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## TSINGHWA GT-278
DTMB-Ресивер с прекрасным программным обеспечением


Отчет об испытаниях
## GLOBALINVACOM

## Удивительно: TELE audiovision AWARD 03-04/2013

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## HD DVB-S2 with CI MPEG-4/H.264 HDS-275SCI

- USB PVR and Timeshift Ready
- HD MPEG-4 DVB-S2 with CI slot
- Media playback: MP3, JPEG, AVI (Divx), MKV
- Up to 5000 channels
- HD output:576I/720P/1080P
- 15 Days EPG(need program support)
- EUP

- DVB-T/T2
- DVB-C
- ISDB-T
- DVB-S2+DVB-T
- HD DVB-T IP
- DVB-S/S2
- HD DVB-T+CONAX
- ISDB-T+DVB-T
- IP VOD BOX
- Mobile Device

### DVB-S FTA SDS-552ANP

- SD MPEG2 DVB-S FTA version
- USB PVR and time shift ready
- Media playback: OGG/JPEG/BMP/ MPGE PS/MPEG4
- Up to 5000 channels
- Advanced Automatic and blind scan
- NIT Network Search compliant

### DVB-T2 HDT-129N

- Full HD DVB-T2 compliant
- Media playback: MP3,WMA,FLAC,JPG, JPEG,MPG,MPEG,VOB,AVI,TS,TRP,M2T, M2TS, MP4, MKV, MOV, DIVX *
- Up to 5000 channels

### HD IP Set Top Box IV210

- Online playback: 1Mbps ADSL supports smoothly, streaming DVD quality video/2Mbps ADSL for smoothly, streaming 720p quality video from bundled/Service or Content providers/TV live, VOD, download
- Content Access: Network open content source, Network specific content service
- Video decode: Full HD H.264, MPEG-1/2/4, DivX, WMV9, XviD, RMVB, FLV), MJPEG
- Audio decode: MP3, WAV, WMA, AAC-LC/HC, OGG Vorbis, RA, Dolby D
- Display resolution: 1080P
- WiFi 802.11(b/g/n): USB WiFi dongle, built-in USB WiFi module (Optional), SSID auto search, WEP/WPA encryption
- IP allocation: Static IP /DHCP/PPPOE

### Android IP Set Top Box IV3010

- Android operate system mediaplayer
- Video Decoding:H.264(1080p/i HP@L4.1),MEPG1/2/4*1080p/i)
- Video Output:NTSC,PAL,720p,1080p/i,HDMI/YPbPr/CVBS
- Audio Decoding:MP1/2/3,WMA,WAV,OGG,AAC,etc


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# Дорогие читатели,

*Сегодня я хотел бы рассказать Вам, как выглядел бы ресивер моей мечты. Останется ли это лишь мечтой, или когда-нибудь моя мечта сбудется? Решать Вам: ресивер моей мечты напоминал бы телешет – это что-то между смартфоном и планшетом. Он будет принимать спутниковые сигналы без проводов, используя беспроводной LNB. Ресивер моей мечты будет получать наземные сигналы от антенны, которая также будет передавать беспроводные сигналы.*

*Мне бы не нужно было кабельное соединение, и я бы смотрел все мои WebTV каналы через подключение к интернету, который я получу через свой ресивер мечты при помощи встроенного 4G/LTE модуля приема.*

*И где же я буду смотреть все эти каналы? Когда я путешествую, это будет прямо с моего телешета – ресивера; а когда я дома или когда у меня есть доступ к телевизору с большим экраном, тогда мой ресивер мечты будет посылать сигналы через беспроводной HDMI. Конечно, ресивер моей мечты будет также снабжен беспроводными колонками.*

*Как только мой ресивер мечты подсоединяется к телевизору с большим экраном, дисплей на моем планшете превращается в пульт. И, естественно, мой ресивер мечты будет способен направлять ТВ каналы на мой смартфон. А когда я далеко от дома, я подключусь к своим беспроводным: спутниковой системе и наземной антенне через интернет и буду смотреть ТВ из дома, и где бы я не оказался в мире – это будет все равно, как смотреть ТВ сидя дома.*

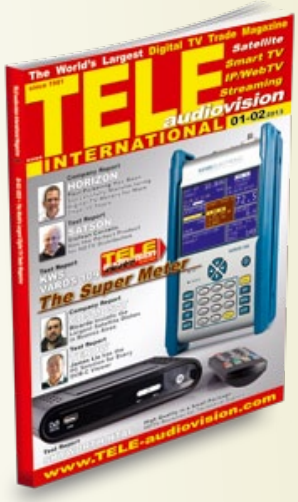
*Теперь Вы, возможно, спрашиваете себя: что именно в моем ресивере мечты – на самом деле мечта? Все эти технологии уже существуют. Так в чем же проблема произвести, наконец, ресивер моей мечты?*

*Интересно было бы узнать ответ на этот вопрос – ибо я его не знаю. Конечные потребители просто уже не хотят прокладывать кабель – это совершенно очевидно из успеха смартфонов и планшетов, а также недавно запущенных телешетов. Чего не хватает, так это – подходящих беспроводных компонентов, которые позволят Вам насладиться полным выбором ТВ каналов, независимо от того, где вы находитесь.*

*Возможно, мне уже не стоит продолжать мечтать, возможно, ресивер моей мечты уже разрабатывается. Я не могу дождаться!*

*Надеюсь, мои мечты сбудутся однажды,*

***Александр Визе***
*Шеф-редактор, TELE-audiovision Международный*

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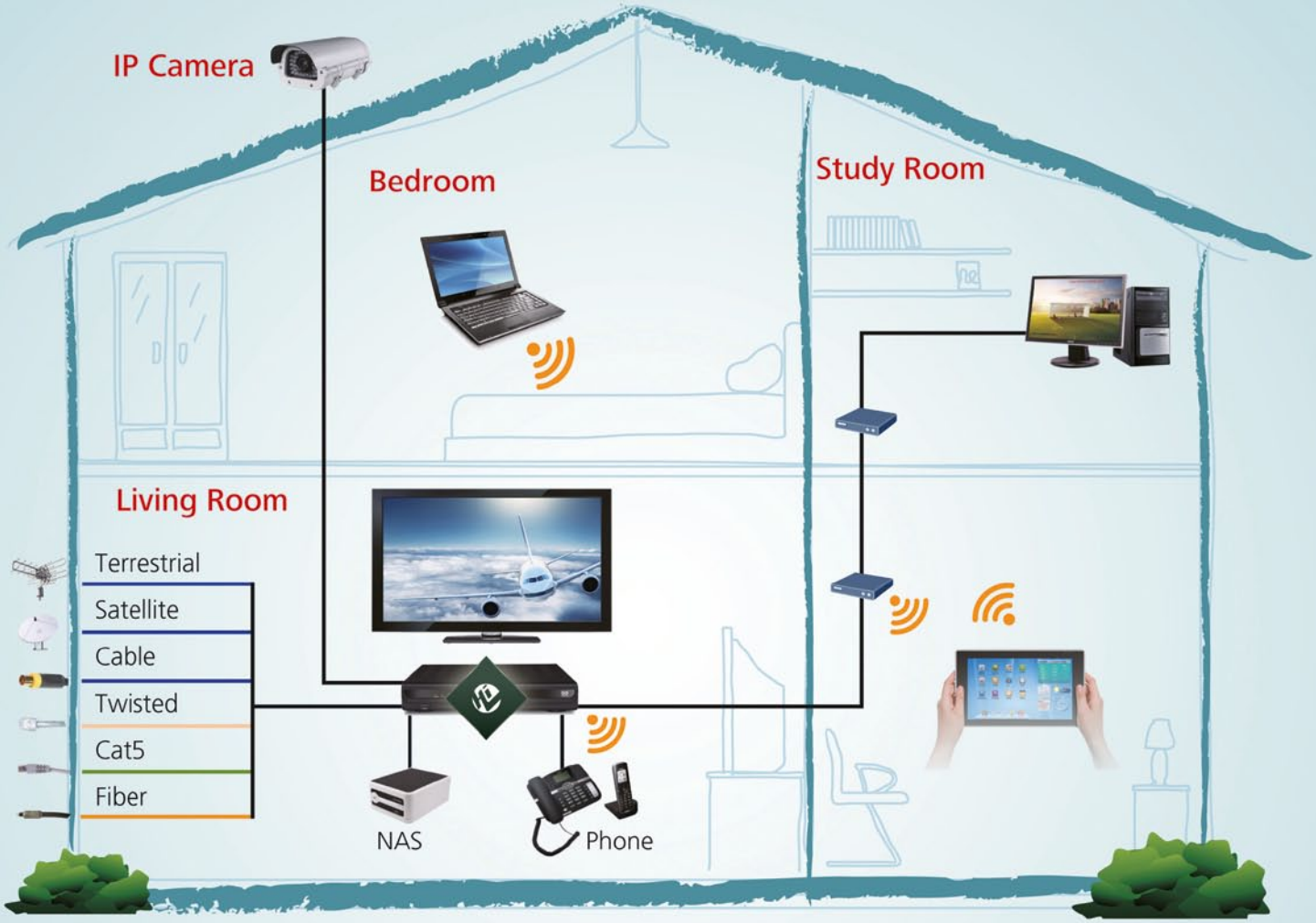
# Hisilicon

## Home network SoCs and Solutions

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- Hardware encoder supporting H.264 SVGA
- High performance 2D and 3D engine
- Advanced security features
- Dual Ethernet, Dual USB 2.0, HDMI 1.4

### Solution Features

- Low cost HD-STB solution with 3DTV
- Quick Boot-up, Low Power Consumption
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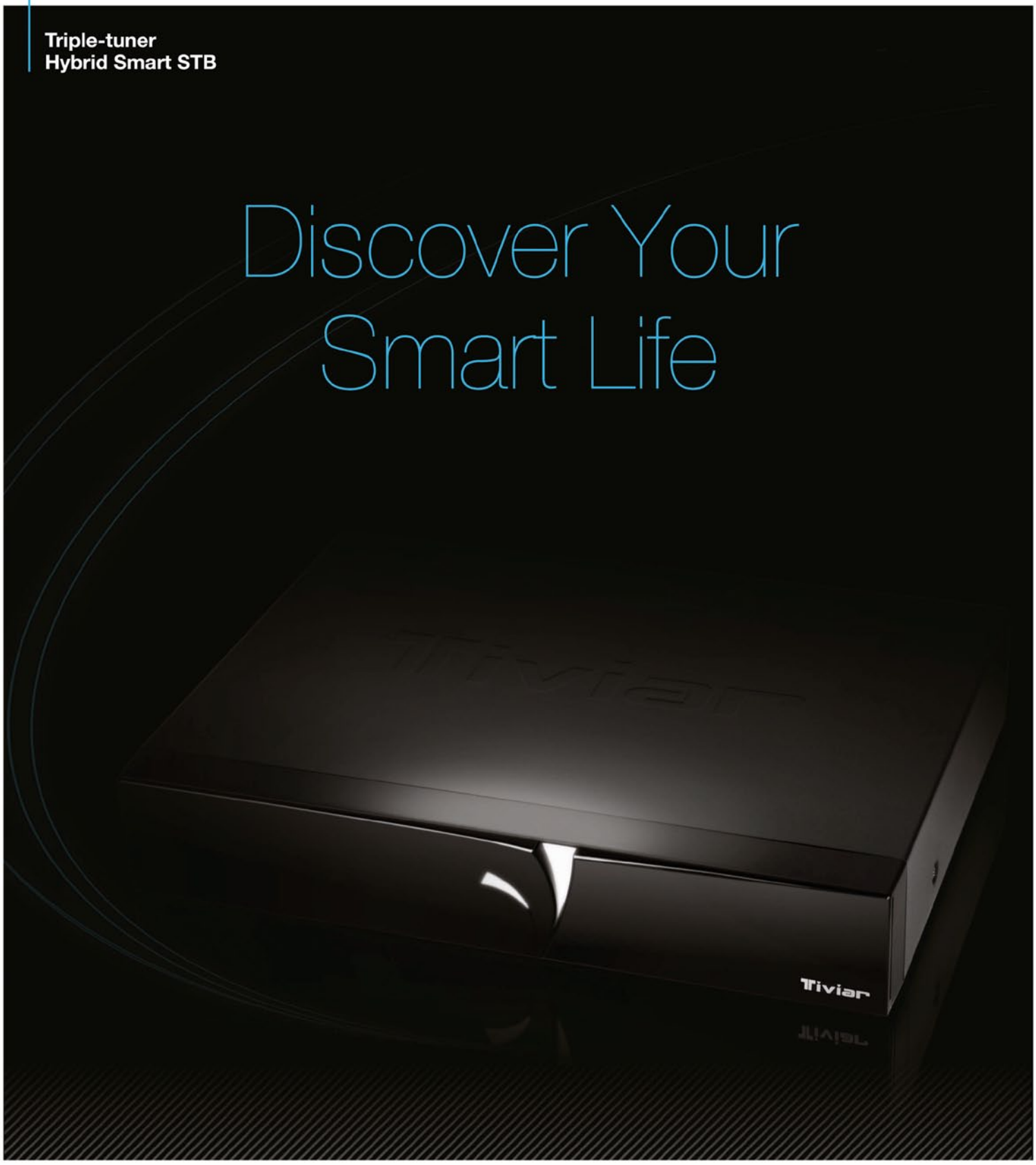


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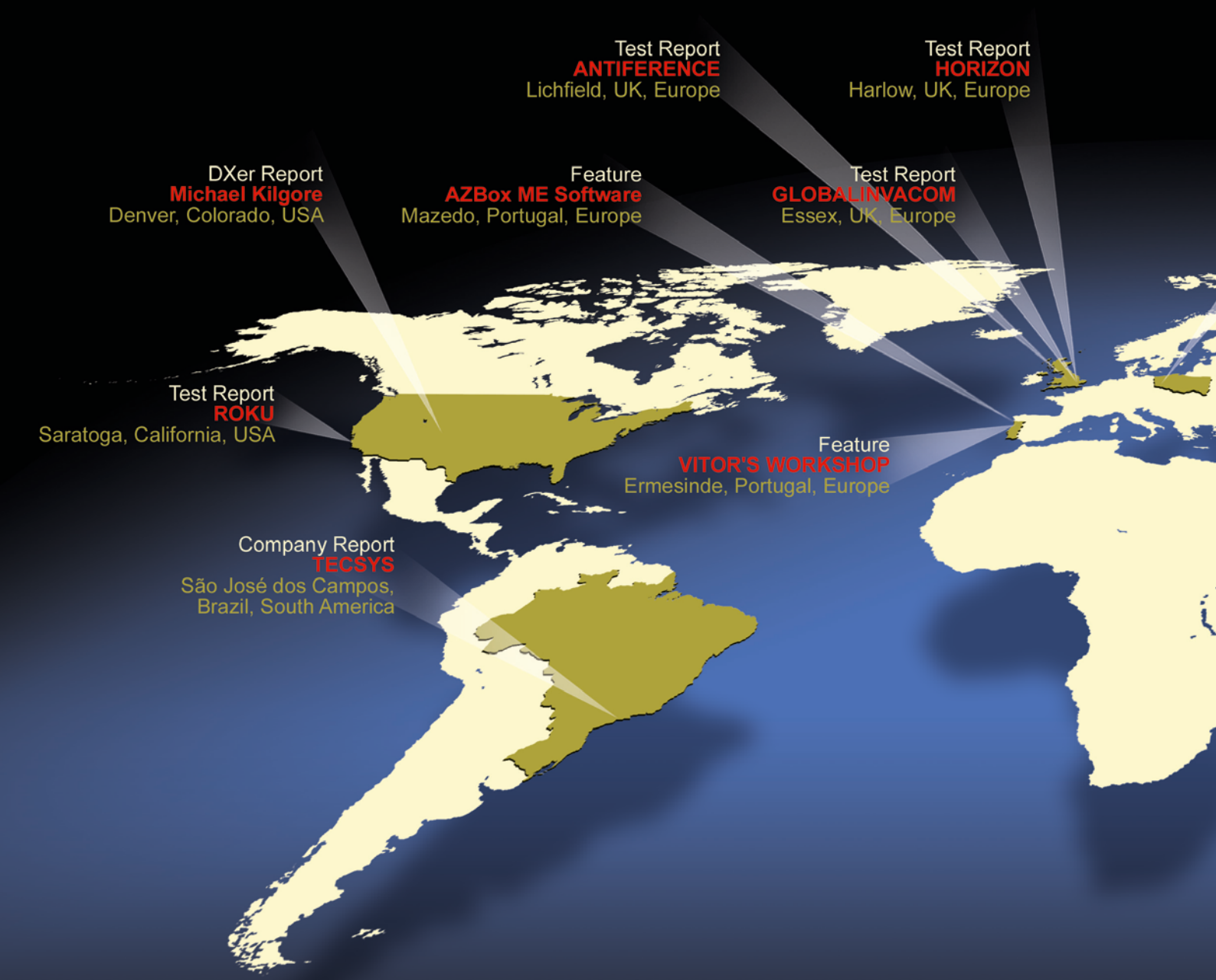


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- Android 2.2, 1080P HD
- Multi-screen interaction
- Content sharing with Pad, phone, STB
- Multi-media player
- 3D somatic games
- HTML 5 browser
- IP camera
- Smart remote control
- Changhong APP store


## Products & Technologies

- DVB-C/T/S/C2/T2/S2, ISDB-T, IPTV
- Conax/Nagra/Irdeto/NDS
- MHEG-5/Opentv/NDS Core/MHP
- Android/OS21/Linux/μ_iTron
- OTT/HBBTV/CATCH UP TV/UNICABLE

## Company Profile

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Http://www.changhong-network.com

E-mail:stbinfo@changhong.com

# HSM1

## Specifiction:

System: Basic on Android 4.0 ICS
OSD: 3D Graphical User Interface(Support OpenGL ES2.0)
DVBS/DVBS2 Demodulator
Mpeg2,Mpeg4(H.264) decoder ,fully DVBS&DVBS2 compliant
Storage 8000 TV and Radio programs
Video codec: H.264(MPEG4-AVC, VC-1), MPEG2, DviX3/4/5/6,Xvid
Audio codec: MP3, AAC, OGG, MPEG, MPEG Audio, Dolby AC-3
Container : MP4, AVI, MKV, FLV, MPEG TS
DLNA 1.5 compliant
Networking-WIFI AP,Ethernet

## Feature:

Multi-Screen shifting (DLNA and AIRPLAY Alike)
OTT (Over the top)
Android Market
Web Browser
Twitter, Facebook,YouTube...
Motion sensing games
Powerful Media
OTA(over the air )
2.4G wireless interface
Support 3D and 3D convert 2D function

## HS1J

- Video decode: MPEG2 SD, MPEG2 HD, H.264/AVC SD, H.264/AVC HD,MP4
- Interface: Single CIplus, SCART,dual USB2.0,LNB ,HDMI,RCA, Digital Audio, Ethernet
- Video Resolution: 480i/p, 576i/p, 720i/p, 1080i/p
- Function : Manual/Auto search, Edit Channel, EPG, Subtitle,TXT, PVR , RSS, Weather Forecast ,Youtube ,Game,32 FAV group, Media player;
- Language:English, French, German, Italian, Spanish, Portuguese, Russian, Turkish, Arabic, Polish etc

## HS1C

- Pluggable tuner,support S2+S2/S2+T2/S2+C tuner
- Video decode:MPEG2 HD/SD H.264/AVC HD/SD
  Output interface:Single CI plus,,dual USB2.0, HDMI,SPDIF,YPbPr/SCART
  Features:
- youtube,google map,picasa,Weather Forecast, RSS,Fastscan search,PVR
- Support WIFI

## HTAB

- Video decode :MPEG2 SD, MPEG2 HD, H.264/AVC SD, H.264/AVC HD
- Output Interface : HDMI ,SPDIF, USB,SCART
- Video Resolution : Full HD 1080P, 1080i
- DVB Function : Manual search, Edit Channel, EPG, Subtitle, TXT, PVR,Meadia player

## HTJ4

SD MPEG-2/HD H.264 & fully DVB-T compliant,

- Output Interface: HDMI,Scart ,SPDIF
- Video Resolution : Full HD 1080P,
- Function : Manual search, Edit Channel, EPG,
- Subtitle, TXT, PVR
  Wifi(option):RSS Reader, Weather Forecast ,maps,
- Picasa,Google ,Youtube ,Youporn,Vimeo,etc

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# INNOVATION
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INNOVATION TELE audiovision AWARD MAGAZINE

# Tsinghwa GT-278

- ***очень быстрое переключение каналов***
- ***быстрое OSD построение и реакция***
- ***PVR – функционален, если подключен модуль памяти***
- ***отличные мультимедийные возможности***

# DTMB Receiver with Excellent Software

As soon as we had unpacked the new Tsinghwa GT-278 we were met with its classic yet elegant appearance. The front panel is characterised by an easy-to read segment display, status LED as well as a total of six buttons for operating the receiver whenever the remote control is misplaced or its batteries are empty.

In standby mode the segment display shows the current time, and when the receiver is turned on you can either see the channel number or information on the current operating mode (recording, playback, etc.).

A USB 2.0 port is also available on the front panel, and you can imagine that this was one feature we were immediately taken too. Yes, you guessed it: The GT-278 can also be used as a fully-fledged PVR!

Moving on to the back panel, we find the tuner input complete with loop-through output using RF sockets, an HDMI port, six RCA jacks for YUV, stereo audio and CVBS, a coax output for digital audio and a mechanical power switch to disconnect the receiver from the mains supply.

The receiver measures 26 x 20 x 4.5 cm, which puts it right in the midsize range, so to speak. The remote control that comes with the set-top box sits nicely in your hand and sports a convenient layout as well as pleasant surface materials.

All buttons are easy to reach and are arranged in a way that makes for a very straightforward user experience. In summary, the design and build quality of this product left us with a very good first impression.

When the receiver is switched on for the first time a dedicated menu is activated that is used to select the desired OSD language and the current location. It is here that an initial automatic channel search can be launched as well.

As far as the location settings are concerned, users are left with only two options: Mainland China or Hong Kong. The channel search that follows completes the basic setup and

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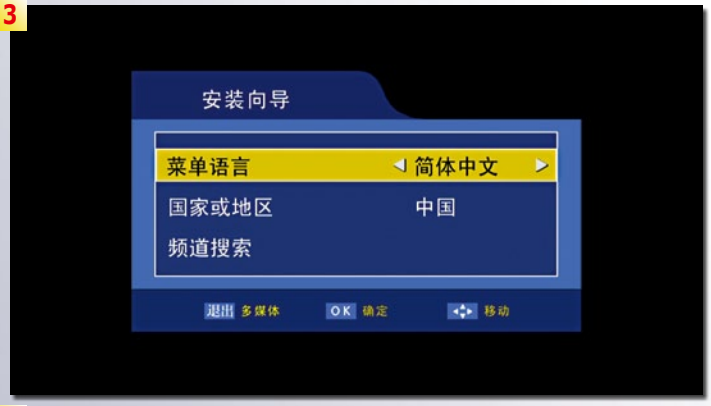





in our case took a little over two minutes to read all active frequencies. Once that job is completed the GT-278 switches to the first available channel.

We'll deal with features and functions for everyday use in a moment, but first here is an overview of the main menu and all configuration options it offers.

A total of seven entries are available: Program, Picture, Channel Search, Time, Options, System and Multimedia.

Under Program it is possible to manage and edit all entries of the channel list – namely delete, move, PIN-lock or add them to a favourites list. This is where the colour-coded function keys of the remote control come into play, whose context-related roles are always explained via the on-screen user interface.

We should mention at this point that the overall responsiveness of the menus and quick execution of commands sent from the remote control were nothing short of impressive in our test. Hardly ever did we notice any significant lag, which adds a lot of extra fun to working with this receiver.

Even though the channel offering via DTMB will never reach the diversity and depth of satellite reception, it is nonetheless possible to have the channel list sorted according to name, service ID or LCN, if required – apart from manual arrangement, that is.

The Picture menu item obviously deals with how the video signal will be provided to the TV panel. As far as resolution is concerned, the following options are available: 576i, 576p, 720p, 1080i and 1080p, with either 16:9 wide screen, pillar box, pan & scan or 4:3. If you opt for Automatic the receiver will negotiate the best possible format with the TV panel.

Both the PAL and NTSC colour standards are supported and with the remote control it is possible to adjust resolution and aspect ratio on the fly.

Apart from the automatic channel search (which cannot only be launched in the start menu but also with the Channel Search menu item), it is also possible to initiate a manual search by entering a specific frequency and its bandwidth.

When we tried that with an active frequency the GT-278 flawlessly detected all DTMB channels. Here again, the current location (Mainland China or Hong Kong) can be determined.

