on your TV. The text entry in the search field with the keyboard was actually quite fast and it was fun playing with this application.

The incredible assortment of features in this receiver can be even limitless expanded with the installation of Plugins. There are already a number of Plugins available that can be directly

downloaded into the receiver and, of course, Plugins can be manually copied via FTP to the AZBox ME and then installed.

And just like with the first image, we also opened the Mozilla Firefox browser on our PC in the Boot (1) image. And just like before we were able to access nearly all of the AZBox ME's functions via the web frontend although it was a completely different web frontend; one that was suitable to the Boot (1) image. There are so many functions that you could use that you'll always discover something new. We were able, for example, to take a

movie, that we earlier copied to the receiver's hard drive via FTP, and stream it to the PC via VLC through the web frontend.

Throughout the entire test, during which the AZ-Box ME was thoroughly put through its paces, the receiver remained remarkably cool even though there was no cooling fan. Every other Linux receiver that we know of gets quite hot and even puts out more heat in standby mode than the AZBox ME does in normal operational mode. This guarantees that the internal hard drive and the electronics will have a long and healthy life.

We could have tested this receiver for days on end; we were always discovering new and fascinating features or capabilities in this little powerhouse. The AZBox ME is truly a super receiver.

Normal, everyday users will be satisfied with every aspect of this box: it comes with a fast processor and the modern firmware permits intuitive operation. Three different firmware images can be installed at the same time so that it's easy to try out a different image.

Even the most daring attempts at flashing the memory no longer pose any risk since the little switch on the

other multimedia devices. The vast array of functions in this receiver will blow away even the most experienced enthusiasts and they'd have the ability to always try out new functions, Plugins and images.

Even for the most sophisticated satellite DXer, this receiver would be an incredibly fascinating machine - it comes with a highly modern tuner that also happens to be extremely sensitive plus it can handle professional MPEG 4:2:2 transmissions. The AZBox ME manufacturer OpenSAT has already said that they will shortly be adding BlindScan as well.



back of the receiver guarantees that you can reflash the receiver should something ever go wrong. This receiver lets you enjoy the highest levels of multimedia - it can easily take the place of

All of this is packaged in a small, attractive housing. We are very enthusiastic about this box and want to congratulate OpenSAT for the success of this super receiver.

### Expert Opinion

**Best Linux receiver with outstanding hardware**  
**Factory-equipped with two Linux images**  
**Large flash memory can administer three images**  
**Emergency image can be activated through a switch**  
**Low heat dissipation**  
**No cooling fan**



**BlindScan function not yet available (coming soon)**

### TECHNICAL DATA

Manufacturer	OpenSAT Ltd, Lagoa, 4950-283 Mazedo, Portugal
Website	www.azbox.com
E-Mail	info@azbox.com
Model	AZBox ME
Function	Digital HDTV DVB-S / DVB-S2 Linux Receiver with Multimedia Features and large Flashmemory for 3 Boot Images
Processor (CPU)	SIGMA SMP 8655 AD
RAM Memory	DDR 256 MB
Video Memory	DDR 256 MB
Flash Memory	512MB
Tuner	Avallink AVL2108 Single Tuner, Blindscan capable
DiSEqC	1.0, 1.1, 1.2, USALS
Harddrives	eSATA and internal SATA (2.5" or 3.5")
Video Out	HDMI, YUV and Composite-Video
Video Containers	MPEG1/2/4 (M1V, M2V, M4V); MPEG1/2 PS (M2P, MPG); MPEG2 Transport Stream (TS, TP, TRP, M2T, M2TS, MTS), VOB, AVI, ASF, WMV, IFO, ISO; Matroska (MKV), MOV (H.264), MP4, RMP4
Video Codecs	XVID SD/HD; MPEG-1; MPEG-2: MP@HL; MPEG-4.2: ASP@L5, 720p, 1-point GMC; WMV9: MP@HL; H.264: BP@L3; H.264: MP@L4.0; H.264: HP@L4.0; H.264: HP@L4.1; VC-1: MP@HL; VC-1: AP@L3
Audio Containers	AAC, M4A, MPEG Audio (MP1, MP2, MP3, MPA), WAV, WMA, FLAC, OGG Audio Codecs: AAC, AAC+, Dolby Digital, DTS, WMA, WMA Pro, MP1, MP2, MP3, LPCM, FLAC, Vorbis, DTS (Audio Passthrough); Dolby Digital (Audio Passthrough)
Picture Formats	JPEG, BMP, GIF
Resolutions	576i (480i), 576p, (480p), 720p, 1080i, 1080p
Ethernet	10/100 Base-T Ethernet
Card Reader	1x (Conax Licence)

### ENERGY DIAGRAM