In case you're wondering: DTMB signals are the same in China and Hong Kong, the only reason the receiver

**1. GT-278 start screen**

**2-3. Initial installation screen of the GT-278**

**4. Automatic channel search**

**5. Main menu**

**6. Using the colour-coded function keys the channel list can be edited with great convenience**

**7. Apart from 1080i the receiver supports the following resolutions: 576i, 576p, 720p and 1080p**

**8. A manual channel search is available alongside the standard automatic search**

**9-10. Setting the time**

**11. Digital audio is provided as PCM or RAW**

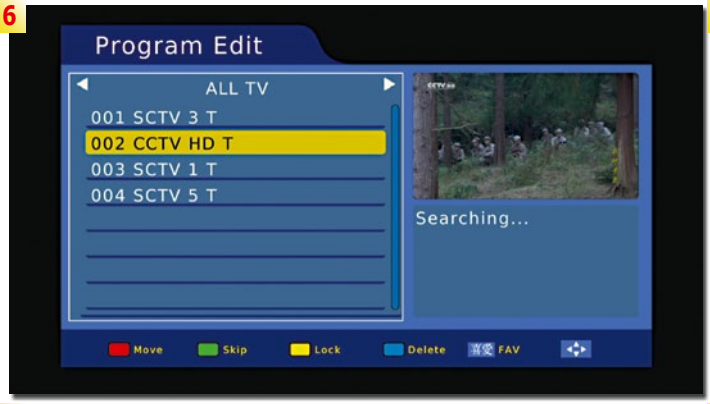
**12. The receiver software can be updated using an external USB storage medium**

**13. Music, video and image files, as well as existing recordings can be played back hassle-free**

**14. M2TS video in 1080p**

**15. DivX Video in Full HD 1080p**

6

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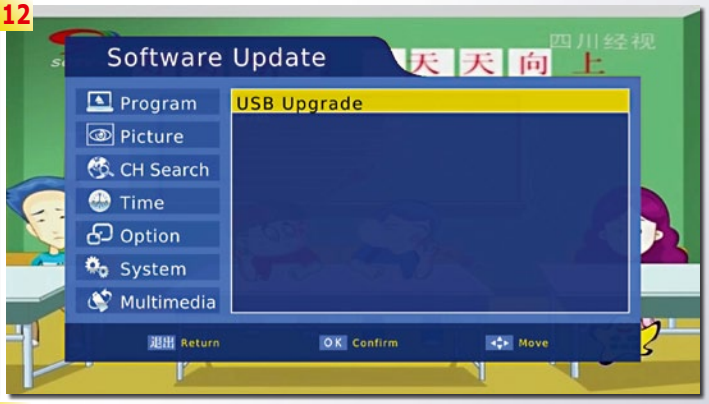


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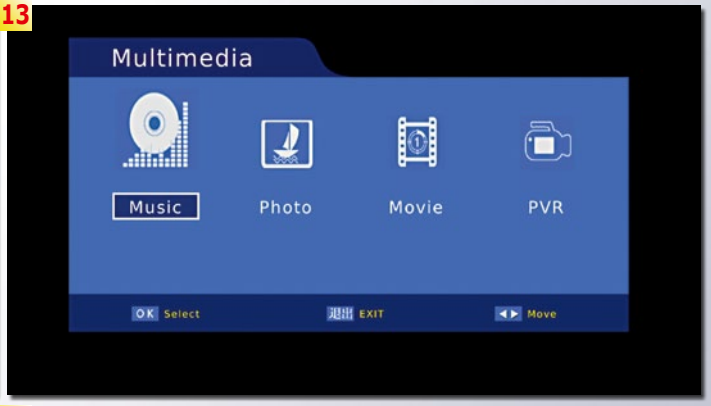


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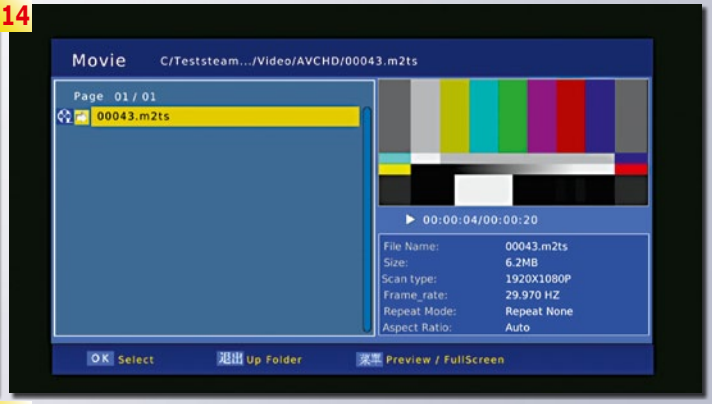


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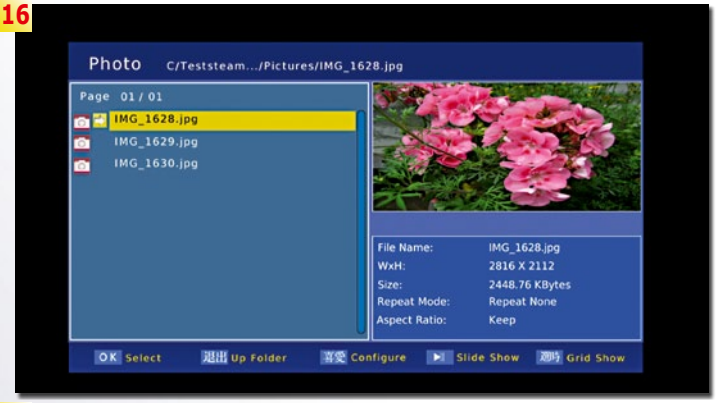


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asks you to specify is that it can automatically determine the correct local time from the time code that is transmitted via DTMB. Unfortunately, we found no way to set the time manually. It is, however, possible to change the time difference.

The receiver also comes with a sleep timer as well as a no-signal timer, both of which will surely be appreciated by users like the author of this report, who enjoy dozing off in front of the telly after a long day's work.

The Option menu looks after audiophiles who have hooked up the GT-278 to a Dolby Digital home theatre system: They will appreciate the PCM and Raw HDMI on/off options. In addition, this is where OSD language, audio language and subtitle language can be selected.

Tsinghwa has a reputation for constantly improving its products, which is why a firmware update option was high up on the specification sheet.

We found that this feature has been integrated neatly and any USB storage medium will do to keep the receiver software up to date.

Make no mistake about it: This receiver performed brilliantly during the entire test, and we could not flaw it at all. Yet, it comes with a factory reset function.

After all, something may go wrong at some stage or perhaps you would like to clear the channel list and get off to a new start with receiver, so it's always a relief to know there is a way out.

The main menu is completed with the Multimedia entry, which we will look at in more detail in a moment.

Once all user settings are completed and the GT-278 is tailored to your very needs it is safe to exit the main menu and wait for the new Tsinghwa receiver to show the first available channel.

Every time it switches to a new channel an info bar on the bottom of the screen shows date and time, channel number and EPG information on the current and next event.

The video and audio quality we experienced in our test won us over. What we liked even more was that new channels appeared on screen less than one second after they had been selected. Quick as a flash, perfect for extreme zapping!

Thanks to the DTMB standard the receiver can process SD and HD signals alike. Last but by no means least we should offer our praise to the low-threshold tuner that is built into this receiver.

Using the OK button it is possible to call up a very clearly structured channel list on the TV panel. In addition, a dedicated button is available on the remote control to access the favourites lists.

The electronic program guide is launched with the EPG button and provides content information, if the channel provider transmits these data. By default, information is shown for one channel at a time, which can be changed in the upper left corner of the OSD.

Right below you will find a listing of upcoming events, with extended content information in the right area.

Using the colour-coded function keys users can scroll up and down the content list, which provides information for up to seven days in advance.

As mentioned above, the GT-278 is designed as a fully-fledged PVR receiver, which is why events can be marked for recording right in EPG view. If required, timer entries can be set for

**16. Image viewer**

**17. Configuration of the storage medium**

**18-19. Channel list (Shenzhen and Hong Kong)**

**20. One touch of a button is all it takes for time-shift viewing**

# WS-6936

SAT-INK
Digital Satellite Meter


## DVB-T&S COMBO METER WITH SPECTRUM

**DVB-S Spectrum:**
In satellite signal C band and KU band range ,
show the energy distribution of the received signal,
show Cursor location and signal strength downlink frequency,
Signal was locked。
Show spectrum bandwith: 1200MHz; 540 MHz; 108 MHz

**DVB-T Spectrum:**
In the 104MHz-862MHz frequency range or stored state table, Shows the energy distribution of the received signal (Frequency, bandwidth, signal strength)Signal was locked, can be displayed Ber, S / N and other indicators.

## So don't wait, Call us for a sample!

**For the first time in an Economical digital meter, you are now able to view the actual channel on the screen of the meter. Now you can quickly and accurately align the satellite and you can instantly check the stable of the channel right on the screen of the meter. Transponders, Frequency, Symbol Rate, Polarity, and other settings can be modified by the user.**


**WS-6909**
DVB-T&S COMBO METER

**WS-6918P**
DVB-S2 Satellite Finder Meter

**WS-6932**
HD Satellite Finder Meter

SAT-INK

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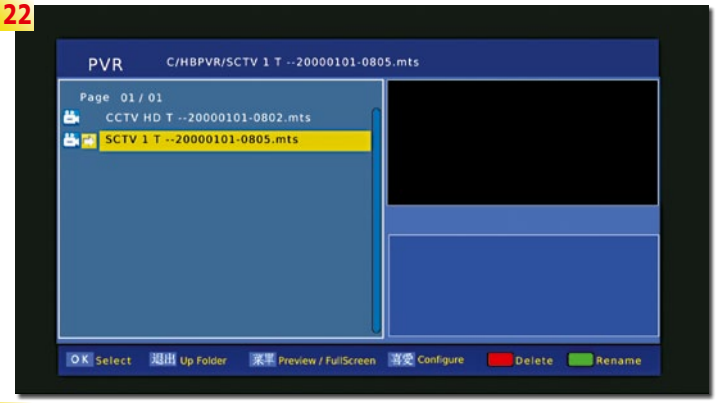
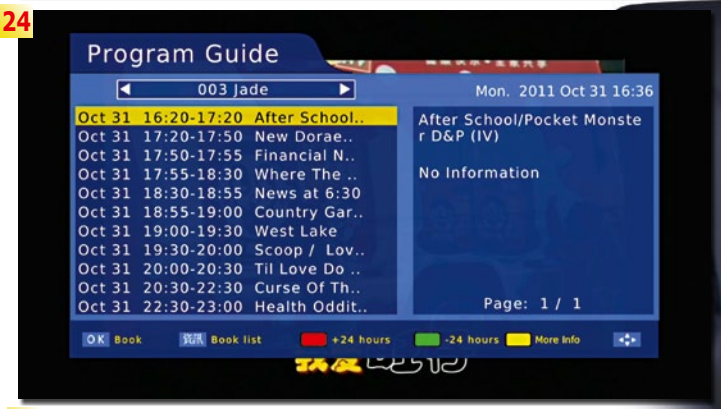
E-mail: dp02@baotong.cc
Website: http://www.sat-link.com.cn www.hktdc.com/em/fjbaotong







daily or weekly recording.

As soon as a compatible USB 2.0 storage medium (USB memory stick or external USB hard disk, for example) is attached to the receiver the time-shift viewing function becomes available. Use it to pause any live transmission and continue from that very scene at a later time.

Unfortunately, the GT-278 is only capable of recording one event at a time. It is, however, possible, to watch another channel on the same frequency while a recording is taking place.

Sooner or later the storage medium might become filled to the brim, and when that day arrives you can easily call up the main menu in order to delete individual recordings. Alternatively, you may format the entire storage medium to free up 100% capacity again.

Right at the start we had detected the DivX logo on the packaging of the GT-278, so we could hardly wait to check out this receiver's multimedia features.

And we were impressed by what we discovered: Tsinghwa has decided to split up the Multimedia menu into the Audio, Images and PVR sub-areas, and when we selected Video the receiver right away showed all video files that were saved onto our storage medium.

No matter whether it was AVCHD, AVI, DivX, FLV, MOV, MP4, MPEG or TS, the GT-278 was happy with any format and flawlessly played back video in SD and HD up to 1080p.

What's more, every time a video is selected from the list, the receiver first presents a thumbnail with technical details (such as resolution, duration, file size, etc.) just below. Another touch of a button on the remote is all it takes for

**21. If one recording is active and you want to start a second one, you need to stop the first recording first**

**22. Listing of all available recordings**

**23. The receiver memorises the exact playback position and continues from that position the next time this recording is selected**

**24. EPG presentation**

**25. Info bar**

full-screen playback to begin.

We can think of only very few tested receivers that treated and processed external video files with similar ease. Hats off to Tsinghwa for a job well done!

After such a brilliant show in the video segment we did not expect anything less for audio, and rightly so – AAC, M4A, MP3 and WMA files can be listened to with great comfort, and thanks to the integrated image viewer you can even present your latest holiday photo to friends and family on your flat-screen TV.

The manufacturer has treated the remote control to a dedicated key for accessing the archive with all existing recordings. These can also be deleted or renamed if required.

We also noticed in our test that the receiver remembers where playback was stopped for every recording and when you call up that recording again you continue from that precise position. While this may sound like a minor feature we strongly believe it's a major plus.

As far as DTMB receivers are concerned, the Tsinghwa GT-278 is a safe bet and will make a great addition to your multimedia rack. Rarely have we come across a receiver with a similarly responsive OSD interface and which not only sports rock solid software but also top-notch multimedia features.

## 专家意见

**Luo Jun**
TELE-satellite
Test Center
Shenzhen

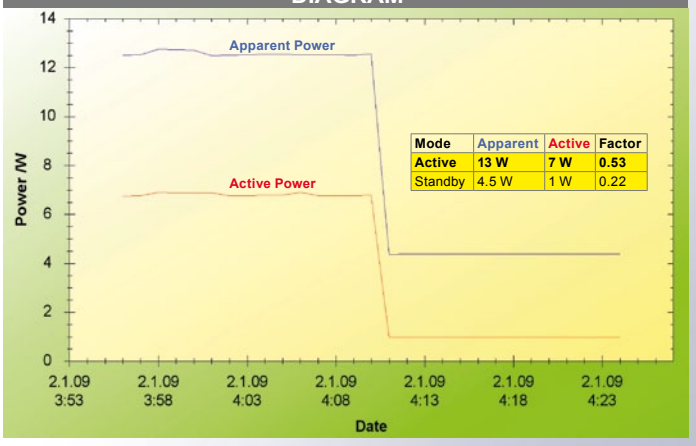
**+**
- highly responsive OSD
- perfectly implemented multimedia features
- tuner with very low threshold

**–**
- clock cannot be set manually
- MHEG (Hong Kong) cannot be processed

## TECHNICAL DATA

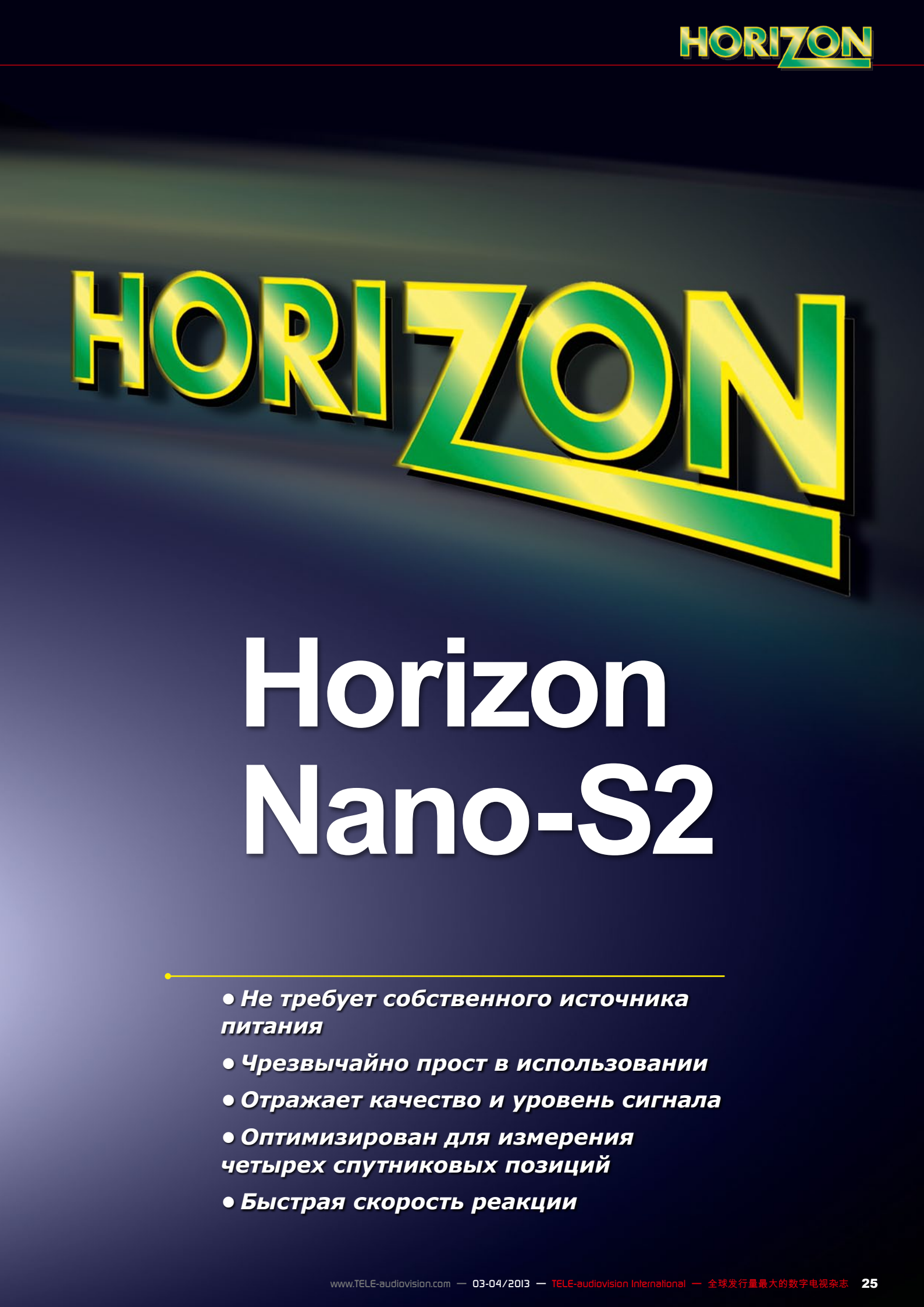
| | |
|---|---|
| **Manufacturer** | Tsinghwa |
| **Model** | GT-278 |
| **Function** DTMB | PVR Receiver with various Multimedia Features |
| **Input frequency** | 474 - 858 MHz |
| **EPG** | yes |
| **Supported standards** | DTMB |
| **Video resolution** | 576i, 576p, 720p, 1080i, 1080p |
| **RS232** | no |
| **Ethernet** | no |
| **USB 2.0** | yes |
| **HDMI** | yes |
| **YUV** | yes |
| **Stereo Audio / CVBS** | yes |
| **HDTV** | yes |
| **MPEG4/H.264** | yes |
| **Supportes languages/regions** | English, traditional & simplified Chinese |

## ENERGY DIAGRAM




**Active use with recording, playback, zapping, etc. during the first 15 minutes, followed by 15 minutes of standby.**


For a reliable solution!
HORIZON
DVB S2
Program mode
Nano-S2




# Horizon Nano-S2

- ***Не требует собственного источника питания***
- ***Чрезвычайно прост в использовании***
- ***Отражает качество и уровень сигнала***
- ***Оптимизирован для измерения четырех спутниковых позиций***
- ***Быстрая скорость реакции***

# Small and Very Practical

The Horizon Nano-S2 is a very special device! It's a signal analyzer that a) truly focuses on the essentials and b) is incredibly easy to use. We introduced the previous model, the NanoSat for DVB-S measurements, in TELE-satellite 12-01/2010. The Nano-S2 is designed for DVB-S2.

Because of the lack of a power supply (there's no rechargeable battery and no power cord), it weighs a mere 250 grams (just over ½ pound). The Nano-S2 feels small and comes with an LCD display that is merely 5.5 x 3 cm (128 x 64 pixels) in size. The display can easily be seen even in direct sunlight and it also comes with background illumination.

There's only one button on the top side along with a USB port and two "F" jacks to connect the Nano-S2 to the reception system. Naturally, we here in the test center wondered if it would have made sense to include more buttons and additional connections. The obvious answer to this question turned out to be 'no'. The Nano-S2 along with its logical operational structure and its powerful tuner is perfectly equipped for the speedy installation of a satellite system. It actually is easier to use for daily antenna installations!

The question remains then, how does the Nano-S2 get its power when there are no power connections at all? Horizon answered this question very ingeniously in that the analyzer very simply draws on the satellite receiver or the active multiswitch.

What might sound complicated at first is in reality quite simple: a satellite system is always put together in such a way that a coaxial cable runs from the receiver or a multiswitch to the LNB. This cable carries the selected polarization voltage (13V or 18V) to the LNB. This cable is therefore connected to the right-side "F" connector of the Nano-S2 thereby receiving the required voltage. The second "F" jack is connected to the LNB using the included coax cable. This guarantees that on the one hand the analyzer can directly process the LNB signals and on the other hand the analyzer gets the power it needs.

Also included in the package by Horizon is a protective cover as well as a USB cable to program the analyzer's internal memory. A carrying strap to make it easier to work with the Nano-S2 rounds out the included accessories. For those instances when a receiver or


TELE audiovision AWARD 03-04/2013

**HORIZON Nano-S2**
Very easy to use signal analyzer for quick installation of satellite antennas for HDTV reception.

www.TELE-audiovision.com/13/03/horizon

# Hybrid OTT BOX+DVB-S2/T2/C

- IPTV
- Movie Online
- Web Browser (Optional)
- USB Mouse, Keyboard
- Fully MPEG-2 / MPEG-4 (H.264 / VC-1) and DVB-S/DVB-S2 Compliant
- Network Application (Youtube, Podcast, Yahoo, Picasa, Flickretc etc.)
- Multi-media Player (TS, MKV, AVI, VOB etc., )
- DLNA
- WiFi
- Recording & Playback with External Storage Devices(e-SATA / USB2.0 / HDD)
- Firmware Upgrade (USB / Online / OTA)
- VOD
- Conax CAS7.0 (Optional)
- 2 USB

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## HD DVB-S2

- Fully MPEG-2/MPEG-4(H.264/VC-1) and DVB-S/DVB-S2 Compliant
- Multi-media Function (Playback TS, MKV, AVI, VOB etc.)
- Record & Playback with External Storage Devices (USB Stick/HDD)
- Support HDMI output (up to 1080i)
- Conax CAS7.0 Embedded (Optional)
- One Common Interface(CI) (Optional)
- Ethernet
- Support OTA (Optional)
- WiFi (Optional)
- 2 USB

## HD DVB-T

- Fully DVB-T/MPEG-2/MPEG-4/H.264 Compliant
- PVR Recording (Viewing one channel and Recording another channel Simultaneously)
- Multi-media Function (Playback TS, MKV, AVI, VOB etc.)
- Record TV and playback with External Storage Devices (USB stick/HDD)
- Advanced Time-shift function
- Format Resolution: 1080i, 720p, 576p
- OTA (Optional)

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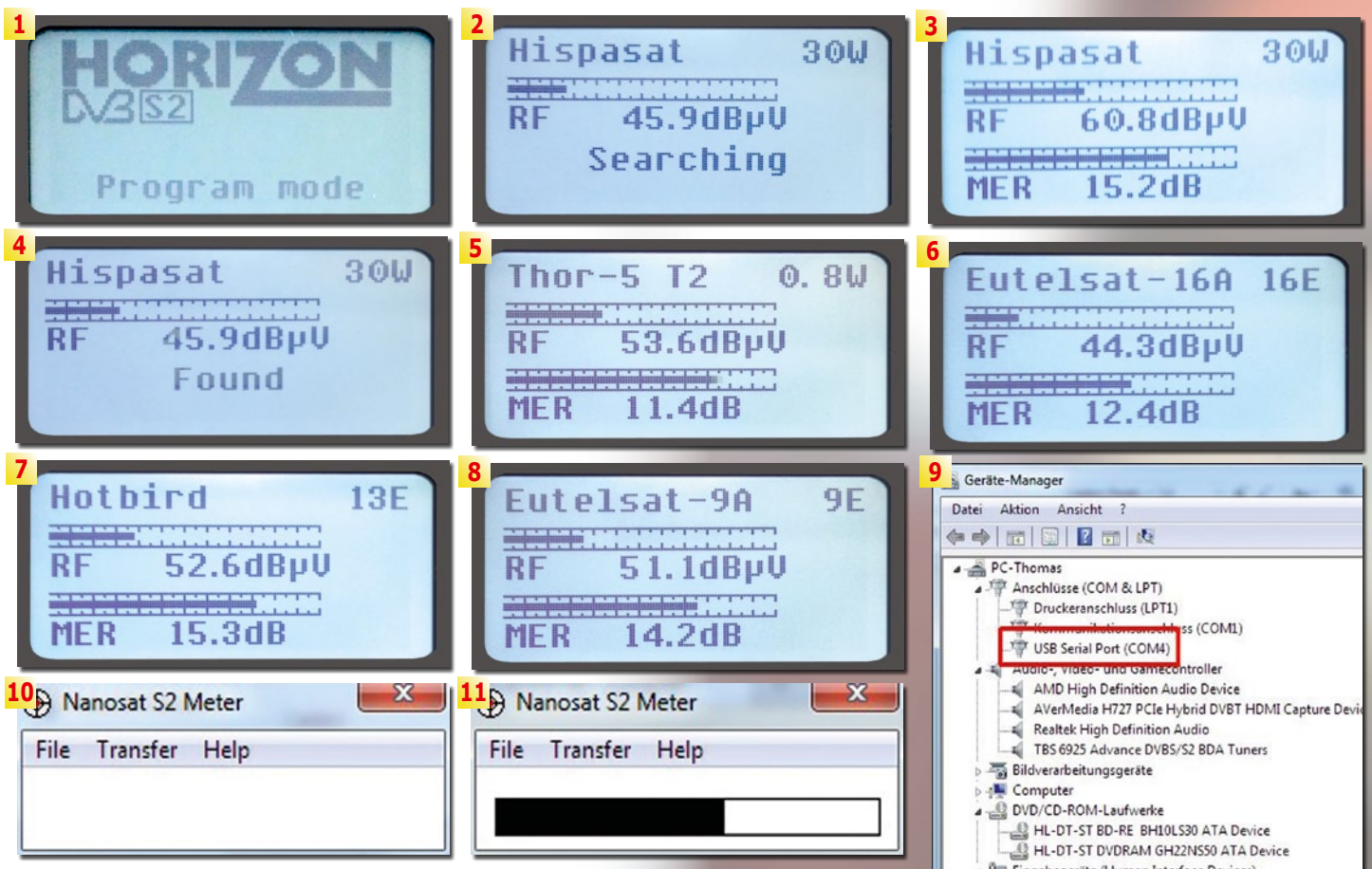



**1. The Horizon Nano-S2 in programming mode**

**2. The selected satellite is shown in the upper left, underneath is the RF level. The antenna is moved until the analyzer recognizes the satellite**

**3. Once the desired satellite has been found, the MER for fine-tuning appears alongside the RF level**

**4. In just a short time we located HISPASAT 30.0° West from our location with our 90 cm antenna**

**5. THOR-5 0.8° West**

**6. EUTELSAT-16A 16° East**

**7. HOTBIRD 13° East**

**8. EUTELSAT-9A 9° East**

**9. The Nano-S2 is recognized by Windows as a serial port in Device Manager**

**10. With the help of a small tool new firmware and satellite lists can be uploaded to the Nano-S2**

**11. The download only takes a few seconds**

multiswitch is not available to supply power and the analyzer still needs to be used, Horizon also provides a battery case that can hold a total of 10 AA 1.5V batteries that could then be connected to the input "F" connector to supply the necessary power to the analyzer.

As soon as the cabling is correctly taken care of, simply pushing and holding down the large button on the top side of the Nano-S2 is all that's needed to turn it on. Next the same button is pressed again, only this time it's pressed momentarily to select the desired satellite from the preprogrammed list. These lists consist of up to four satellite entries and are available for download from Horizon's website (www.horizonhge.com) for different regions of the world. We'll explain how this works shortly, but for now it's time to test its reception capabilities.

The preprogrammed satellite list in our test Nano-S2 encompassed two positions for ASTRA 28.2° east (for ASTRA 1N and for ASTRA 2B), HOTBIRD 13° east as well as ASTRA 1 19.2° east. We connected the nano-S2 to our antenna on the roof and loosened the mounting screws.

Once the desired satellite was selected on the analyzer's display, in our case it was HOTBIRD at 13° east, we started aligning the antenna. First the antenna was pointed exactly south; for our location that roughly represents the 16° east position. To find your local coordinates you can either use a device with a GPS receiver (SmartPhone, etc.) or you can have a look at the numerous lists available on the Internet and search for your

■TELE-satellite editor Thomas Haring aligning a 90 cm antenna with the Horizon Nano-S2

# HORIZON

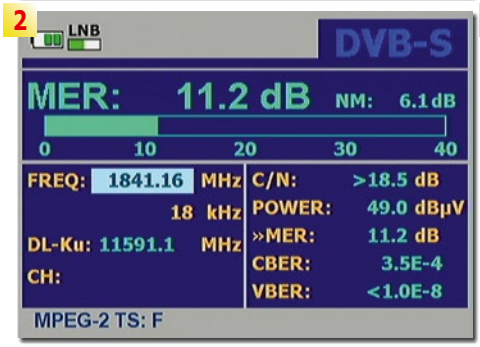

coordinates there. We recommend www.dishpointer.com

A look at the Nano-S2 reveals an RF value display (signal level) in dBµV. Now adjust the elevation of the antenna, that is, adjust the antenna up or down, until the highest signal level is reached on the display. Next adjust the antenna in the azimuth direction, left or right, until the desired satellite has been found. Keep in mind though, that if the desired satellite is located a fair distance away from the southern point (in the southern hemisphere it would be the northern point), the elevation of the antenna would need to be readjusted. You'll see how much better the RF signal level will then be.

Once the Nano-S2 has identified the desired satellite, the message 'Found' appears in the display, an acoustical tone activates and a second bar graph for the MER (in dB) appears. To put it in simpler terms, the RF bar graph represents the signal level while the MER (Modulation Error Rate) represents the signal quality.

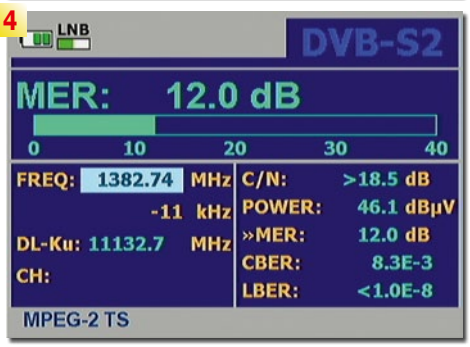
Now simply finely adjust the antenna position in all four directions until the RF level and MER are at their maximum levels. Slowly tighten the mounting screws on the antenna. Lastly, it's recommended to adjust the skew angle (the rotation of the LNB). For each position that is to be received, the LNB should be rotated clockwise or counterclockwise. The Nano-S2 can once again be helpful here: the LNB is rotated until the RF level and MER are at new maximums.

In just a very short time we managed to perfectly align our 90 cm antenna first to HOTBIRD 13° east, then to TURKSAT 42° east, HISPASAT 30° west, THOR 5 0.8° west, EUTELSAT-5A 5° west, EUTELSAT-8A 8° west as well as EUTELSAT-12A 12.5° west. Additional control measurements using a professional signal analyzer confirmed the outstand-

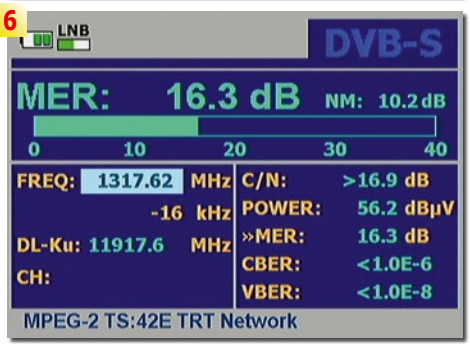

1. EUTELSAT 5A 5° West

2. Comparison measurement of EUTELSAT-5A 5° West


3. EUTELSAT-8A 8° West (DVB-S2)

4. Comparison measurement of EUTELSAT-8A 8° West (DVB-S2)


5. TURKSAT 42° East

6. Comparison measurement of TURKSAT 42° East

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ing capabilities of the little Nano-S2. We also liked that the measured MER and RF values were similar to those obtained with the professional analyzer. This speaks volumes for the quality of Horizon's built-in tuner.

As the Nano-S2 name suggests, Horizon's new signal analyzer can receive not only DVB-S signals, but DVB-S2 signals as well. This was confirmed on EUTELSAT-8A 8° west where the frequency 11131H in DVB-S2 8PSK was correctly processed. Even DVB-S2 QPSK signals (for example, on HOTBIRD 13° east) were processed effortlessly.

One of the most important criteria for any signal analyzer would be its reaction time, that is, the time it needs to read and process a transponder. This would actually determine whether or not an analyzer is compatible for everyday use. If it would take, for example, five seconds to read and process a satellite position, you would have in all likelihood already moved the antenna to a new position and passed the desired satellite. But, don't worry; the Nano-S2 is light years ahead of five seconds; in our tests only about one second was needed to identify a satellite. And it didn't matter if the antenna was moved quickly from east to west and only had access to the signal for a very short time.

You're probably grumbling to yourself right now: how was it possible to measure so many satellites when the preprogrammed list only has four entries? Very simple; Horizon currently has five satellite packages available for download with the most popular satellites in a region. Not only that, Horizon's worldwide distribution partners will undoubtedly expand on these lists and adapt them to their regions so that every user will be able to find the entries that they need.

How do you get these satellite lists into the Nano-S2? In order to add new lists or update the firmware in the analyzer, it must be connected to a PC using the included USB cable. Our test PC with Windows 7 automatically recognized the drivers that were needed and downloaded them from the Internet. If necessary, the matching drivers for all Windows versions starting with XP can also be downloaded directly from Horizon's home page.

Regardless if it's a firmware update or a new satellite list, Horizon makes every update available in the form of an .exe file so that the user does not need to first load any download tools and then open up Firmware or Settings files. Simply start the .exe file and then click on the 'Transfer' button. The program will then create a connection to the Nano-S2 and transfer the desired content. This all functioned perfectly in our tests but we really didn't expect anything less from Horizon.

All in all, the Horizon Nano-S2 is an excellent alternative to align antennas at little cost. The Nano-S2 focuses on the absolute necessities resulting in intuitive and simple operation.

The user manual is well-written and is a good source of information even for half-way experienced users but is hardly necessary. Even the Nano-S2's technical specifications made the adrenaline flow as did its DVB-S2 reception. The excellent tuner and the speedy signal recognition topped it all off.

## Expert Opinion

**Thomas Haring**
TELE-satellite
Test Center
Austria

**+** **Extremely light and easy to use. Very precise measurements and quick tuner reactions to signal changes. Designed for DVB-S2 use. Can be used immediately thanks to the preprogrammed satellite lists.**

**–** **None**

## TECHNICAL DATA

| | |
|---|---|
| **Manufacturer** | Horizon Global Electronics Ltd, First Floor Office<br>Allen House, Edinburgh Way, Harlow, Essex<br>CM20 2HJ, United Kingdom |
| **Tel.** | +44-1279-417005 |
| **Email** | sales@horizonhge.com |
| **Model** | Nano-S2 |
| **Function** | Digital Satellite Meter for DVB S and DVB S2 Signals |
| **Input frequency** | 950 - 2150 MHz |
| **DVB-S2 compatible** | yes |
| **Modulations** | DVB S QPSK, DVB S2 QPSK, DVB S2 8PSK |
| **Display** | 128 x 64 Pixel |
| **RF-Input** | 2x F-Type |
| **USB Port** | yes |
| **Power supply** | via Receiver or 10 x 1.5V AA Batteries |

## MORE ABOUT THIS COMPANY

www.TELE-audiovision.com/13/01/horizon.pdf


| HORIZON Nano-S2 Satellite Packs | | | | |
|---|---|---|---|---|
| **ASTRA Package** | **East Package** | **West Package** | **UK Package** | **Motorized Package** |
| ASTRA 2 (B) 28.2° East | EUTELSAT 16A 16° East | THOR-5 0.8° West | ASTRA 2B 28.2° East | TURKSAT 42° East |
| ASTRA 3 23.5° East | HOTBIRD 13° East | EUTELSAT-5A 5° West | ASTRA 1N 28.2° East | ASTRA 19.2° East |
| ASTRA 1 19.2° East | EUTELSAT 9A 9° East | EUTELSAT-8A 8° West | ASTRA 1 19.2° East | THOR-5 0.8° West |
| ASTRA 4 4.8° East | EUTELSAT 7A 7° East | EUTELSAT-12A 12° West | HOTBIRD 13° East | HISPASAT 30° West |

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- High performance spectrum analyzer to display the signal strength of all transponders
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- Constellation analyzer
- Screenshot Function (Capturing): screens with data can be in BMP format on a USB-stick
- Super ECO system management for power saving, auto-standby function supported
- Multi-lingual OSD menu supported
- Weight: 480 grams
- Dimensions: (W*H*D) 105*170*45 mm

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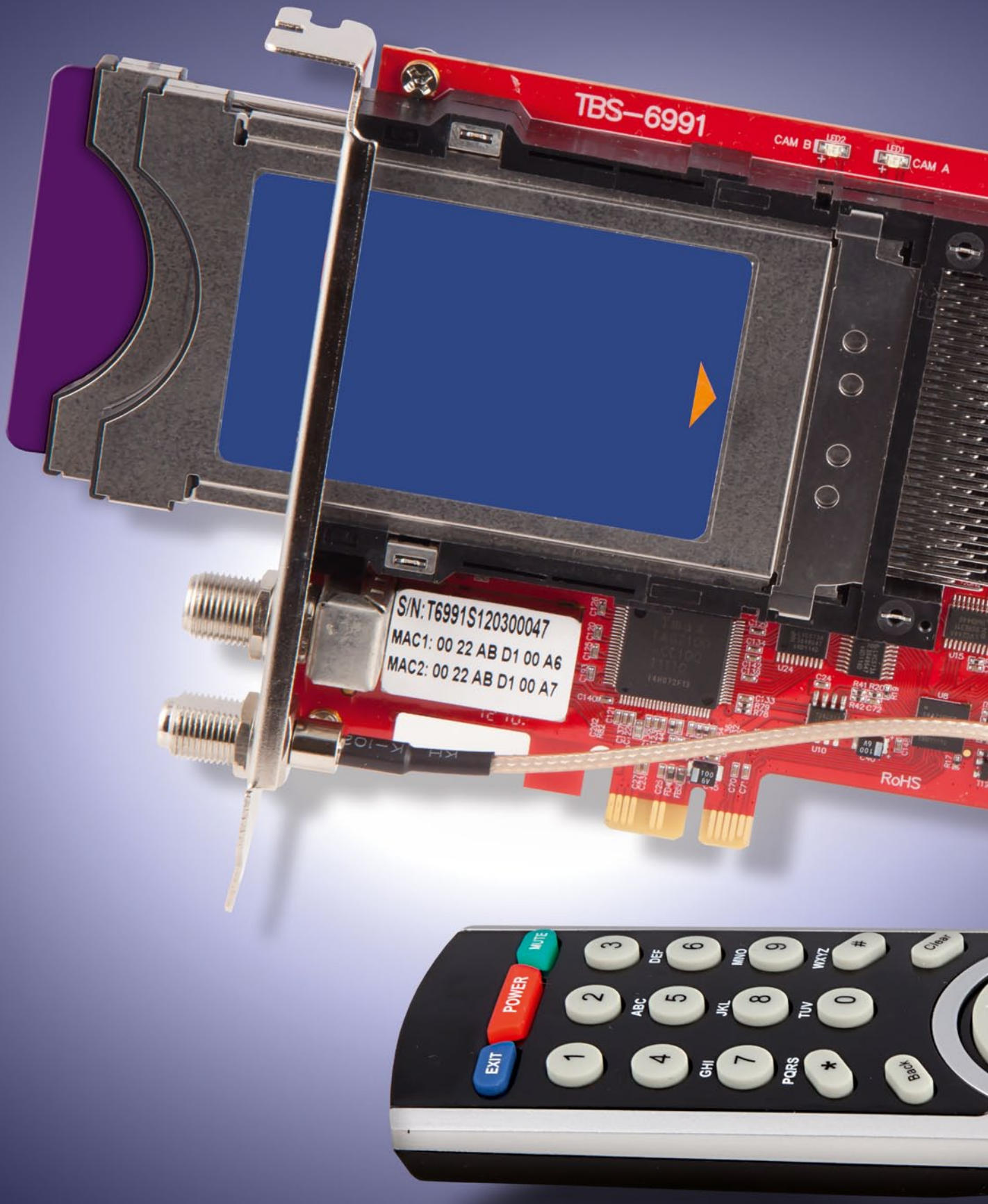
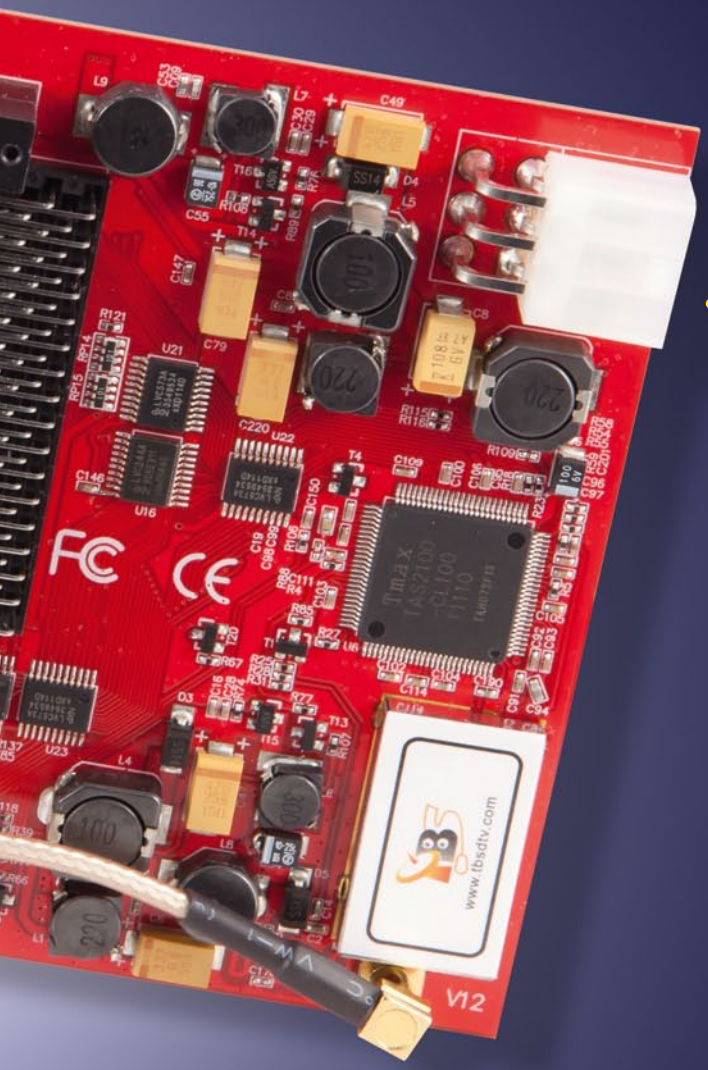

TBS-6991
CAM B
CAM A
S/N:T6991S120300047
MAC1: 00 22 AB D1 00 A6
MAC2: 00 22 AB D1 00 A7
RoHS
MUTE
POWER
EXIT
Clear
Back

# TBS 6991

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# The Ideal Satellite Card for Multimedia and DX


**The Ideal Satellite Card for Multimedia and DX: Nothing Left Out with its Twin Tuners and Two CI Slots**

If the term TBS doesn't mean anything to you, you missed the last issue of TELE-audiovision. The developments at TBS (also know as Tenow) are running at a high pace; there are always new TV cards being introduced that cover every possible market niche. In the last issue we introduced two DVB-C receivers, the TBS 6618 for PCI-e and the TBS 5860 as an external USB box. In the 10-11/2011 issue we tested right away four TBS TV cards including the TBS 6984 with an incredible four tuners!

The new TBS 6991 comes with two tuners as did the TBS 6981 (tested in the 12-01/2011 issue) but this time the card also comes with two CI slots. Especially interesting is the chip in use: the TMAX TAS2100. Obviously there are two of them since this is a twin tuner card. Even though the card only take up one PCI-e slot, it will operate like two separate DVB-S/S2 cards in the system. What makes this chip so special? It's very simple: it makes real Blindscans possible and is supported 100% by the CrazyScan software. More on that later.

As is standard, the TBS 6991 is shipped in a black package that also includes a remote control, an IR receiver, a power adapter cable and a mini CD. Installing the card presents no problems; it can be inserted in any available PCI-e slot, regardless if it's PCI-e x1, x4, x8 or x16. As expected from TBS, the card was perfectly fabricated. In just seconds we were able to screw the cabinet shut. The power adapter cable included as part of the accessories is connected to three of the Molex connectors on the power supply. This should guarantee that enough power is be available for more complex satellite systems such as with a rotor, polarizer, multiswitch, etc. Since three Molex connectors from the power supply are necessary, we had to figure out where to get them from; our test computer only had one free Molex connector. For our tests we unplugged two Molex connectors from the hard drives. Everything was working magnificently but it didn't take long for the missing hard drives to become noticeable; some files that were needed were on these hard drives. Therefore we decided to operate the TBS 6991 without the additional power sources and everything worked fine with the exception of motor control. In a further test

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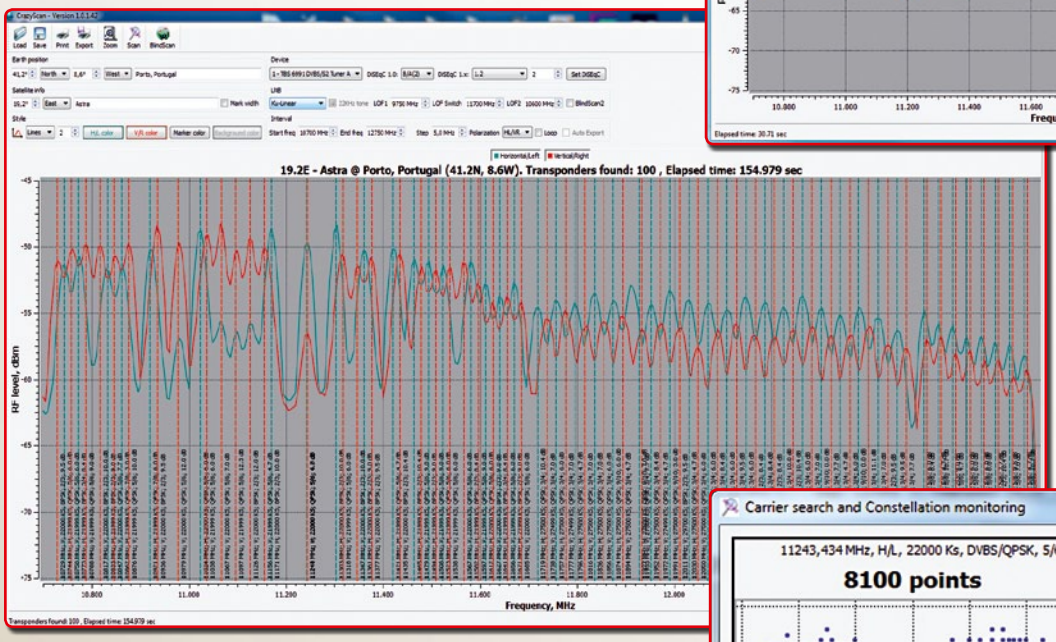
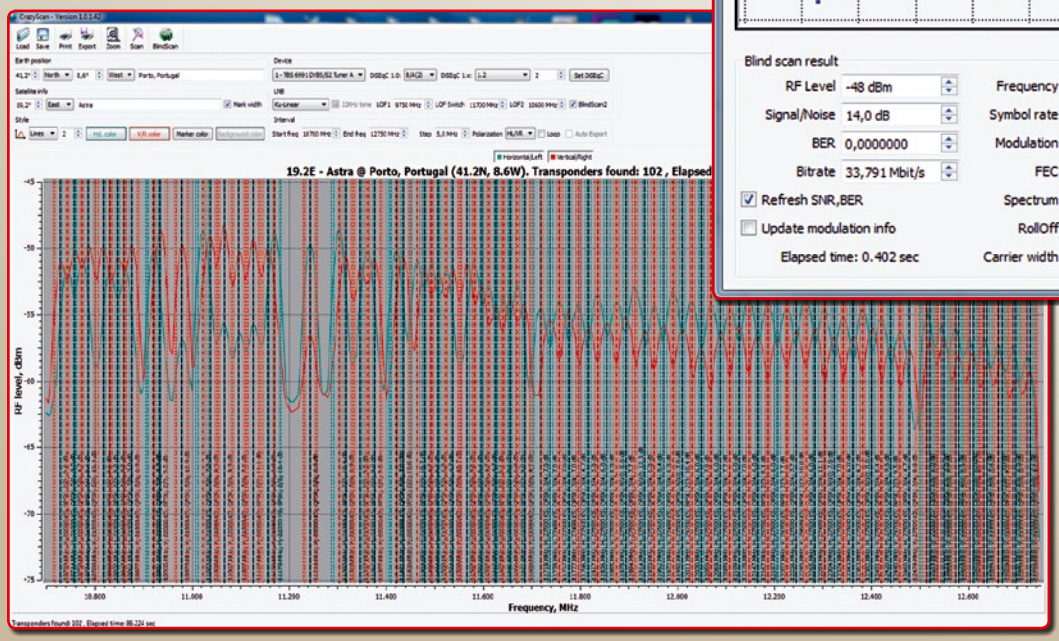
we connected only one of the Molex connectors to the adapter cable and discovered that we could now operate our motorized antenna without any problems. This antenna actually consisted of two motors, a DiSEqC switch and a Twin LNB. Clearly more power is needed for this set up than with a simple antenna.

Under Windows the TBS 6991 is linked without any problems to the system BDA drivers and Device Manager identifies this correctly as "TBS6991 Dual DVBS/S2 BDA Tuners & CI". Setup and installation is therefore completed in just five minutes – it should always be like this!

Thanks to the BDA drivers, the card can be used instantly with nearly all TV applications, such as, DVB Dream, TBS Viewer, ProgDVB or Windows Media Center. During testing of the DVB-C cards we ran into some problems with the scan (see the test report in the 01-02/2013 issue) although we didn't have this problem with DVB-S/S2.

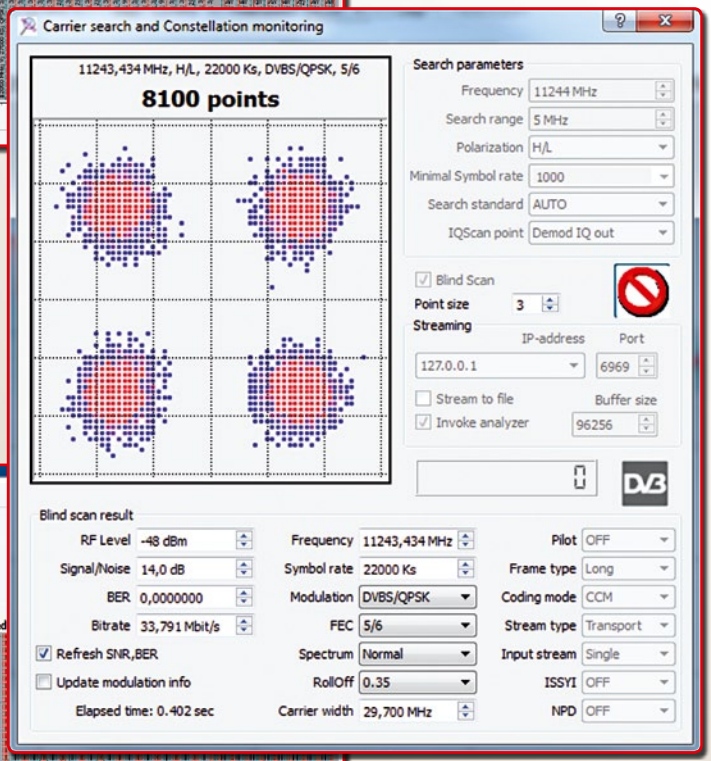



First we tried Windows Media Center (WMC) with the newly installed TBS 6991. This time the channel list could immediately be displayed and it once again became clear why there were so many problems with DVB-C cards: WMC does not perform a scan with auto-



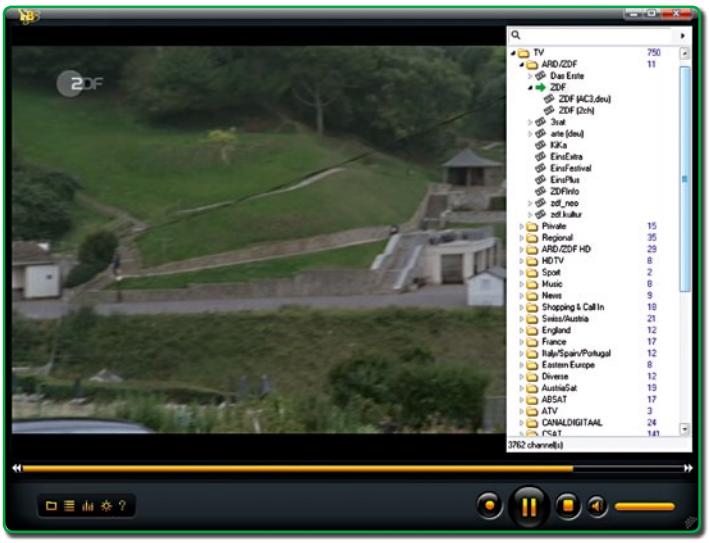

## The TBS 6991 with CrazyScan


matic configuration, instead it simply loads the desired channel list from the Internet. In this way you don't have to wait and you can only hope that Microsoft manages to keep the channel lists of all the different satellites up to date. But you can also perform a channel scan. Here



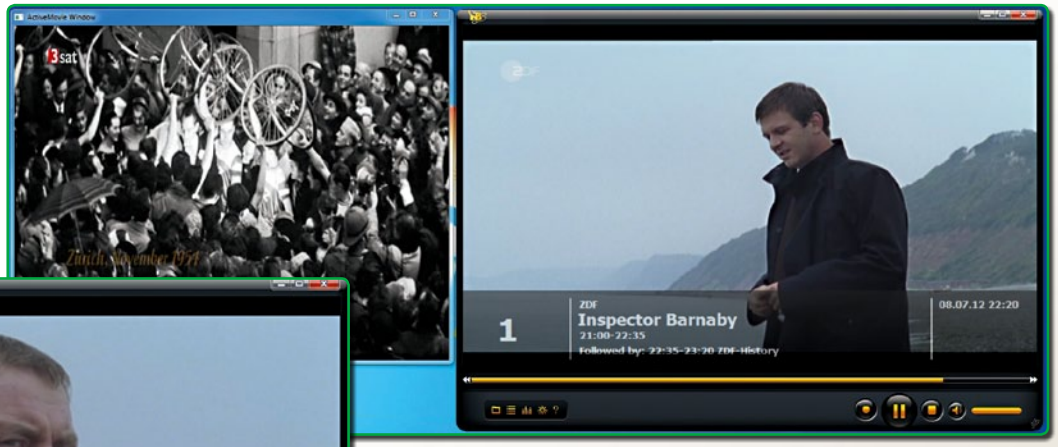

you can choose between an automatic scan of all transponders (the transponder list is not available to the user) or a scan of a manually entered transponder. Once again WMC attempts to make it as easy as possible in that you only need to enter in the frequency and symbolrate of

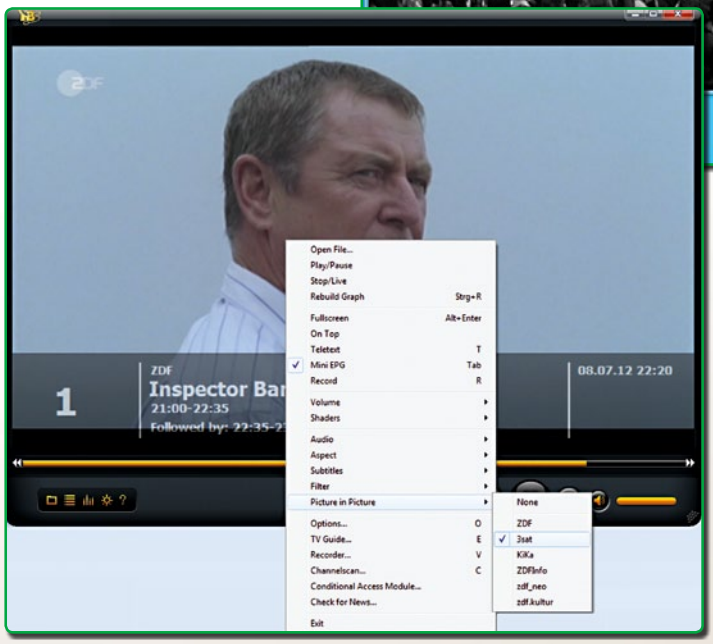
## The TBS 6991 with TBS Viewer



a transponder.

A special application is available on the included mini CD that will allow the CAMs and associated Smartcards inserted in the CI slots to also be used under WMC. Since the WMC has no special functions for communicating with the CAMs and the inserted Smartcards, this task is handled by the TBS MCE CI Tool that runs in its own window. All of our CAMs were correctly recognized although, as expected, the HD+ CAM did not do its job since we're not dealing here with a certified CI receiver.






WMC can be described in just a few words: it works and it's intuitive. All functions are supported and especially the EPG, Timeshift and Recording functions are nicely implemented. This is obviously not the design of a single programmer, rather it's the work of an entire design team.

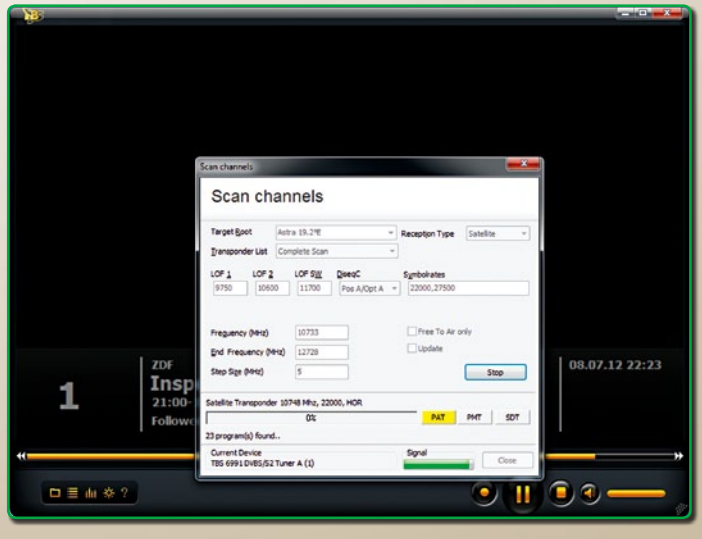
As we have come to expect from TBS, the included remote control is integrated with its own software that translates the remote into keyboard buttons. The TBSVHID tool contains preconfigured settings for the various TV applications so that nearly all common programs are perfectly harmonized with the remote control without the need to do anything else. We liked this concept since we've already often experienced problems with the common LIRC.

There are two TV applications on the mini CD that are available for installation: TBS Viewer and DVB Dream. The TBS Viewer is actually an OEM version of the DVB Viewer. Its functional capability is somewhat limited compared to the full version of the DVB Viewer and comes with a slightly altered user interface that carries the TBS logo. Nevertheless, this software is very good for watching TV.

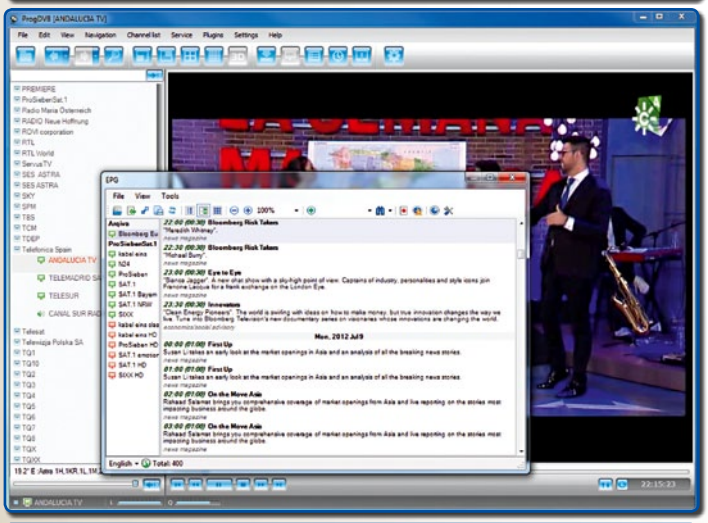
DVB Dream is installed as a Demo version. Compared to the full version, quite a few functions are missing in the Demo version so we decided not to look at it any further. Instead we tested the TBS 6991 with ProgDVB and with the full version of DVBViewer. The TBS 6991 worked very nicely with all of the tested TV applications and even functions such as DiSEqC 1.2, which can bring some other cards to its knees, did not produce any problems.

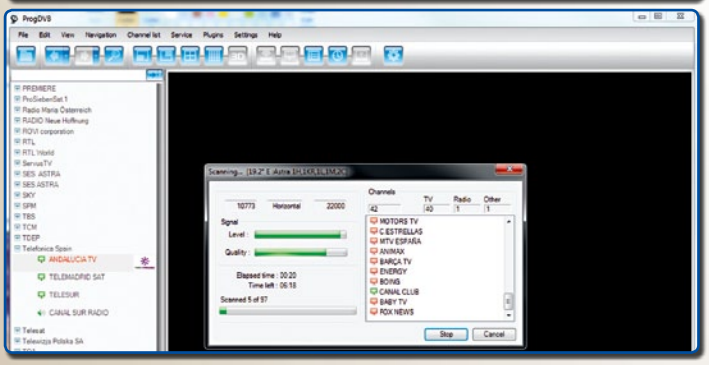
If you're in the market for a Twin Tuner satellite card for a PC, the TBS 6991 would be a good choice. It is compatible with all of the more common software programs, has an excellent remote control and with the two CI slots you can watch PayTV channels even through the Windows Media Center as long as you use an appropriate CAM and Smartcard. We were even able to operate two different TV applications at the same time by simply configuring the two tuners properly.

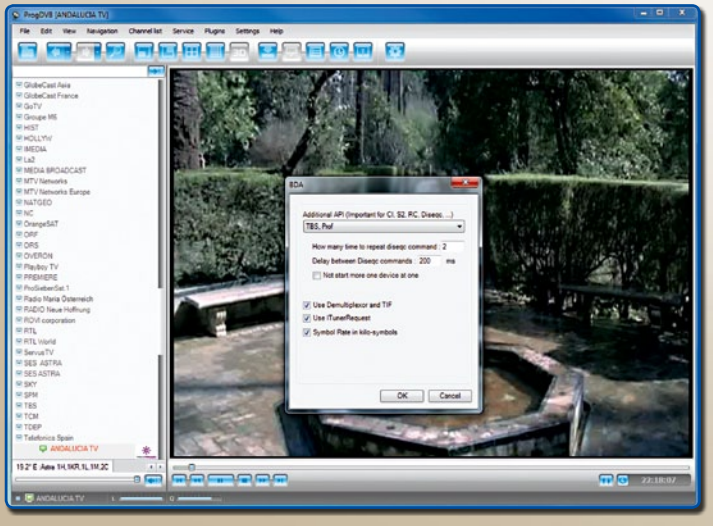
For us though, using this card to merely watch TV would have been shame-



## The TBS 6991 with ProgDVB





ful. DXers, feedhunters and techies would definitely get their money's worth with the TBS 6991. Both of the tuners are actually blindscan-compatible tuners. They can identify if there's a signal on the current frequency and, if so, it will automatically recognize reception parameters such as modulation, symbolrate and FEC.

A blindscan is especially interesting with satellites that are used for feeds, that is, live transmissions from mobile broadcasting units. Just like "train spotting", it can be quite a lot of fun receiving raw video material. Sometimes it could even be unedited live transmissions like sporting or music events and then it could also be a news reporter passing the time while waiting for his live news broadcasting segment. Once in a while you'll even catch some entertaining bloopers. Since these feeds are not normally transmitted on a regular basis and typically always use a different frequency each time, a blindscan and a spectrum analysis are worth their weight in gold. Unfortunately, measurement equipment like this can be prohibitive for a normal hobbyist and that's why we're so excited about the TBS 6991. Several applications make possible near professional quality analysis of the frequency band for satellite TV.

TBS has provided a program on the mini CD that performs a blindscan that will find every transponder and channel on its own in a short amount of time without the use of any predefined transponder list. After we installed this tool from the mini CD, we wanted to try it our, but the TBS blindscan announced rather sternly that the available tuner is not supported. After fussing around a little bit, we found a newer version for the TBS 6991 on the TBS website. After uninstalling the previous version and then installing the new version, we were able to start the program without any error message. Unfortunately, the scan was unable to find any channels at all and we couldn't figure out why. It's possible that TBS has to fix something in their software, but this didn't bother us at all; it was obvious by looking at TBS's download site that they are constantly at work upgrading their drivers and tools.

With this software we reached an absolute DXer high point in terms of PC based satellite technology. CrazyScan implements the following functions:

- RFScan: Corresponds to a spectrum analyzer
- BLScan: Implements a blindscan
- IQScan: Shows the constellation of the current transponder including automatic identification of reception parameters and streams the transport stream to TSReader (see below)
- Signalinfo: Displays information on the received signal

What's so special now about the TBS 6991 with respect to CrazyScan? Very simple: while most of the TV applications access the card through BDA drivers, CrazyScan speaks directly to the card so that full potential of the tuner can be used. But to do this the tuner has to be able to implement the necessary functions and, beyond that, CrazyScan has to support the current tuner. And it just so happens that the TBS 6991 tuner supports all of the four functions mentioned above and is also recognized by CrazyScan. There are relatively very few cards that are fully supported by CrazyScan and oddly enough most of those cards are TBS models…

CrazyScan is available for

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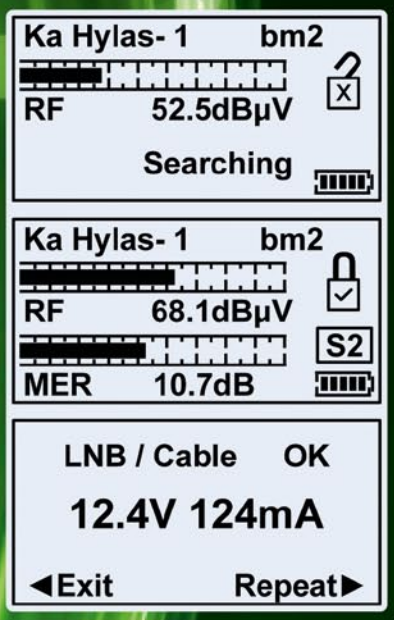


The HD-S2 satellite meter features all the functions you will need to perform DVB-S and DVB-S2 satellite installations.

The HD-S2A developed for Avanti Broadband features tone functions for Hughes Ka-Band ODU polarisation selection.

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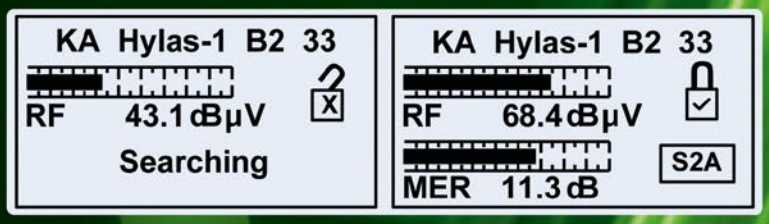



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download in ZIP format and in order for the software to work a number of additional files need to be copied into the same folder. This includes a StreamReaderEX BDA DLL, the necessary QT/QWT DLLs and eventually the Microsoft Visual C++ 2008 SP1 must also be installed. These files can be downloaded from the CrazyScan Wiki at http://sourceforge.net/p/crazyscan/wiki/Home/

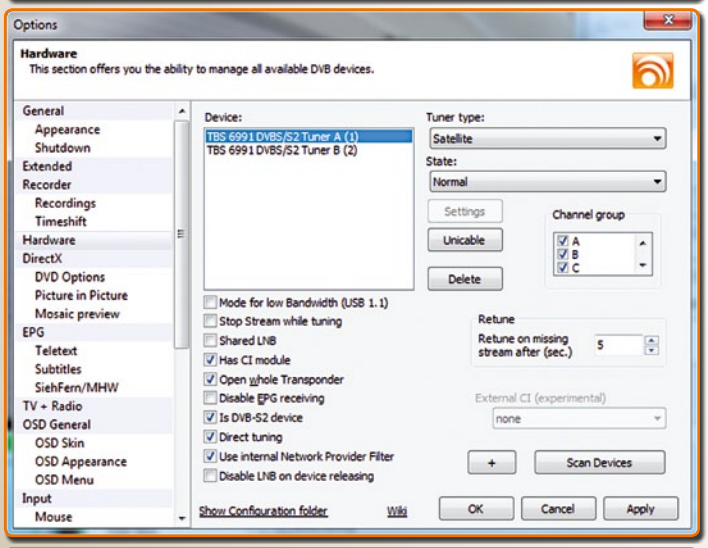
Now CrazyScan can be started. First, though, several parameters have to be configured. The user interface is kept quite simple and on the main screen there are only six groups that need to be configured.

- Earth Position: Not necessary, but nice for the report - it's the exact geographical position of the reception antenna.
- Satellite Info: In order to better compare the reports at a later time, the current satellite information should be entered.
- Style: Here the graphics display can be set up the way you like. The thickness of the lines, the type of curves and the colors can all be chosen. There are also two buttons that determine which of the two polarizations are displayed (H/L, V/R or both).
- Device: Here the TBS 6991 card with the desired tuner is selected. Additionally, the DiSEqC parameters can be entered here whereby CrazyScan makes possible a cascaded DiSEqC 1.0 and DiSEqC 1.2 sequence. This is ideal for more complex systems with multiple motorized antennas connected through DiSEqC 1.0 switches.
- LNB: The frequencies of the local oscillators are set here. A drop-down menu lets you choose the desired values from predefined LNB types.
- Interval: Here in this group the user can enter in the start and end frequencies of a scan as well as the frequency step and the polarization (H/L, V/R or both). The Loop option activates a continuous scan and can be interesting when, for example, the antenna needs to fine tuned. A small span would be used that in essence is updated in real time – almost like a real spectrum analyzer.

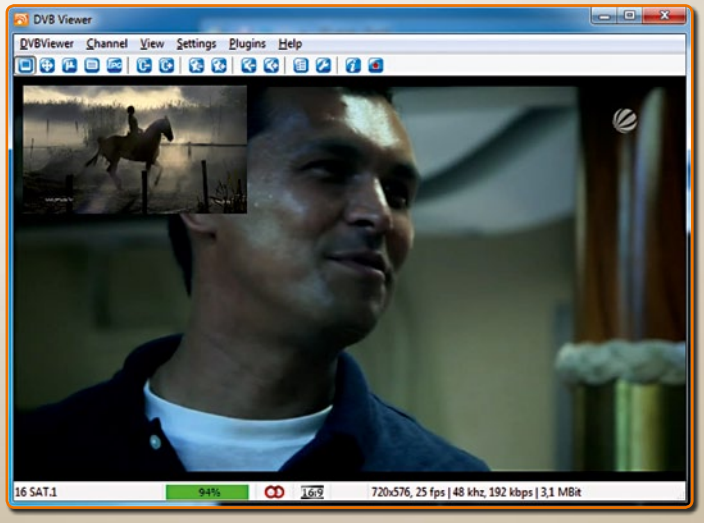
Once all of the parameters have been configured, you can press the Scan button. In just a few seconds an extensively detailed spectrum is displayed. Even the spectrum of both polarizations is shown depending on the configuration. For us the construction took about 15 seconds per polarization with frequency steps of 5 MHz. This resulted in a truly detailed spectrum. If the frequency steps are increased to 10 MHz, the construction of the spectrum needs only about half the time but in exchange the spectrum doesn't look as nice. At frequency steps of 1 MHz you have to wait a little bit but in return you'll get an unbelievably high resolution spectrum display. After a number of tests we've determined that 5 MHz steps is the optimal value in terms of detail and speed.

Thanks to the total support of the TBS 6991, the Blindscan function can now be started. When the appropriate button is pushed, Crazy-

## The TBS 6991 with DVB Viewer





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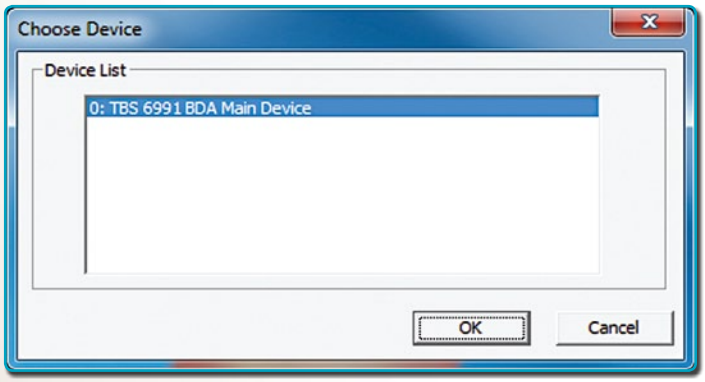
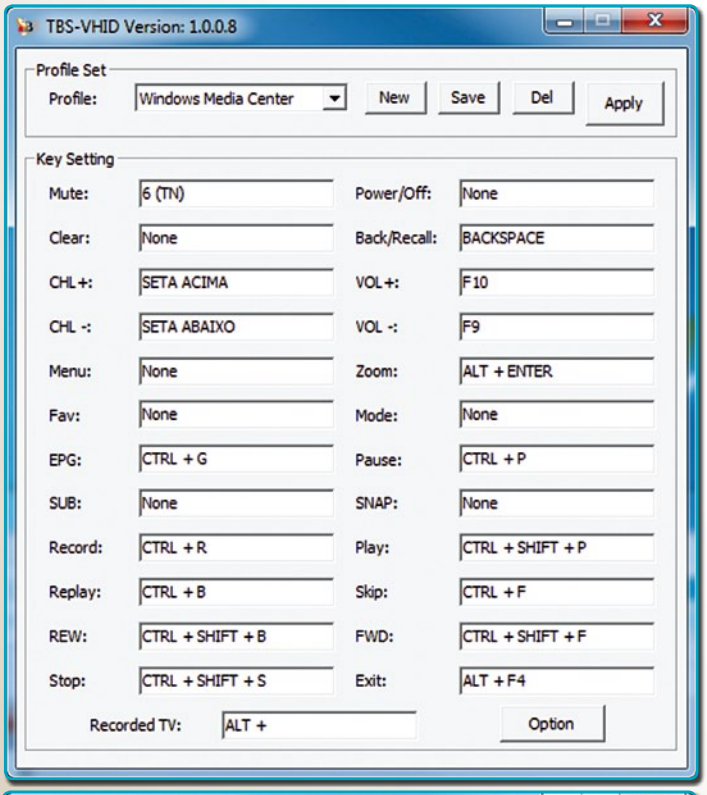
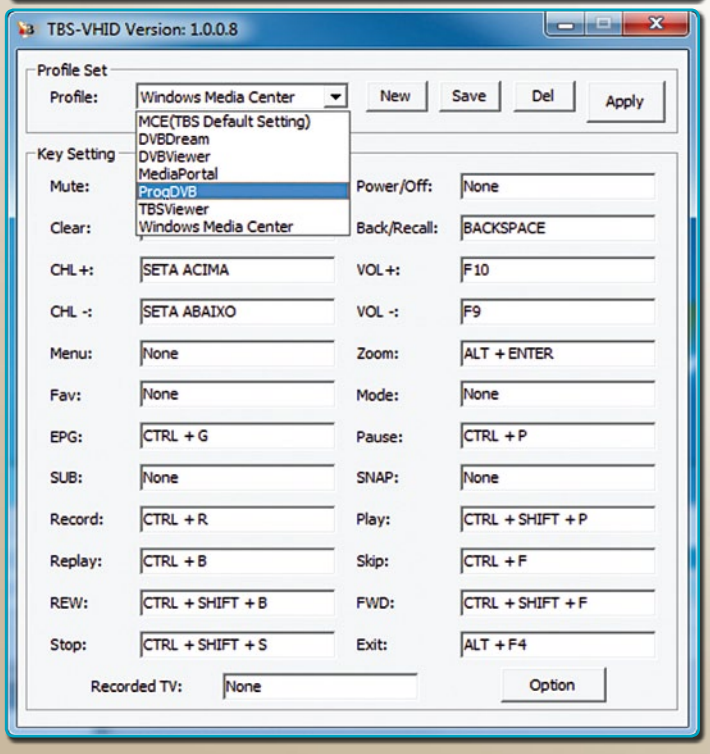
## The TBS with TBSVHID




Scan checks out in the spectrum all of the transponders that were found and displays the individual reception parameters in the graphic. That happens very quickly – faster than any other signal analyzer that we know of. Even more impressive is the speed when the "Blindscan2" option is activated. In this case the CrazyScan Blindscan algorithm is not used; instead it's the hardware implemented Blindscan in the tuner. And it's here where the TBS 6991 shines with its high speed. All the reception parameters of the current satellite are listed in record time.

The displayed graphic can be exported in PNG picture format, PDF document format or SVG browser format. Unfortunately, the transponder list cannot be exported in INI format for normal TV applications. Sooner or later the author of CrazyScan will undoubtedly implement this but it's really not all that important since CrazyScan still has a lot more to offer. If you double-click with the mouse on a transponder, a new window opens in which the corresponding frequency is already preset. The colored key with the alien face activates the constellation diagram. This has it all; it will reset the reception parameters through the Blindscan function and then in just a few seconds the constellation diagram will appear. The user does not need to set the modulation, symbolrate, FEC, etc. Excellent!

If the production of the constellation diagram is stopped, the currently active transponder can then be streamed such that it can be further processed by TSReader. The result is unbelievable: now we can meticulously analyze the stream that was just determined and even display the desired channel using VLC. This is so powerful that we simply have to describe the process again so that we can believe it ourselves:

1) You align the antenna to a desired satellite. Using the Loop function and a small span you can optimally align the antenna with CrazyScan and the use of the spectrum. On the other hand, a complex system can be controlled thanks to cascading DiSEqC commands.

2) Next initiate the scan function across the entire frequency range.

3) Continue with the Blindscan function. If, for example, you find a new transponder that you would not normally find on this satellite, you need only double-click on it to see the constellation diagram with all of its reception parameters.

4) Lastly the transponder is streamed directly to TSReader where you can then see a multitude of information regarding the PIDs in the transponder.

5) From TSReader you can further stream the desired channel to VLC so that it can be displayed.

It is our opinion that even professionals will appreciate this solution; we as DXers are very impressed and can now understand how some other DXers manage to find new feeds (and before us no less!). But we didn't even tell you the best part yet! CrazyScan is free!

TSReader has been around for some time now and its programmer Rod Hewitt was introduced in the TELE-satellite 06-07-08/2012 issue. This program is a transport stream analyzer. The various sources for the transport stream can be incorporated including BDA-compatible TV cards as is the case with all TBS cards.

In our last test of TBS DVB-C cards (TBS 5680 and TBS 6618) we thoroughly checked

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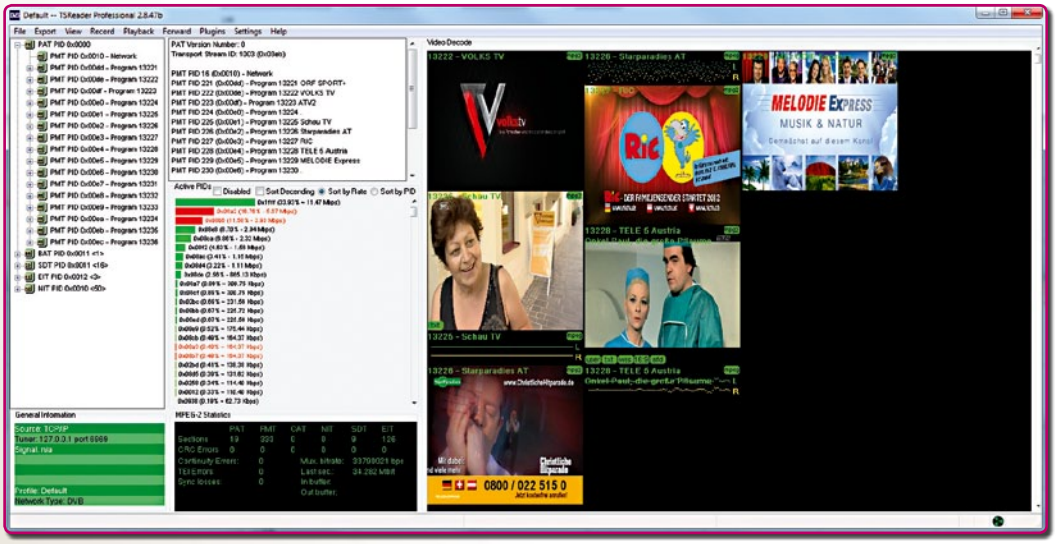
## The TBS 6991 with TSReader




out TSReader and used it to see whether or not our cable provider incorporated valid NIT tables in the stream – a network scan from DVB Dream could not find any additional transponders. Thanks to TSReader we were able to determine that it was not with the provider.

If it's finding errors in the stream or to just simply see all the details, TSReader is the tool for advanced amateurs and professionals. Because of this it was important for us to see how far the harmonization between the TBS 6991 and TSReader went. This test was much too fast in that you only had to select "DVB-S BDA compatible source" as the source.

In the next step the reception parameters are selected like normal after which TSReader begins analyzing the numerous PIDs within the stream. Inserted CAMs, as was already the case with Windows Media Center, are controlled by the TBS-MCECITool that must be started on demand. This interrupts the stream which then has to be newly restarted from within TSReader. A restart of TSReader is not necessary.

Thanks to the twin tuners, two different TV applications can be started at the same time with the requirement that they both use different tuners. Even though the TBS 6991 occupies only one PCI-e slot, it can be operated as if there were two separate cards.

We could therefore, for example, use TSReader with tuner A while CrazyScan was performing a scan on tuner B. We should not forget to mention that ending one of the applications will interrupt the stream on the other application. In this case the stream would have to be restarted.

If you have the full version of DVB Viewer, it will include a tool called TransEdit. This program primarily serves to create channel lists through scanning that is based either on transponder lists or the manual entry of transponder data. Alternatively, a Blindscan can also be performed but it does not utilize the possibilities that the TBS 6991 tuner offers. For this reason a Blindscan like this is significantly slower compared to CrazyScan. TransEdit can do something else; it can perform a transport stream analysis in which it lists all the PIDs. Additionally, complete transponders or only those selected PIDs can be streamed to a hard drive. The scan is very comfortable; you need only click on a transponder to list all the available channels from a scan. An additional double-click on one of the listed channels opens a new window with the live TV picture.

TBS (Tenow), with its TBS 6991, has once again shown how perfectly designed a PC card can be. The TBS product palette includes cards in every conceivable version, whether it's DVB-S/S2, DVB-C or DVB-T/T2, with or without CI, for PCI-e or USB. And let's not forget the exceptional quality and attention to detail that highlight all of TBS's cards.

If you want to comfortably watch TV on your PC, whether its through a TV application or with a multimedia PC that, for example, works with the Windows Media Center, the TBS 6991 gives you an easy to install TV card that leaves nothing to be desired and works in harmony with nearly every TV application.

And yet the TBS 6991 is also interesting for DXers and professionals. The complete support of CrazyScan, TSReader and TransEdit together with its twin tuners and CI slots provide for a wide range of possibilities. Even some higher-end signal analyzers can't keep up with all of these functions, especially when it comes to transport stream analysis.

We're not only thrilled with the TBS 6991; we're actually putting more of them in our test PCs!

## Expert Opinion

**Vitor Martins Augusto**
TELE-audiovision
Test Center
Portugal

**+**

**Full featured DVB-S/S2 card with PCI-e**
**Twin Tuner**
**2x CI for PayTV**
**Fully supported by Windows Media Center**
**Fully supported by CrazyScan, TSReader and TransEdit**
**Ideal for satellite TV viewing**
**Ideal for DX and professional applications**

**–**

**None**

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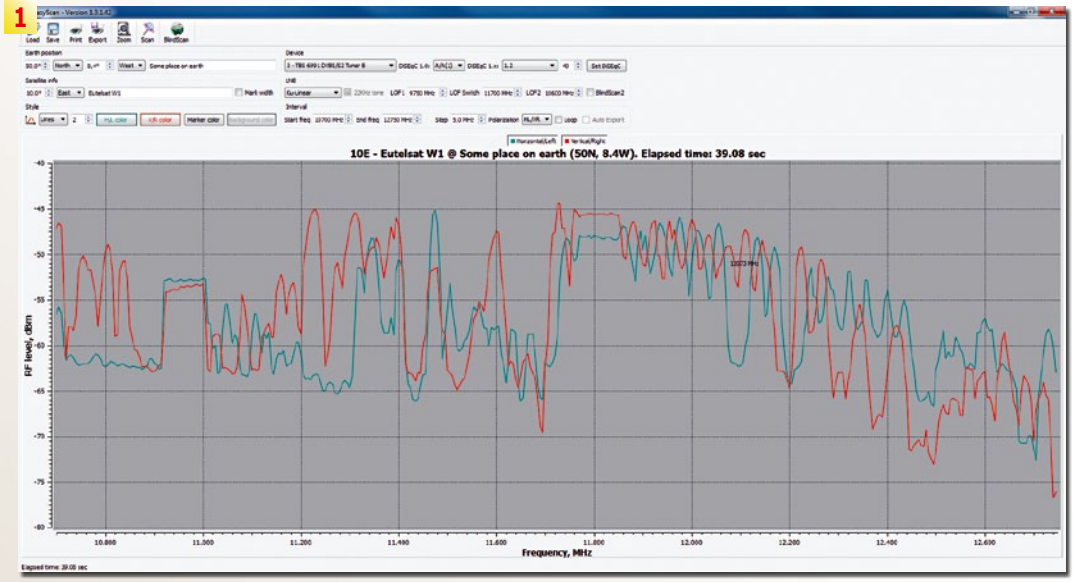


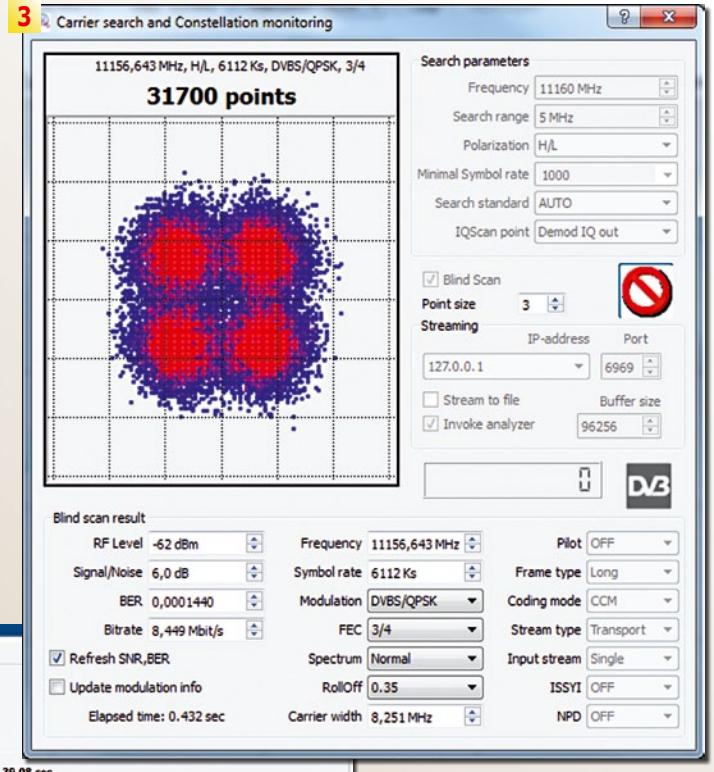

# Searching for a Feed

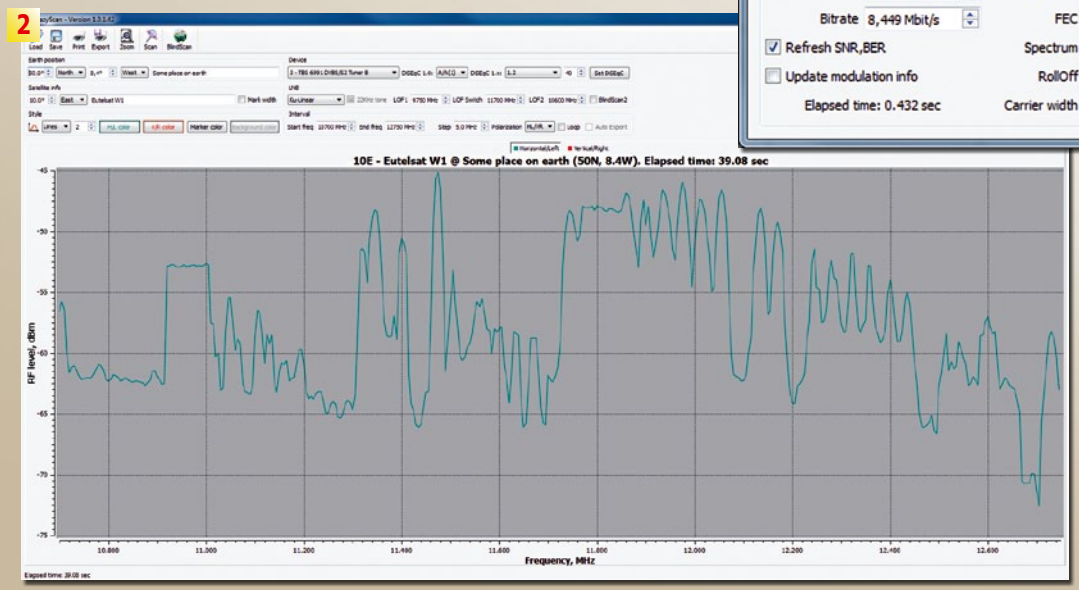
We would like to demonstrate how easy it is to find a feed using the TBS 6991. For this purpose we connected our 100cm motorized antenna to tuner B on the card. In memory location 4 in our configuration can be found Eutelsat W1 (10.0E). This satellite often carries feeds making it a good starting point.

We start CrazyScan and enter in the data from Eutelsat 10.0E in the "Satellite Info" field. Only then will the documentation of our results be complete. We also select tuner B and set DiSEqC 1.2 to position 4. A click of the "Set DiSEqC" button and the antenna turns to the satellite.

Now we perform a scan of both polarizations (V/H). Transponders with feeds can generally be identified by their small size; typically only one single audio/video stream is transmitted. With some experience you'll get to know the spectrum and you'll instantly be able to recognize a transponder peak that normally isn't there. And, how about that, something seems to be happening on 11.156 GHz H!

With a double-click on this transponder we open CrazyScan's "Carrier Search and Monitoring" window and start the constellation diagram (the button with the alien's face). The QPSK constellation shows that the signal is locked in and that a useful signal quality exists. Next we stop the constellation diagram and then press the DVB button to send the stream to TSReader. The first time you do this you have to tell CrazyScan the path to TSReader, after that TSReader will open automatically with the stream. It doesn't get any easier.



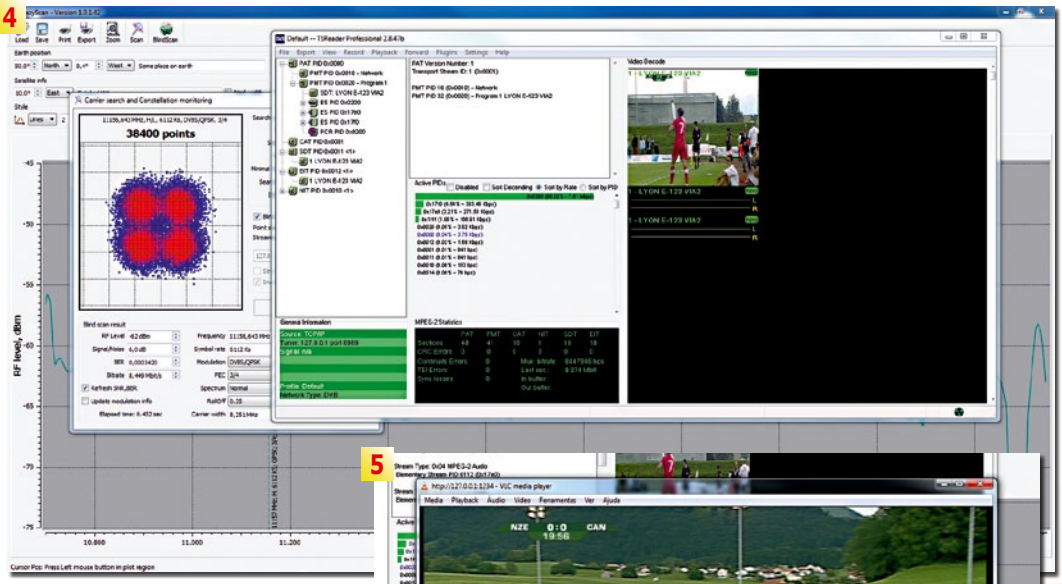

And look at that: TSReader has identified an audio/video stream and instantly shows a preview image. Double-clicking the preview image routes the channel to VLC (Video LAN Client) where it is then displayed: live soccer without any editing.

The DXer now has a nice screenshot with reception parameters and the time.

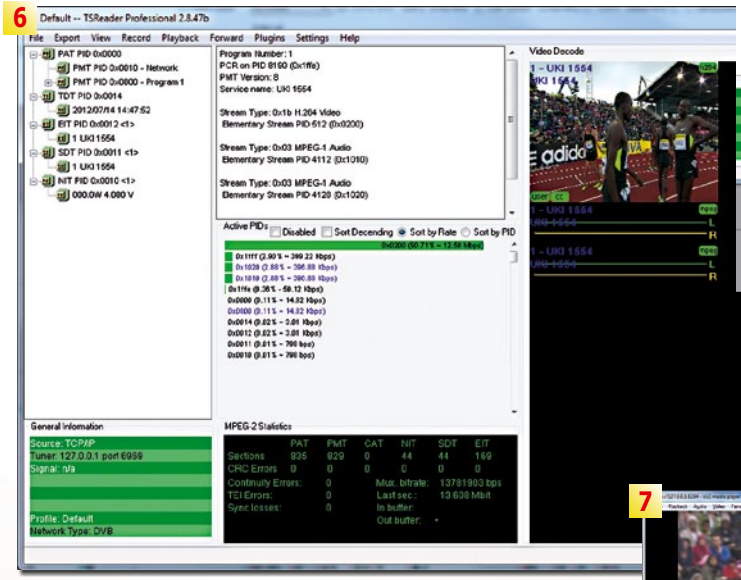
He then posts the results in the appropriate forums hoping that he was the first to do this!

And then after a few minutes the feed is gone. But look at that, right after that a new feed appears, this time on 11.93 GHz. A nice DVB-S2 signal with unusual reception parameters: SR 7119 Ks/sec, FEC 2/3 with DVB-S2 with 8PSK. The MPEG-4 video signal in Planar 4:2:0 YUV is coded in H.264 with 1920x 1080 pixels.

Welcome to the world of the feedhunter!








**matically and show the constellation diagram. Indeed it looks very promising, so let's click the DVB-button to send the streamt o TSReader.**

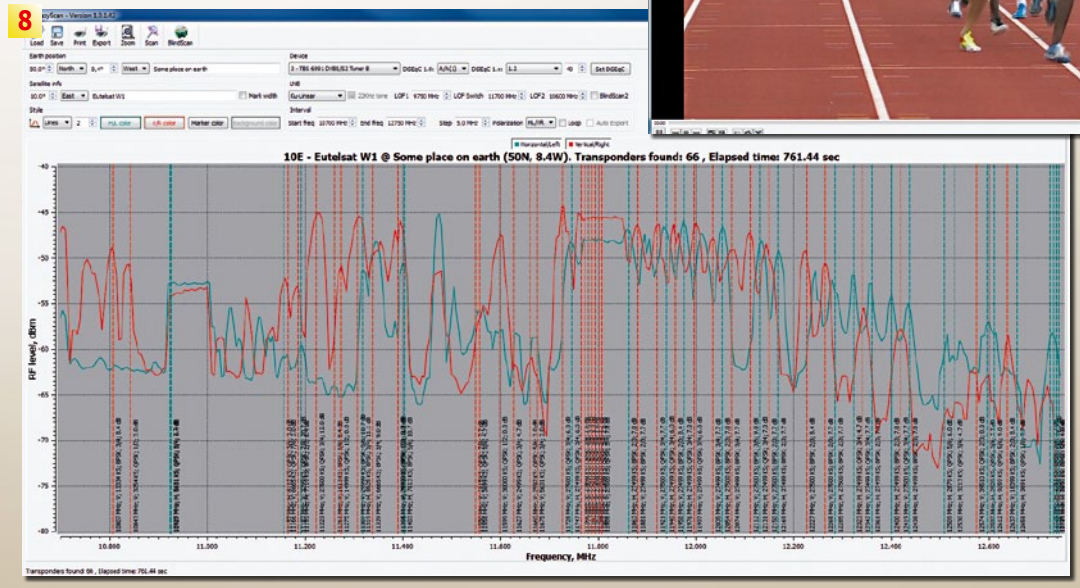
**4. TSReader shows the content oft he Transport Stream (TS) and even shows a preview-picture of the video PID's.**

**5. Double-Clicking on the image will stream the video-**


**1. Finished scan using CrazyScan. Blue is horizontal, red is vertical polarisation – too much information, so we turn off the vertical polarisation fort he next step.**

**2. Just viewing the horizontal polarisation. Notice the small transponder close to 11.200 MHz: small but with perfect shape! Could that be a transponder carrying a feed? Let's find out by double-clicking on its centre.**

**3. CrazyScan will determine all tuning parameters auto-**




**and audio-PID's to VLC, which will show the live video.**

**6. After the end oft he first feed, a new feed is transmitted with slightly different parameters. The sport event goes on, now with a different modality!**

**7. By the way: the feed is broadcasted in FTA DVB-S2, best resolution possible. But the best of it all: no broadcasting logos, textboxes, nothing! Just the plain video!**

**8. Result of the full blindscan. All reception-parameters are written on the respective transponder.**

# Оптические разветвители от Global Invacom


- ***расщепляет оптические сигналы практически также хорошо, насколько это теоретически возможно***
- ***дает даже лучше уровни наземных сигналов, чем при использовании стандартного оборудования***
- ***Доказывает, что оптическая система – почти безшумна***
- ***Расщепляет оптический сигнал на 50+ без заметных потерь***

TELE-audiovision test editor Jacek Pawlowski testing GlobalInvacom's optical splitters

TELE audiovision AWARD 03-04/2013

Global Invacom
GISplit16pro and GISplit32pro
Loss-less splitters for large optical distribution systems

www.TELE-audiovision.com/13/03/globalinvacom

# Can 3% Be As Good As 100%?

When you need to distribute satellite and terrestrial signals to a large number of apartments, a fibre optics system comes first to mind. Even with very long optical cables there is hardly any signal quality loss. Also signal strength suffers only insignificantly for practical cable lengths. But what is the impact of optical splitters? You need them to distribute the input signal to many terminal devices like TV-sets or satellite receivers. And every passive splitter will attenuate the signal. The larger the number of its output the weaker the signal you get. So you can not split the signal without an end. Where is the limit?

We had the opportunity to find an answer to this question. We got two models of multi-output optical splitters made by GlobalInvacom: GISplit16pro and GISplit32pro. As you can easily deduce, these are 16-way and 32-way splitters respectively. Both are contained in the same sized metal enclosures but while GISplit16pro has one input and 16 outputs located on the same side panel, the other model has an additional 16 outputs on the opposite side. All connectors are of the FC-PC type.

There are four holes in the corners of the top and bottom panels. So how are you supposed to install the device on the wall? You do need to have long and rather thin screws to pass them through the whole device before entering the wall, or else you need to partly disassembly the device. After unscrewing four small screws on the side panels, the bottom panel can be detached from the splitter enclosure. Then, you can attach the bottom panel to the wall with standard screws and reassemble the device.

Ideally, the GISplit16pro splits the input to 16 equal

DEVISER

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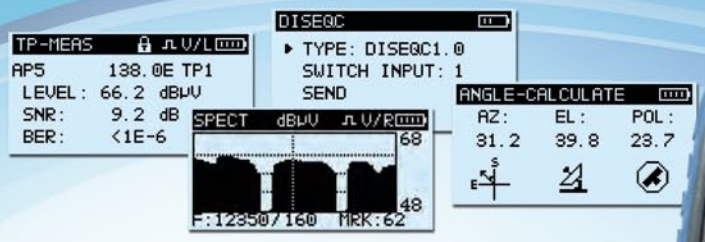




# S30✓ Satellite Meter

- Supports DVB-S/S2
- C, Ku, Ka or L band
- MER and BER
- Spectrum function
- Supports DiSEqC 1.0/1.1
- Signal level and quality display together
- 128×64 matrix LCD with back-lighted
- Large lithium battery capacity, over 4 hours working time
- Software upgrade and parameter set via USB interface

# S7000✓ TV Analyzer


QAM Constellation

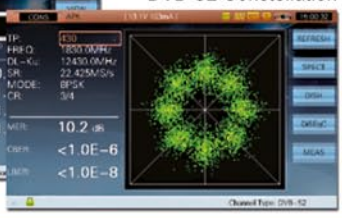

Spectrum

TR101 290 Three level Monitoring

- All standards in one: QAM(J.83A/B/C), 8VSB, DVB-T/H/T2, DVB-S/S2
- Digital/Analog TV and Satellite TV analysis
- MPEG2 Transport stream analyzer and monitoring via TS-ASI input & RF input
- Fast spectrum analysis with 5~2150 MHz frequency span
- DSP Technology to support different Video decoding: MPEG-2, MPEG-4 and H.264 for 1080i, 720p and 576i, support PAL/NTSC/SECAM color system
- Support SD&HD Video format
- CI module (Common Interface) for encrypted channels
- TS-ASI input and output
- TS record and TS replay
- IPTV analysis option
- GPS option
- HDMI, LAN and USB interface
- Easy to use
- High resolution 7" TFT LCD with bright display for indoors and outdoors use
- W245×H194×L105, light weight
- Working time >5 hours (battery)



DVB-T Signal


DVB-S2 Constellation

**Deviser Electronics Instrument Co., Ltd**
No 8, Haitai Chuangxin 3 Road, Hi-Tech Industrial Development Area, Tianjin 300384, China
Tel: +86-22-27682088, 27645003, ext 803 ▪ Fax: +86-22-27645002
Http://www.devisertek.com ▪ E-mail: overseasbiz@deviser.com.cn

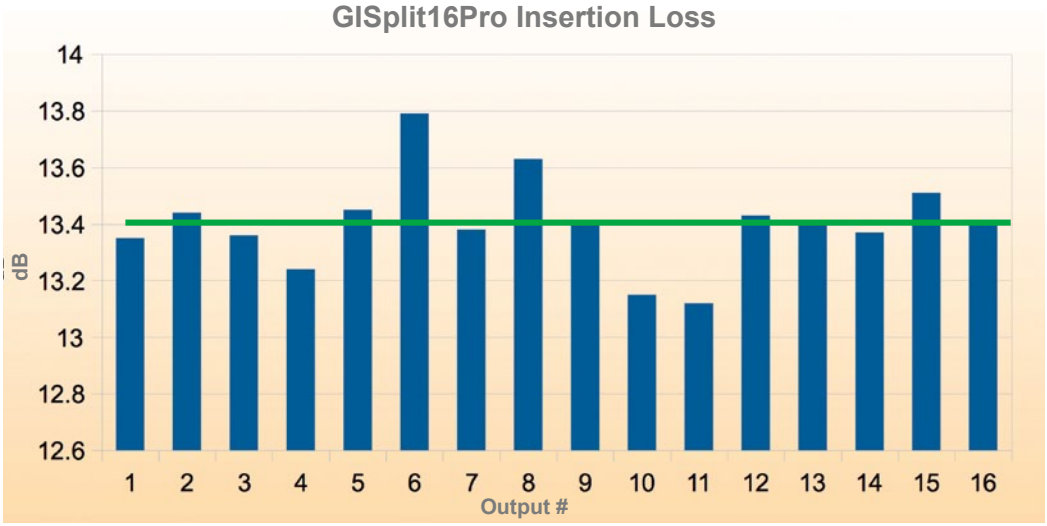
DEVISER

outputs each carrying 6.25% of the input light. That's because 100% / 16 = 6.25%. Should we convert it to decibels, it would be -12 dB. Of course, real performance must be somewhat worse due to unavoidable coupling losses. And indeed, GlobalInvacom specify their GISplit-16pro as having a typical insertion loss of 13.3 dB.

Similarly, the GISplit32pro should ideally split the input to 3.125% and have -15 dB of insertion loss but GlobalInvacom specify the loss as 16.8 dB typically. The manufacturer's specifications are explicitly provided on the labels attached to the splitters as you can see on the photographs.

And that was the first performance parameter we wanted to measure in our test. For that, we used a GlobalInvacom Optical LNB and their FibreIRS ODU32 optical transmitter as signal source. Additionally, we fed the ODU32 with a terrestrial signal to create the most realistic test conditions. We connected the output of the ODU32 with the input of the splitters. Then we measured the optical power at the input and at every output of the splitter at 1490 nm wavelength.

The first to go was GISplit-16pro. As you can see in the graph 1., the maximum insertion loss was 13.8 dB and minimum only 13.15 dB. The average loss (green line) was 13.4 – so very close to the typical value specified by the manufacturer.




**Graph 1.**

The next splitter – GISPlit-32pro was even better. You can see its results in the graph 2. The average loss (blue line) was only 16.2 dB and all outputs had a lower insertion loss than the specified typical value 16.8 dB! Output number 23 was the best – only 15.99 dB. Impressive!

The insertion loss for both optical splitters was really very small – very close to the theoretical limit. But to be fully convinced that the optical systems built with GISPlit-16pro and GISplit32pro are really that perfect, we decided to compare the results we got with the results we could achieve in a classical way - in purely RF systems.

For the satellite test, we used the same dish but this time with a classical high performance LNB. Table 1 presents the outcome.

| | Channel Power [dB] | MER [dB] |
|---|---|---|
| Signal from a classical RF system | 76.3 | 14.3 |
| GISplit16pro->GTU Quad output | 63.5 | 12.6 |
| GISplit32pro->GTU Quad output | 63.4 | 13.9 |

**Table 1. Optical systems incorporating the GI splitters under test in comparison with top class RF satellite system without any splitters.**

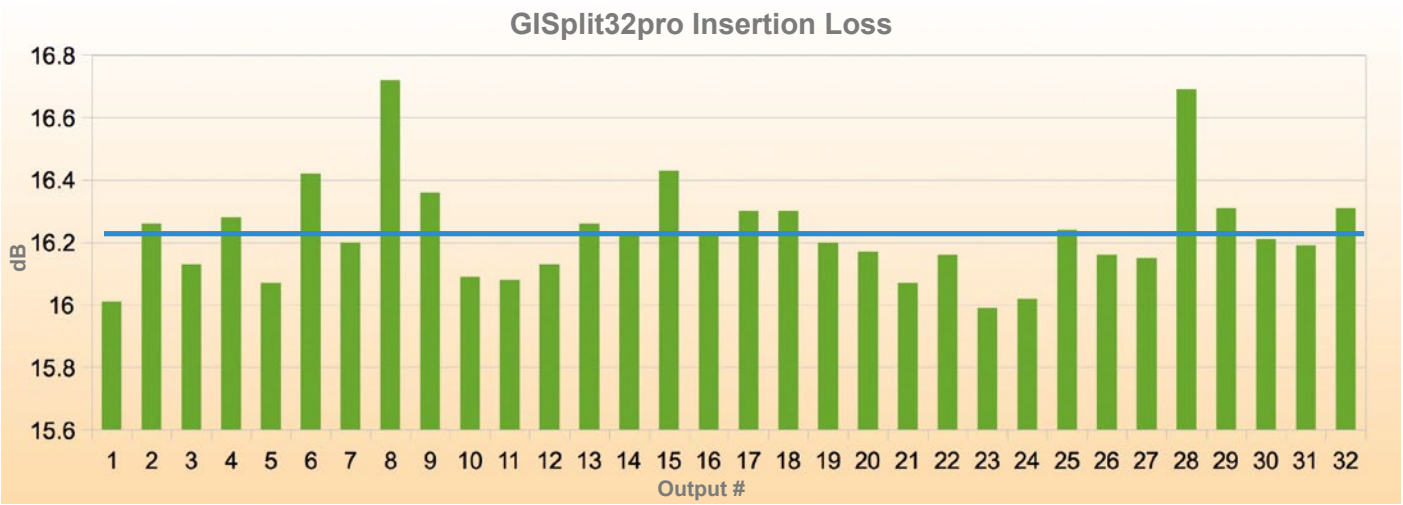
We used transponder 10720 V from HOTBIRD on 13° East as our test signal. Please note that we measured the RF signal directly at the LNB output without any RF splitters or multiswitches. Despite the fact that the optical signal was split to 16 or 32 outputs, the results were only slightly inferior to the top class single LNB system with a very short cable!

We did a similar test with a terrestrial antenna and this time we were even more surprised. See our results in Table 2.

The output signal in both cases of optical setup was better than a classical installation! Not only was the signal stronger but its MER was also better! And remember that we used only 3.125% of the light power entering the

| | Channel Power [dB] | MER [dB] |
|---|---|---|
| Signal from a terrestrial antenna | 49.3 | 25.4 |
| GISplit16pro->GTU Quad output | 61.2 | 28.0 |
| GISplit32pro->GTU Quad output | 62.7 | 29.2 |

**Table 2. Optical systems incorporating the GI splitters under test in comparison with a signal from a terrestrial antenna.**




**Graph 2.**

system in case of the GISplit-32pro. Evidently, we were working with very good signals with so small amount of noise that it was comparable with the noise threshold of our signal analyzer. This last test was a crowning evidence that the whole optical system is almost noiseless and signal quality does not suffer at all.

And how much splitting can you get in real life? Well, the optical LNB by GlobalInvacom generates about 7 dBm of optical power. The GISplit32pro has a specified insertion loss of 16.8. This means that at its output we can expect -9.8 dBm. And the light-to-RF converter that we used in our test (GTU QUAD) is specified for -15 through 0 dBm. It means that we still have a 5 dB margin. Enough to use 2-way optical splitter at every one of 32 outputs of GISPlit-32pro to get more than 50 optical outputs in total. The theoretical limit would be 64 outputs, but it is recommended to leave sufficient margin to allow for ageing of the laser and the odd output going to maximum loss.

Both GISplit16pro and GISplit32pro are really excellent building blocks you can rely on when building fiber optics distribution systems.

## Expert Opinion

**Jacek Pawlowski**
TELE-audiovision
Test Center
Poland

**+** **Very small insertion loss, close to theoretical minimum**

**Absolutely noiseless, what allows you to build systems with a large number of outputs driven from a single optical LNB**

**−** **It seems to us that the manufacturer could improve a bit the mechanical design of the devices to make the installation on the wall more convenient**

## TECHNICAL DATA

| | |
|---|---|
| **Manufacturer** | Global Invacom Ltd., Great Britain |
| **Web** | www.globalinvacom.com |
| **E-mail** | Fibre@globalinvacom.com |
| **Phone** | +44-1621-743440 |
| **Fax** | +44-1621-743676 |
| **Models** | GISplit16pro and GISplit32pro |
| **Function** | 16 way and 32 way optical splitters |
| **CR typ.** | 6.25% and 3.125 % respectively |
| **Insertion loss typ.** | 13.3 dB and 16.8 dB respectively |

## MORE ABOUT THIS COMPANY

www.TELE-audiovision.com/10/09/globalinvacom


PRODUCT NEWS | Fibre Optic Products |

GlobalInvacom Expands Product Palette

The British company GlobalInvacom invented the optical LNB. TELE-satellite reported on this futuristic invention back in its 04-05/2006 and 08-09/2009 issues. In the meantime, GlobalInvacom has expanded its optical LNB product palette. TELE-satellite, in the 04-05/2010 issue, introduced the newest versions, a PFA optical LNB, (until then optical LNBs were only available for offset antennas) and an expansion of the terrestrial optical LNB system in which the transmission of both satellite and terrestrial signals on two optical frequency ranges are carried on one optical cable.

# Panodic HDT-275C

DVB T2


PANODIC

Digital World, Simple Life

- ***отличная презентация HDTV в DVB-T2***
- ***чрезвычайно быстрое переключение каналов***
- ***потребление энергии в состоянии покоя – слишком мало, чтобы можно было его измерить***
- ***PVR функция может быть контролируема через электронный программный гид***
- ***прием платного TV , благодаря CI***

# DVB-T2 the Way It Should Be

27 x 16.5 x 4 cm, packaged into an elegant case design – in case you're wondering what the heck we're talking about, this is what the new HDT-275C from Panodic looks like. As early as when we unpacked this new receiver the fact that Panodic has opted to integrate DVB-T2 has met with our approval. Thanks to DVB-T2 support reception of terrestrial HDTV is possible, which is of particular significance since DVB-T2 transmissions are available in most countries still endorsing DVB-T as well, and in the medium to long term DVB-T2 is en route to replacing DVB-T in virtually all markets.

A four-digit segment display is located on the front panel of the HDT-275C which shows either the current time or the number of the selected channel. Right next to it we find the usual LED to indicate the receiver status. A flap hides the CI slot which accepts all standard conditional access modules, and a total of six buttons are available on the front panel so that you can make use of Panodic's new receiver even when the remote control is misplaced or out of batteries.

Turning our attention to the back panel, we notice a generously equipped connection board, offering all options you may ever require, with the exception of a mechanical power switch. In detail, you get a tuner input socket complete with loop-through output, a total of six RCA jacks for stereo audio, composite video and YUV, an HDMI socket, scart euroconnector for older SDTV devices as well as a USB 2.0 interface for hooking up external storage media. If brilliant audio is what you're after, you'll be pleased to learn that Panodic has thought of a digital coax audio output as well.

The remote control that is shipped with the receiver is on the small side, yet its buttons offer a very pleasant pressure point and are clearly labelled. In general, the level of workmanship left us very satisfied, but we would not have expected anything less from Panodic. One thing that deserves extra-special praise is the almost non-existent power consumption in standby mode. In fact, it is so low our meter could not detect any power consumption at all, which means it is way below one Watt. What's more, a low 13 Watts during everyday use also add up to this receiver being not only good to the environment, but also to your wallet!

What has become commonplace for most receivers these days is also available with the Panodic HDT-275C: a short installation wizard that takes care of setting up the receiver in the first place and of customising many of the available parameters. All you need to do in order to get going is select your region, preferred language, video mode and aspect ratio.

We did like the fact that Panodic streamlines the whole process with a number of small but meaningful enhancements. To give you just one example, the receiver suggests an on-screen language based on the region selection which can be accepted by the user, or overruled just as well.

As far as video resolutions are concerned, the following options are available: 480i, 480p, 576i, 576p, 720p 50 Hz, 720p 60 Hz, 1080i 25 Hz, 1080i 30 Hz, 1080p 50 Hz, 1080p 60 Hz, 1080p 25 Hz, 1080p 30 Hz, 1080p 24 Hz, as well as 'source' and 'native'. 'Source' in this case means that the receiver adjusts its output resolution to the broadcast that is currently received, while the 'native' setting takes into account the maximum resolution of the TV panel.

Thanks to 1080p support the HDT-275C is compatible with full HD transmissions. The receiver can automatically adjust the aspect ratio based on the received material, or users can manually choose either 16:9, 4:3 Pan & Scan or 4:3 Letterbox.

Once users have decided on these three major items a touch of the OK button brings them right up one step to the automatic channel search. While this sounds nicely straightforward at first, we would have liked more options here. Why?

Imagine you're using a small DVB-T antenna with integrated amplifier – there would have been no way to turn on power supply via the coax cable before starting the channel search and most probably that search would have resulted in nothing more than zero channels, or very few high-powered channels at most. Luckily in our case, a UHF-VHF antenna combination installed on the roof of our test center provided the signal, which means that all active DVB-T and DVB-T2 frequencies available at our location were detected in a little less than four minutes. While four minutes won't break any record it is still an acceptable result, given that a full signal scan does not need to be performed on a regular basis. As soon as the channel search is completed the receiver switches to the first channel on the list and is thus ready to provide viewing pleasure.

While it is true that most basic settings are taken care of thanks to the installation wizard, we nonetheless recommend having a closer look at the clearly structured main menu of the HDT-275C. It is divided up into six main sections and offers all adjustment and configuration option you'll ever need.

Considering the small number of DVB-T and DVB-T2 chan-


nels (as opposed to DVB-S or DVB-C) you won't make use of the channel list management options too frequently, but it's still good to know that all usual jobs such as deleting, moving, renaming or PIN-locking individual channels can be accomplished easily. In addition, a total of eight favourites lists can be set up und filled with channels.

Incidentally, Panodic has opted to split up the overall channel list into TV and radio sections, which additionally enhances the overall user experience. Thanks to the colour-coded buttons on the remote control it is child's play to create a tailor-made channel list since each function can be called up with a single touch of a button.

In case the channel offering at a specific location changes users can keep up to date with an automatic or manual channel search, both of which can be accessed in the 'Channel Scan' section of the main menu.

If you opt for a manual search it is possible to enter a frequency or a channel number of the UHF or VHF bands. Two bars on the bottom of the screen indicate right away whether or not the entered values correspond to an active frequency.

We also appreciated the option to restrict the automatic search to free-to-air channels. This way the channel list will only include channels that can actually be watched without any pay TV subscription.

In the Setup section of the menu you'll find all basic adjustment options to get the receiver running, including video resolution, region, OSD language and aspect ratio. So any time you need to make some changes after having run through the initial installation wizard this is the place to go. In addition, it is here that you can set up your preferred language for audio, subtitles or teletext, as well as duration of on-screen inserts and the internal clock. You may set the time manually or you can fall back on the time signal transmitted with the DVB standard.

Based on a number of predefined time zones the difference between GMT and your local time can easily be set, since the receiver lists a number of major cities in each time zone on the bottom of the screen, which should help you select the correct one.

Being a fully-fledged PVR receiver the HDT-275C comes with a total of eight timer slots which can be set individually. Events can be marked for daily, weekly or monthly recording, which means you should never miss an episode of your favourite drama or sitcom show. We also appreciated all adjustment options regarding contrast, colour saturation, sharpness

**1. Installation wizard of the HDT-275C**

**2. Automatic channel search**

**3. Channel list**

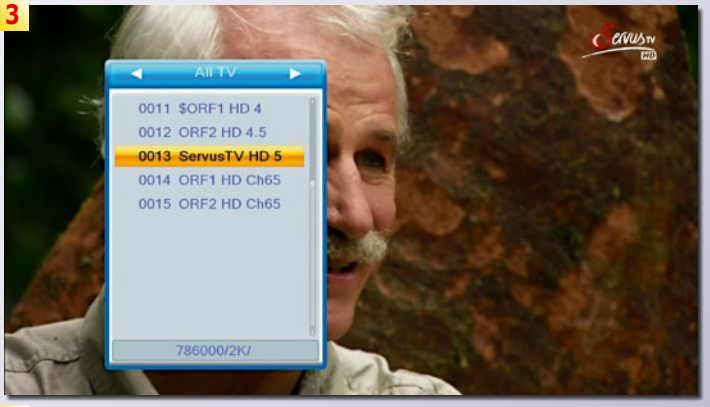
**4. The recording time can be extended with a double click on the Record button.**

**5. Two channels can be recorded simultaneously**


1


2


3

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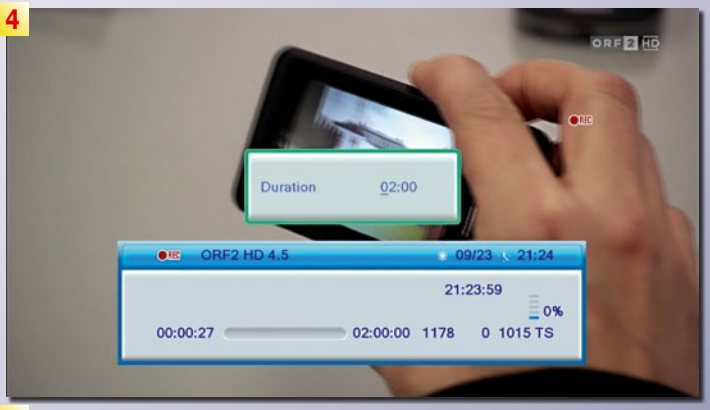


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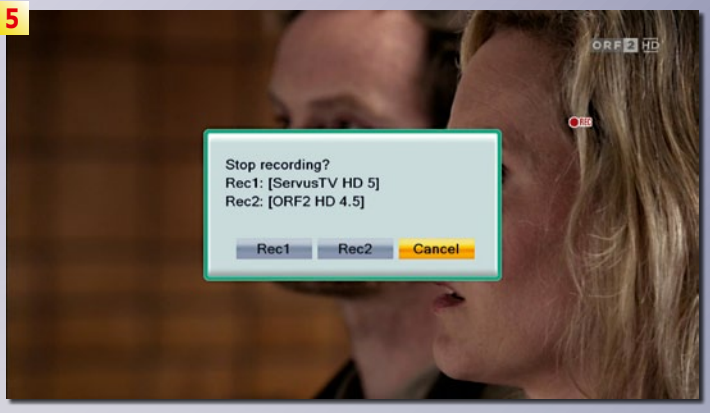

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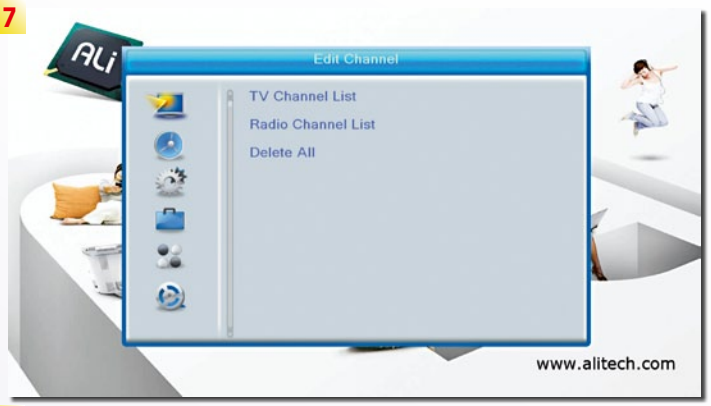


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9


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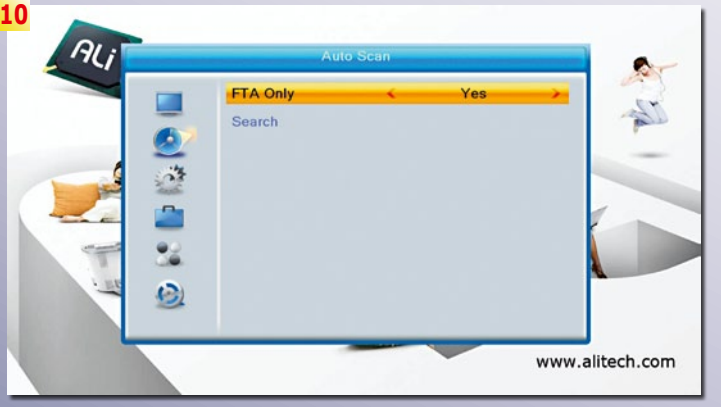


and colour space of on-screen messages.

It was more than once in the past that OSD pop-ups appeared way too bright and we would have loved a similar option to create an experience that is more pleasing to the eye.

Kudos to Panodic for not leaving out in the dark people with special needs: Its HDT-275C supports playback of a descriptive audio track, if provided by the channel. The volume of the descriptive audio track can even be adjusted in relation to the regular soundtrack. Families with children will appreciate the fact that they cannot only PIN-lock certain channels but also the entire main menu. In addition, the receiver uses age restrictions transmitted via the EPG to block certain broadcasts from your children's eyes, if required.

Hidden away in the 'Other' section of the main menu – and therefore not too easy to find for the average user – is the activation of a supply voltage that is transmitted via the coax cable to the antenna amplifier. So finally we were able to resolve that issue as well.

Now that we have chewed over all technical specs and features of the new Panodic HDT-275C, how about putting it to actual use for a change and watch HDTV on our TV panel? So off we go: Every time a new channel is selected an info bar presents information on the current and next events, and pressing the INFO button twice calls up extended EPG information on the current event, if provided by the channel. A touch of the OK button activates the channel list which might look a little plain at first sight, but provides wonderful ease of use.

Once you have found a channel you would like to watch you need to press OK twice to make sure the channel appears on screen and the inserted channel list disappears. The LEFT/RIGHT buttons take you through all of the eight favourites lists, which can also be called up directly with a dedicated button on the remote control.

We were truly impressed by the lightning speed with which this receiver switches from one channel to the next, which takes way less than one second if both channels are transmitted on the same frequency and thus is comparable to the old analog times.

We hooked up the HDT-275C to a 42-inch LCD panel and using 1080p Full HD the final result was excellent, giving us no reason for complaint as long as the original broadcast material was in native high-definition.

What's more, the wonderful feast for the eyes was complemented by flawless audio when we fed the digital audio to our amplifier with a coax cable.

These days an electronic program guide is a conditio sine qua non, and it goes without saying that the new Panodic HDT-275C is no exception to that rule. A touch of the EPG button on the remote calls up an overview which – we are afraid to say – is one thing that failed to impress us. This was due to the miniature size of the EPG on the screen, which in turn means there is hardly any space for content information.

Obviously, Panodic tried to strike a balance between the EPG window on the screen and the current channel that is shown in the background. While we acknowledge the effort we still cannot talk away the fact that the small EPG has to provide information for five channels at a time and there is no option to reduce that to one channel only – which would have vastly enhanced our user experience. The way the EPG is currently implemented is a somewhat cumbersome affair and navigation across five channels and a multitude of events borders on the tiresome at times. But maybe it's just us – we therefore suggest you have a look at the screenshots and decide for yourself.

On a brighter note, we liked that timer entries can be created right out of the EPG, with a total of eight entries available.

Another aspect we discov-

**6. Previous recordings are listed in a user-friendly way complete with a small preview window**

**7. TV and radio channels are managed in different sections**

**8. Channels can be added to one of the eight favourites list with a single touch a button**

**9. Manual channel search**

**10. The search can be restricted to free-to-air channels only**

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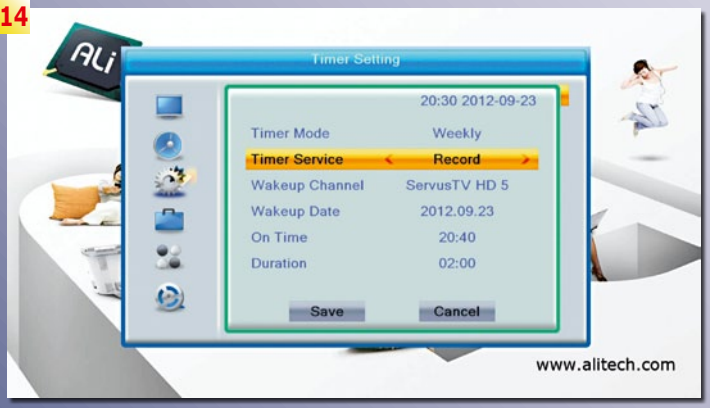


ered in everyday use and which deserves special praise is that several dedicated function keys on the remote are available to directly access features such as favourites, audio language, video resolution, teletext or content available from an external storage medium. This is a genuine time-saver, as it means you don't have to work yourself through various submenus in order to find what you're looking for.

And while we're at it, we found it peculiar that the buttons for audio, teletext, etc. are positioned in the lower section of the remote control, while the subtitles button is right in the top line of keys, next to info and mute.

As soon as an external storage medium (USB harddisk, USB memory stick, etc.) is attached to the HDT-275C the receiver miraculously turns into a fully-fledged PVR receiver and offers all functions and features required for recording and playing back content. Two recordings can take place simultaneously while a third channel is being watched live. As the receiver comes with a single tuner only, all channels that cannot be watched while an event is being recorded are blanked out on the channel list which creates a very user-friendly overview.

Whenever we test a receiver, we test it really hard and this time we programmed two HDTV events for simultaneous recording. Quite frankly, we would not have been surprised by an occasional performance hiccup, yet there wasn't any.

The HDT-275C acted like it was the most natural job on earth and accomplished this mission without a glitch. Using appropriate software like DVR Studio or ProjectX it is possible to create a DVD on the PC using the recordings made by this receiver. You may of course choose to simply save a file with the recording as well.

The HDT-275C comes with a built-in timeshift viewing feature which can also be deactivated, if not required. Turned on, it allows rewinding during a live recording or even adding the entire timeshift buffer to a manual recording. What this means in everyday use is that you can record an interesting event in full even though you only decided to do that some minutes into the broadcast. All recordings saved onto the storage medium are clearly listed in the integrated media player and even come with a small thumbnail picture. During playback users can fast-forward or rewind with 2/4/8/16/24-fold speed.

It goes without saying that Panodic has treated its HDT-275C to a video and audio player, as well as an image viewer. The video player will happily work with all standard files such as MPEG, VOB, TS, MP4, WMV and DivX – the only thing it steadfastly refused in our test was flash video.

**11. Language selection**
**12. Video output options**
**13. OSD settings**
**14. Timer entries can be repeated daily, weekly or monthly**
**15. Child protection settings**
**16. Each of the eight favourites lists can be named individually**
**17. The receiver can be set to play back descriptive audio louder than the general audio track**
**18. The software of the HDT-275C can be updated with the help of an external storage medium**
**19. Integrated video game – Othello**
**20. Integrated video game – Sudoku**
**21. PVR settings**
**22. Video player of the HDT-275C**
**23. MP4 playback**
**24. MP4 playback in SD or HD**

15


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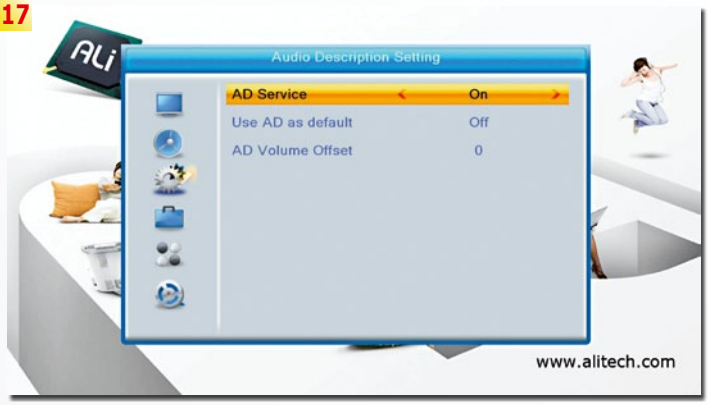


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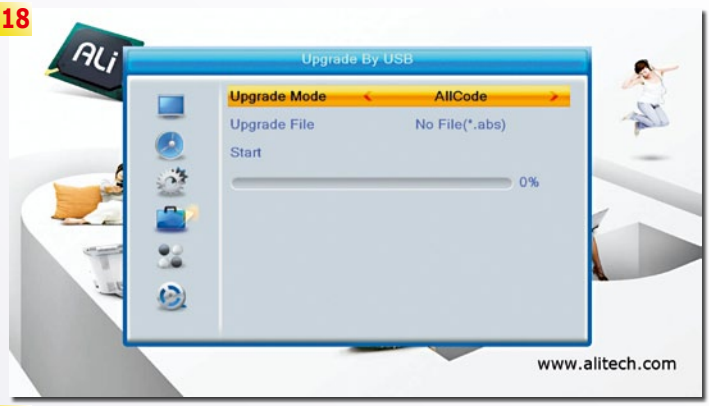


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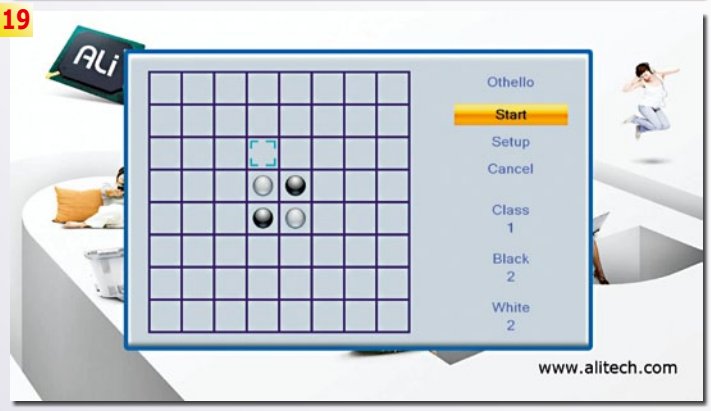


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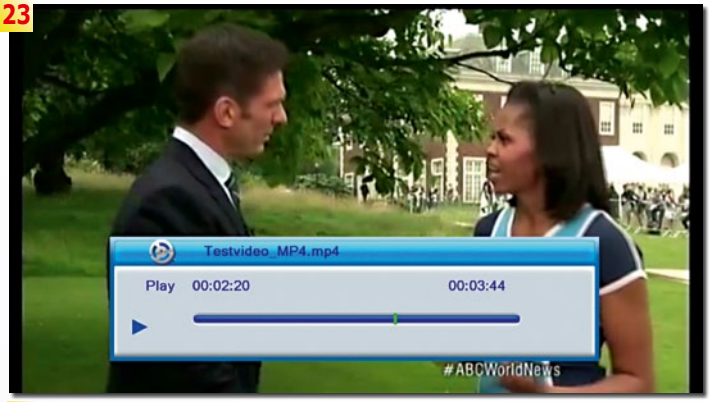


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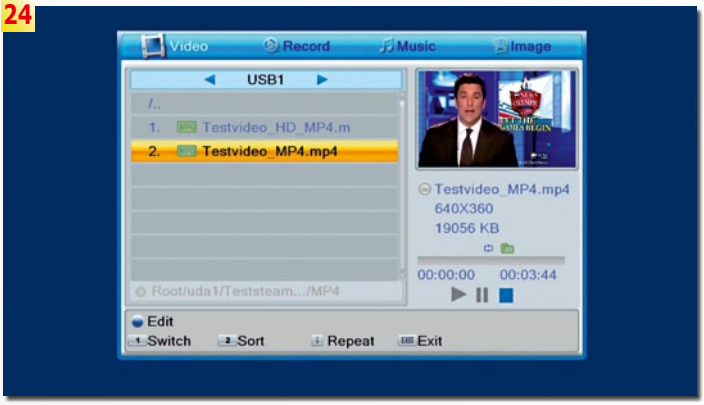

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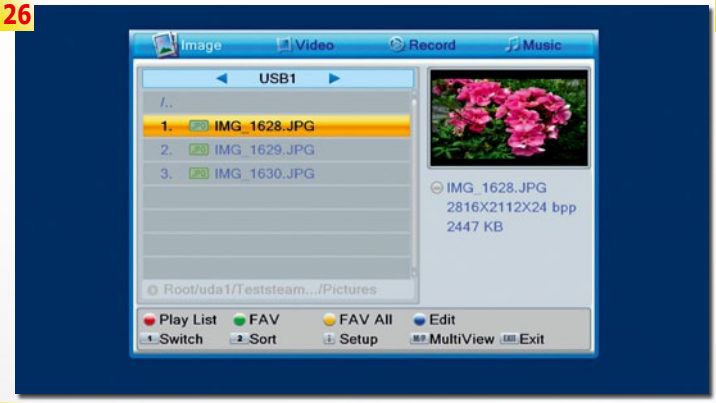


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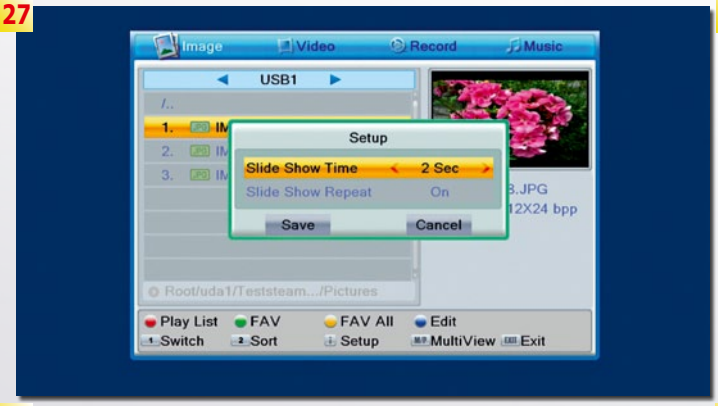


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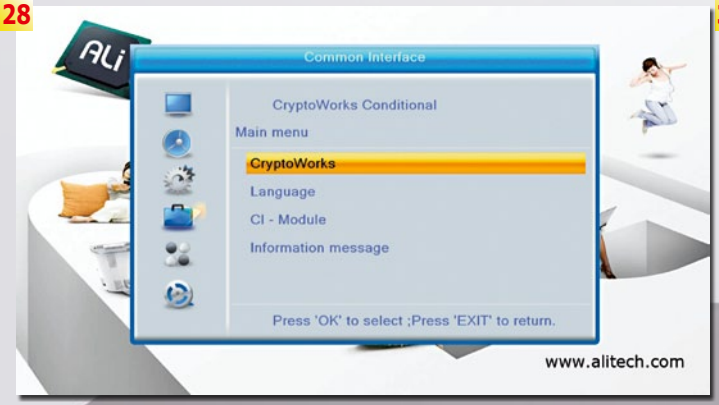


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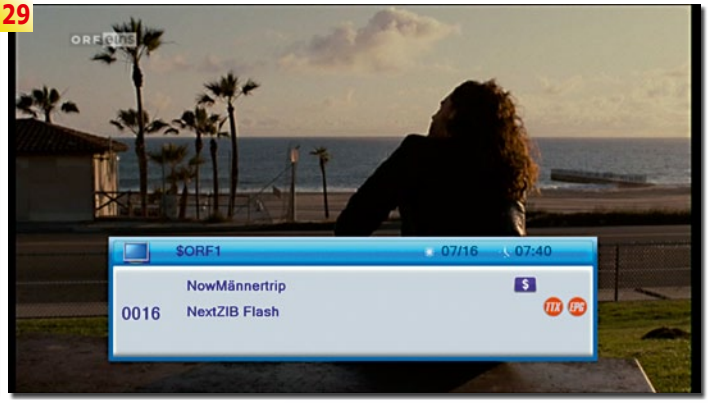


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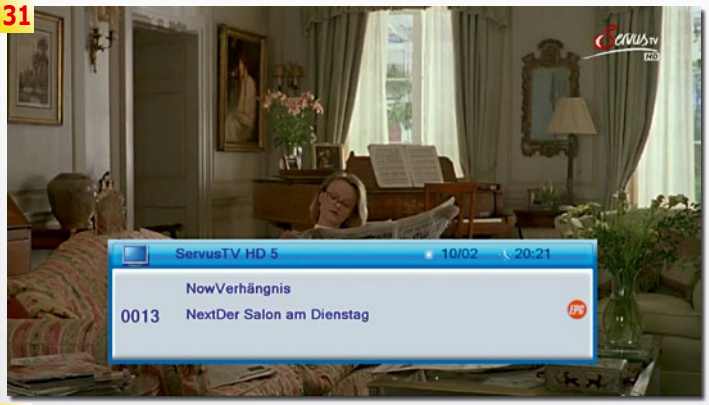


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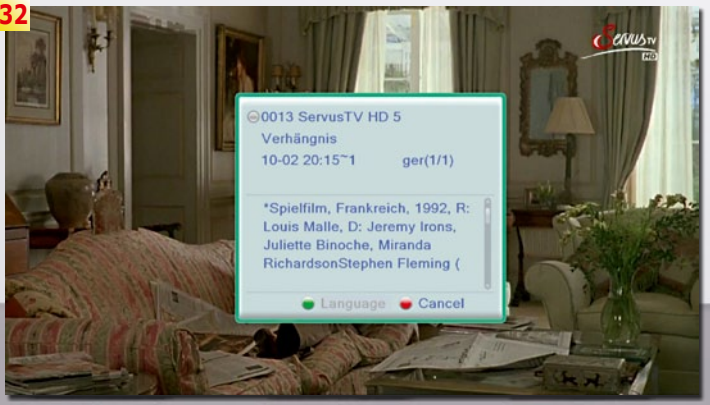



The audio player, on the other hand, turns out to be much less versatile and requires MP3, and MP3 only. It does make up for that drawback with a truly useful playlist feature, plus it's no big deal these days to convert WMA and MP4A files into the MP3 format. A Google search is all that's required to find an endless supply of free conversion software.

The built in image viewer performed reliably and can be set to present all of your holiday photos in a slideshow. You can even determine how long each photo will be shown in order not to try your friends' patience too hard. To sum up, we were thoroughly happy with the HDT-275C during our test. Offering all functions and features required for DVB-T2 reception, it actually surpasses many of its peers in a number of fields. Nonetheless, Panodic never rests on its laurels and is constantly improving the software of its products. A USB storage medium is all that is required to update the box's firmware or operating system.

And whenever those commercial breaks seem to drag on forever, you can kill some time with one of the two built in games (Othello and Sudoku), or why not do some old-fashioned teletext surfing for a change? There's only one issue we haven't dealt with so far: the CI slot. But rest assured, it gets the green light from us right away, since it is a perfect match for pay TV reception. All this makes the Panodic HDT-275C the right companion for both worlds, free-to-air-reception and pay TV.

**25. MP3 playback**
**26. Image viewer**
**27. Slideshow mode**
**28. The receiver happily accepted our Cryptoworks CI module**
**29. A channel with Cryptoworks encryption was decrypted and presented by the receiver**
**30. EPG**
**31. Info bar**
**32. Extended EPG information**

## Expert Opinion

**Thomas Haring**
TELE-audiovision
Test Center
Austria

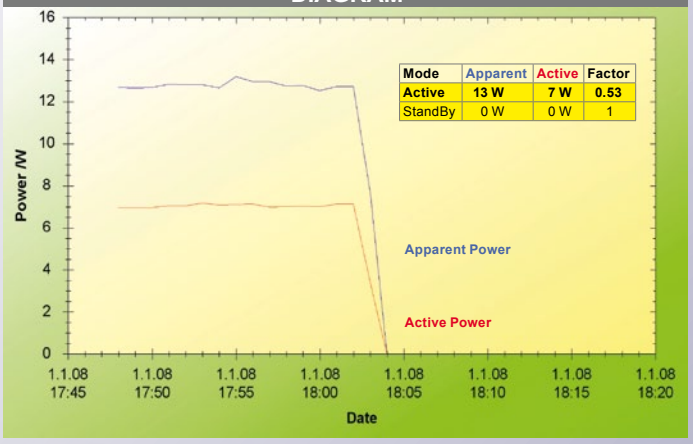
**+** **Reliable DVB-T2 receiver that will make for a useful addition to any lounge room TV rack and is easy to operate. Impressively fast channel switching, extremely low power consumption in standby mode and user-friendly software. The level of workmanship is excellent.**

**–** **We found the remote control to be a little bit too small, and the electronic program guide (EPG) did not quite meet our expectations either.**


## TECHNICAL DATA

| | |
|---|---|
| **Manufacturer** | Panodic |
| **Contact** | www.panodic.com/Contact.aspx |
| **Internet** | www.panodic.com |
| **Model** | HDT-275C |
| **Function** | DVB T2 HD-Receiver |
| **Input frequency** | VHF (177.5-226.5 MHz), UHF (474-858 MHz) |
| **EPG** | yes |
| **Supported standards** | DVB T, DVB T2 |
| **Video resolution** | 480i, 480p, 576i, 576p, 720p 50 Hz, 720p 60 Hz, 1080i 25 Hz, 1080i 30 Hz, 1080p 50 Hz, 1080p 60 Hz, 1080p 25 Hz, 1080p 30 Hz, 1080p 24 Hz |
| **RS232** | no |
| **Ethernet** | no |
| **USB 2.0** | yes |
| **HDTV** | yes |
| **MPEG4/H.264** | yes |
| **Supportes languages/regions** | English, French, German, Spanish, Italien, Greek, Portugiese, Russian, Polish, Croatian, Slovenian, Czek, Hungarian, Danish, Rumanian |
| **Dimensions** | 27 x 16.5 x 4 cm |
| **Weight** | 0,76 kg |

## ENERGY DIAGRAM




**Active use with channel switching, playback via USB, etc. in the first 15 minutes, followed by 15 minutes of standby.**

## MORE ABOUT THIS COMPANY

www.TELE-audiovision.com/12/03/panodic


■KCC110AF Channel Converter Processor and KLA110AF Launch Amplifier Power Supply

# Antiference от Kingray

- *Принимает только желаемые каналы и отфильтровывает любое вмешательство*
- *идеально подогнан, чтобы быть безопасным против LTE сигналов*
- *можно управлять дистанционно через интернет*
- *может работать со смежными каналами*
- *его качество настолько хорошее, что вы можете использовать его как источник для передатчика*

# A Professional DTT Headend

■TELE-satellite editor Jacek Pawlowski testing the Kingray headend by Antiference. In his setup he connected the system to a live DTT signals and measured the output results.



Frequency spectrum is a valuable asset. There are various international and national bodies who grant parts of the spectrum for particular services. Digital television is just one of such services and it has to coexist with the others like the new LTE Internet communication, or digital radio DAB or the old FM radio. Such coexisting services, even if they occupy different but neighboring frequencies, could negatively interact with one another.

In a cable system supplying terrestrial TV signals to every apartment in a large block, apart from installing cables and splitters, we need to significantly amplify the signal received from the antennas on the roof. Should we do that with a simple wideband amplifier, the signal reaching many apartments would be very noisy. That is because there would be inevitable intermodulation in a high gain amplifier and many undesired spurious signals would be created.

No matter if this is the old analog technology or the modern contemporary digital communication, the solution is always the same: block unwanted interference signals and only then process what is left – your desired signal. And such anti-interference function is the main feature of the new headend offered by Antiference in the UK. It is designed to receive up to ten different DTT channels, filter them from unwanted "neighbors", amplify and then move them to other frequencies if desired. So, it is not for converting terrestrial or satellite TV to cable TV. This headend by Antiference is a chain link of a terrestrial distribution system. If you add a suitable transmitter and antenna at the output of this headend, you could convert it to a TV repeater retransmitting DTT channels on different frequencies.

Oh, and we are intentionally using the term DTT here, because this headend is designed for any digital channel with 7 or 8 MHz bandwidth and this means DVB-T/T2 as well as the Chinese DTMB standard. Other DTT modes like ATSC or ISDB-T are based on 6 MHz channel bandwidth and would not be suited for the Kingray headend by Antiference.

Antiference provided us with the KR-110 headend rack, the KLA-110 Launch Amplifier/Power Supply and three KCC-110 Channel Convertor/Processor units. Workmanship of all the components left absolutely nothing to be desired. Everything looked perfectly finished off. Antiference even attached a foiled paper with a channel plan listing channel numbers and corresponding frequencies for analog and digital channels. This is a nice accessory and it proves that the manufacturer really cares about the customer. The accompany-

1. 200 MHz part of the input spectrum. Channels 41, 45 and 46 carry DVB-T channels. The marker is placed on channel 46.

2. Full spectrum of the input signal. Except for the three channels of interest, many other analog and digital channels are present.

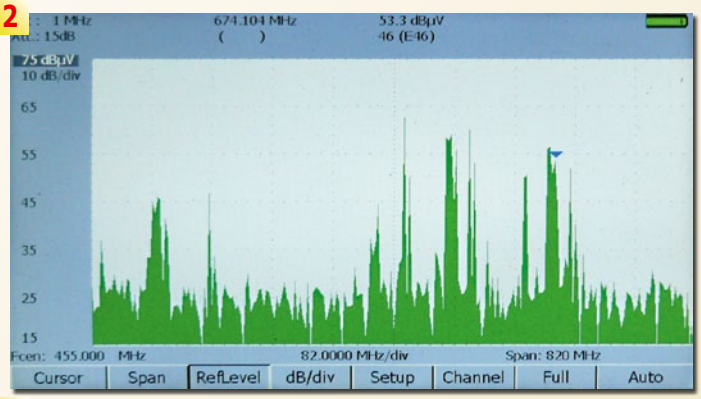
3. After passing the Antiference channels converters, the three input channels are moved to channel 50, 53 and 56. 200 Mhz of the spectrum is shown. Note how marginal the unwanted frequenices have become - they have been filtered out.

4. Full spectrum of the output. Except for the three channels, everything else is removed thanks to the very effective SAW filters.

5. This show the very good signal quality of channel 56 at the output.

6. The headend settings changed. The output channels are now adjacent on channel 52, 53 and 54. Despite that, their signal quality remains equally high.

2

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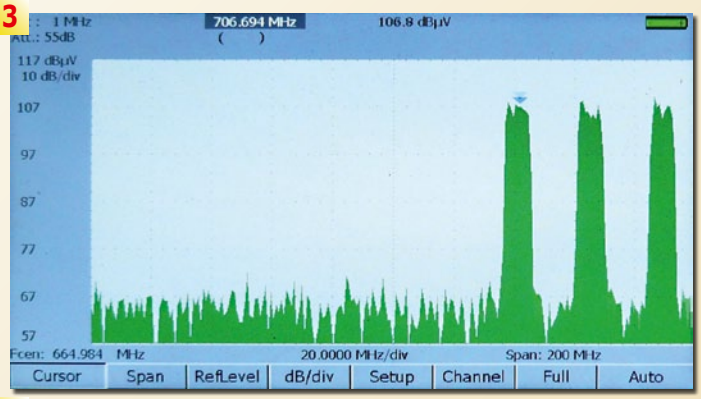


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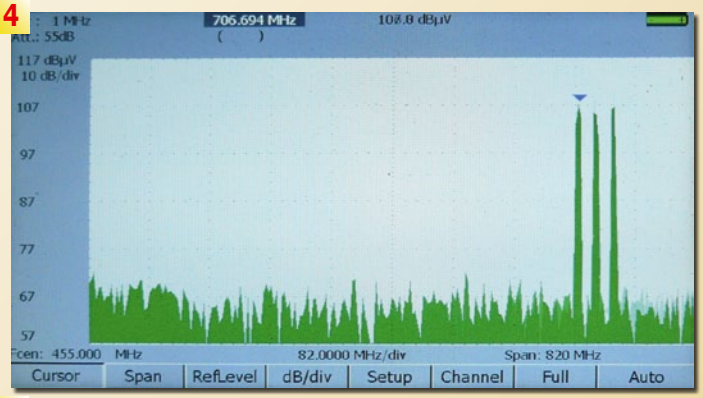


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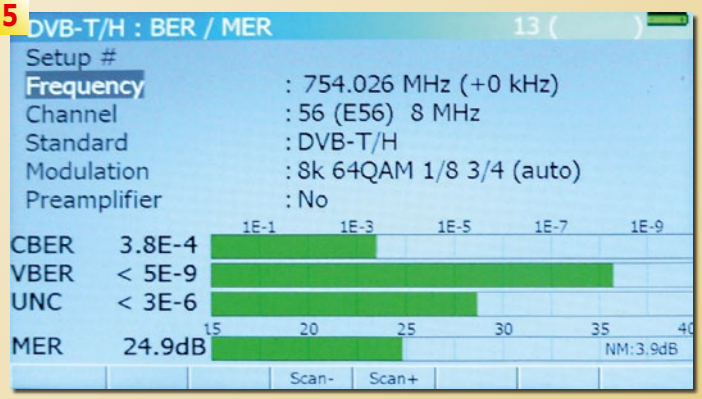


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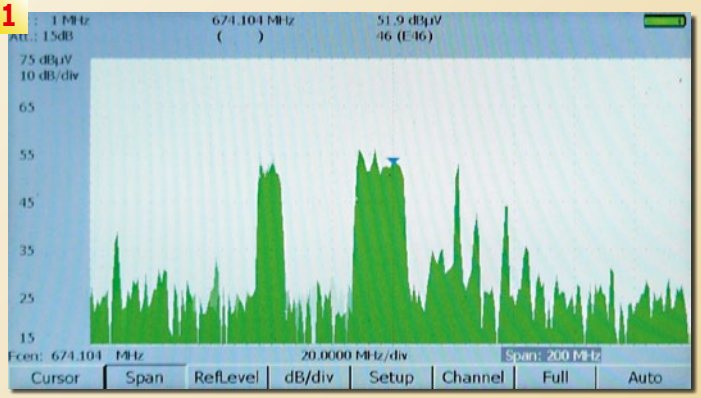


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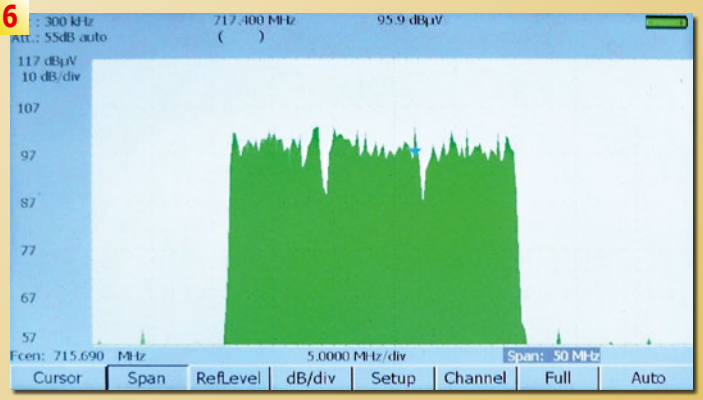


■ **Wall mount for the Antiference DTT headend**

ing documentation was also very well written, though we would recommend to re-write the process on how to connect to the unit on the network - we will address this again a bit later.

The KR-110 rack has been designed to be either installed in a 19" standard cabinet or mounted on a wall. Depending on your application, you are supposed to mount side support brackets in one or the other way – see our photographs. All the necessary nuts, bolts and washers were included in the package. Everything fitted perfectly and we assembled the KR-110 in a minute.

The main unit is the KLA-110. It should be installed exactly in the center of the rack. Only one bolt is needed to fasten it in the correct position. Three KC-100 Channel Convertors were the next to be installed. Another three bolts and everything was firmly attached to the rack. We decided to put one convertor to the left side of the main unit and two other on the right side. The maximum set up can contain five KC-100s on the right side and the other five on the left side of KLA-100. So, KR-100 can accommodate up to ten KC-100 Channel Convertors/ Processors.

Our next step was connecting all the units one to another. We used 5-wire power/data bus cables and the connectors located on the top panels to connect all the units in series. Every KCC-100 is delivered with one power/data bus cable. Now, when all three processors were connected to get the power supply and control data from KLA-110, we had to take care of distributing the RF input signal from KLA-100 to every KCC-100 and feed all RF outputs of the KCC-100s back to the main unit. We did that with short coaxial cables included in the set. As you can see in the photographs, the headend input and output is located in the KLA-100, no matter how many channel processors are installed.

Antiference provide plastic RF link support brackets to better fix mechanically RF links. They look like small plastic wrenches that should be coupled with two RF plugs in every link. Although this concept may sound proper, even a very small misalignment of the RF sockets in the units make the RF links with the brackets hard to install. We did not want to use excessive force and risk introducing mechanical stress to the connectors so we left most of the connectors without support brackets. Even without the brackets the plugs were firmly attached to the sockets and we were pretty sure one should not worry about their disconnection during normal operation.

You should install 75 ohm terminators on any unused RF inputs and outputs. Antiference do not include them in the set, because the number of required terminators depends on the arrangement of the channel

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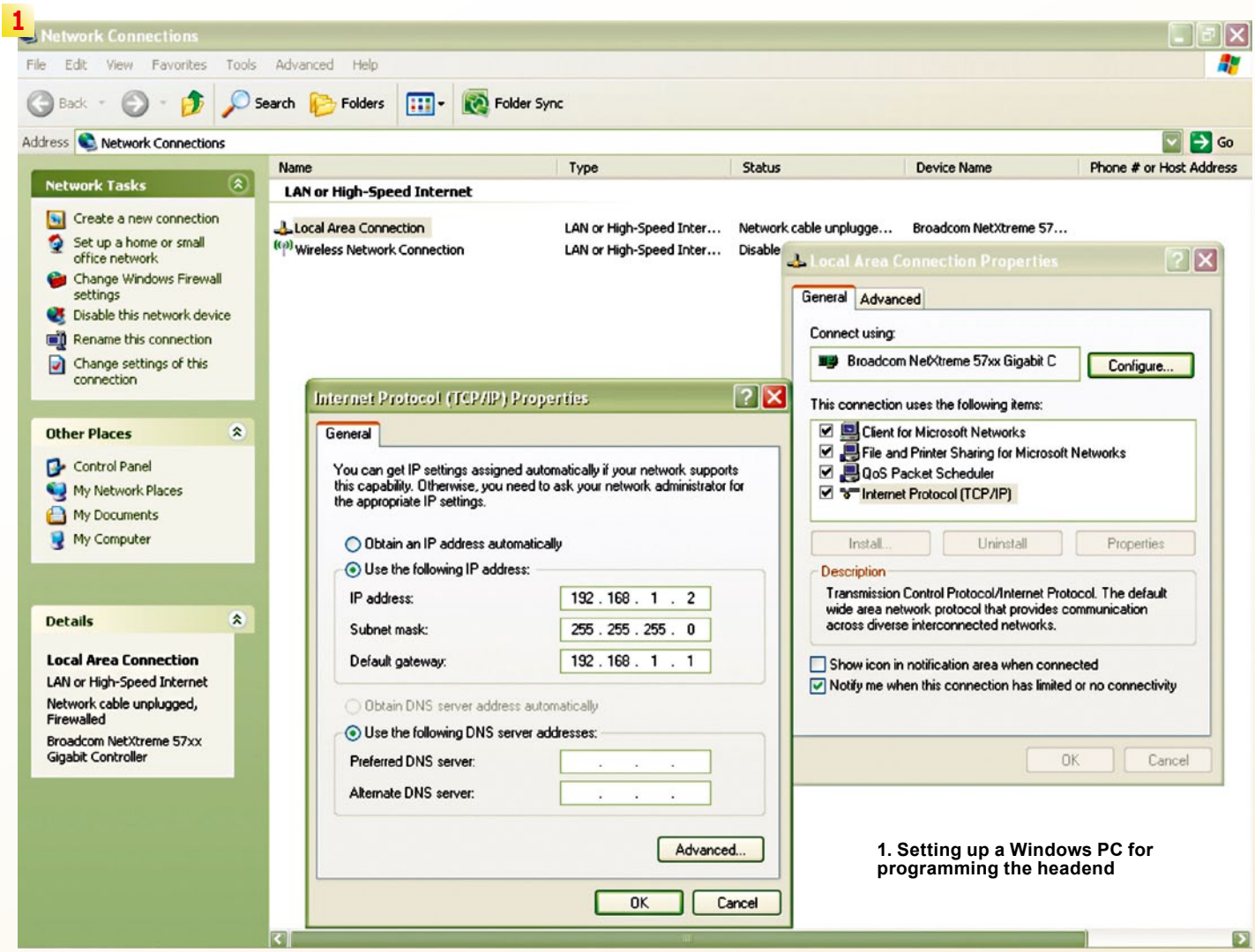


**1. Setting up a Windows PC for programming the headend**

processors in the rack. We used our own terminators. Finally, we connected the power lead (on the top) as well as an Ethernet cable on the front panel of the KLA-110. The only missing cables were the antenna input cable and the headend output cable. The set up was ready for programming.

Antiference's manual tells the reader that you should use a straight thru Ethernet lead and connect the KLA-100 with your laptop. You should then open any web browser in your PC and enter the address 192.168.1.1. A welcome web page generated by KLA-100 embedded web server should be displayed. In our test, we found it was a bit more to it: you need to be inside the same network as the KLA-100. How do you achieve this? Because not every TV installer is an expert in computer networks, here is what is needed (for Windows XP based PC):

- open Network Connections by right clicking on the network icon in the lower right part of the desktop of your PC or laptop
- right click Local Area Connection and choose Properties
- in LAN properties, highlight Internet Protocol (TCP/IP) and click on Properties
- select "Use the following IP address" what will automatically deselect "Obtain an IP address automatically"
- enter 192.168.1.2 in the "IP address"
- leave the proposed "subnet mask" unchanged (255.255.255.0)
- enter 192.168.1.1 in the "Default gateway"
- leave "Use the following DNS addresses' unfilled

The reason for this is that although the KLA-110 has a web server embedded, in its factory presets it has no DHCP protocol activated and this means you are supposed to define the IP address of your computer manually - what we have just described above.

However, after re-configuration, KLA-110 may be turned into a client device and then it can support DHCP protocol as a client. But in fact this is not so convenient in a larger network as it may sound. Because the addresses are

| Input | | | | | Output | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ch. | Freq. [MHz] | Power [dBµV] | C/N [dB] | MER [dB] | Ch. | Freq. [MHz] | Power [dBµV] | C/N [dB] | MER [dB] |
| 41 | 634 | 52.6 | 39.9 | 29.4 | 50 | 706 | 107.3 | 48.7 | 23.9 |
| 45 | 666 | 55.8 | 43.9 | 26.5 | 53 | 730 | 107.8 | 49.0 | 24 |
| 46 | 674 | 54.2 | 41.4 | 28.9 | 56 | 754 | 106.9 | 47.5 | 24.9 |

**Table 1.**

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| | |
|---|---|
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| DVB-S2 | DIGIPRO IIIS HD |
| DVB-T 1GB | DIGIPRO T MK2 |
| DVB-S/C | DIGIPRO SC COMBO |
| DVB-C | DIGIPRO C MAX |
| DVB-S 1GB | EXCEL-TV MK4 NIT |

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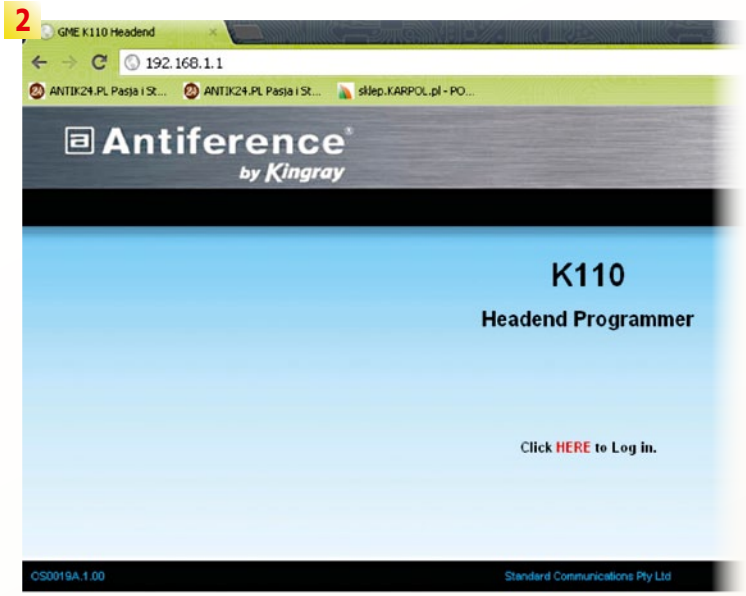
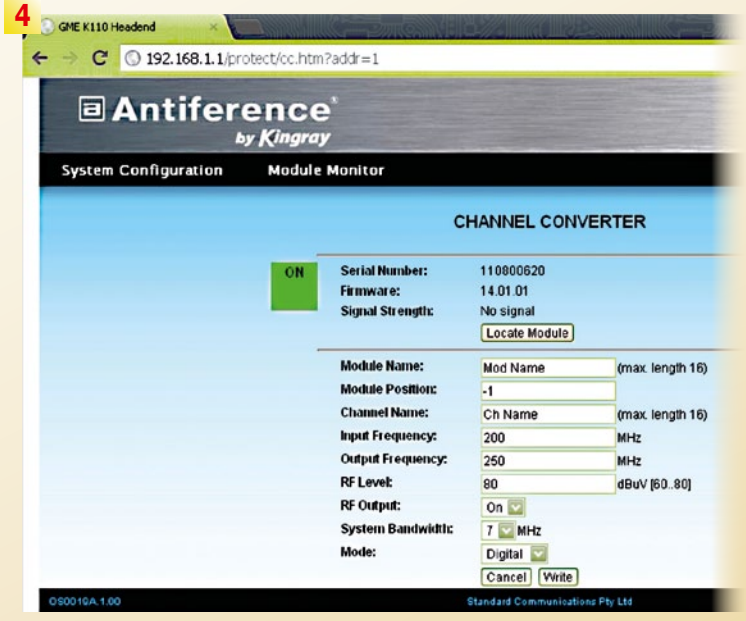
ALL PRODUCTS ARE AVAILABLE FROM YOUR LOCAL DISTRIBUTOR IN YOUR OWN LANGUAGE !








allocated dynamically each time you want to access the KLA-110 remotely, you must first find out what address it has at the very moment (by using a program scanning the network and telling you what devices occupy what addresses). So, in professional networks, you'd rather prefer to manually allocate the IP addresses for all the client devices and then you know for sure that at, say, 192.168.1.25 there is always your headend not your printer or something. If you set the network parameters manually, it is recommended to write down the new settings for future reference because the KLA-110 does not have any LCD to show you what the current settings are. Once the KLA-110 is properly set up in the network and you know its IP address you can reprogram it from anywhere else, as long as you can log into the network. This is a great feature of the Kingray headend as it allows maintainance from outside the actual installation point.

After we connected to it with our laptop, everything went very well. Login worked with the default user/password combination provided in the manual (admin/admin). All the screens displayed in our web browser looked exactly as in the manual and every setting took effect immediately after pressing the "Write" button on the web page. So, we decided to connect a real world signal to the headend.

We first examined the signal coming from our antenna and decided that three digital channels: 41, 45 and 46 will be the channels to be processed. They were on the following frequencies: 634 MHz, 666 MHz and 674 MHz respectively. We decided to move them all to new frequencies. We chose the output channels to be 50, 53 and 56. The following table lists the basic parameters of the input signals and the corresponding output signals and the results of our measurements. (Table 1.)

The combined gain of the KCC-110 Channel Processors and the KLA-110 Launch Amplifier gave more than 50 dB boost to each channel. Despite such a great amplification, carrier-to-noise (C/N) ratio did not degrade but even improved. The Modulation Error Ratio (MER) decreased by a few decibels but still the signal had quite a good noise margin. You can see a meter screenshot of the channel 56 measurement results.

We wanted to check if the signal would be equally good if we program the headend to use adjacent output channels. We chose 50, 51 and 52. The signal quality was practically the same: MER = 24.0, 24.0 and 24.5 respectively. So nothing prevents using adjacent channels when programming with the Antiference headend. The quality of the signals will not suffer.

It is important to note here the consequences of this excellent result. For one, it shows the ultra-steep cut-off double mode SAW filters Antiference is using. SAW stands for 'Surface Acoustic Wave' and means that SAW filters use piezoelectric crystals or ceramics instead of the classical inductors and capacitors

**2. KLA-110 initial web page displayed right after entering 192.168.1.1 in the web browser IP address field**

**3. After logging in, the headend has the default factory settings. By pressing "Settings", you enter a page in which you can configure either the KLA-110 Launch Amplifier or one of the KCC-110 Channel Converter**

**4. The default settings of a KCC-110 Channel Converter**

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## The **New** Generation
## Fibre Integrated Reception System

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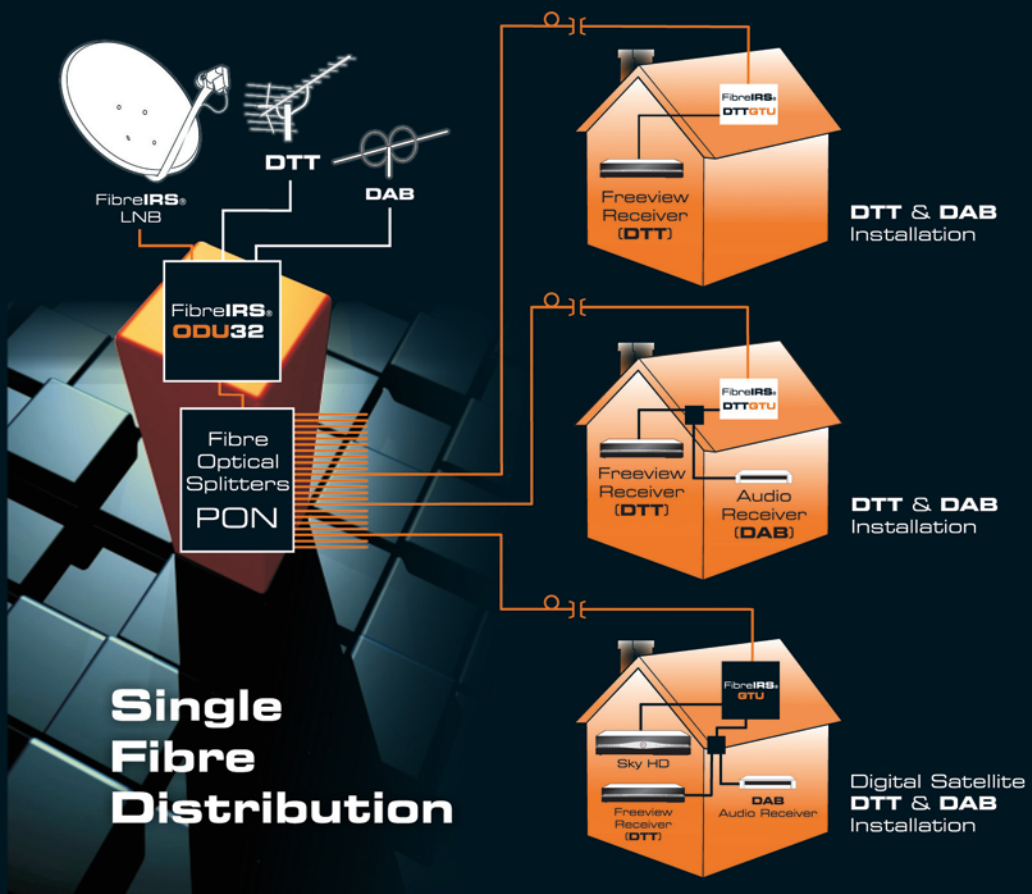
**Satellite IF, DTT and DAB over a Single Fibre Optic Network.**

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- Compatible with all DTT/Freeview™ STBs
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*Compared with existing Fibre Systems

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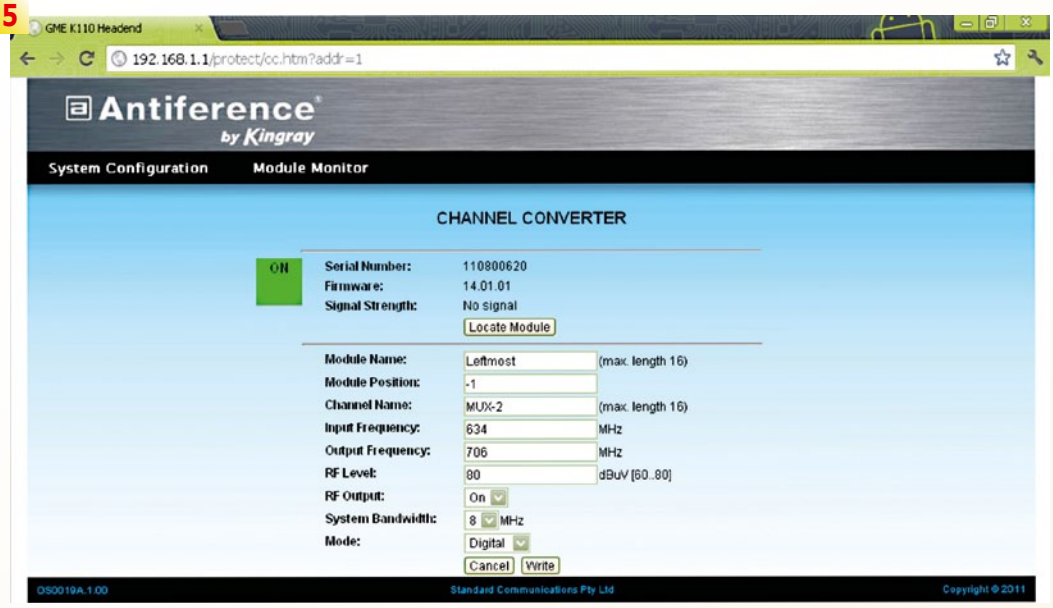
completing the picture

normally used. This in turn means that such SAW filters can work up to a couple of gigahertz while maintaining perfect stability with a high quality factor. The result then is also a superb lockout of any unwanted signals and here as of lately LTE signals spring to mind. The Kingray headends by Antiference are really safe against receiving such unwanted signals at nearby frequencies.

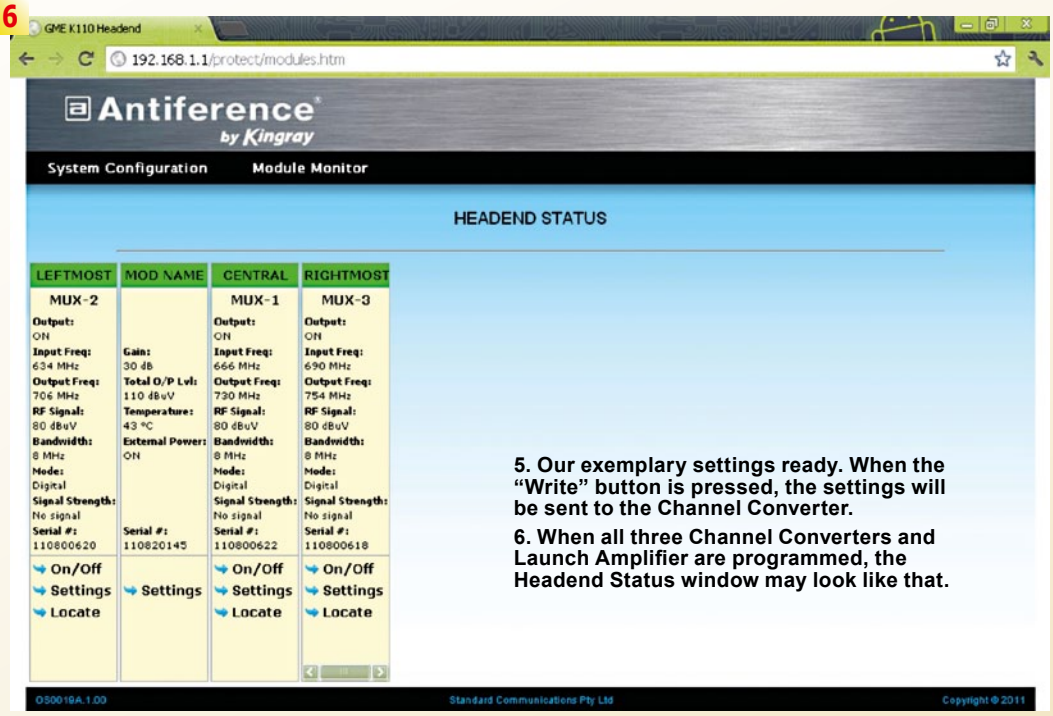
Then we experimented with the signal gain settings to see if it had any impact on signal quality. No matter if the output signal was high or low, signal quality remained practically the same. During these tests we also confirmed that the headend gain settings were very well calibrated. For example, when we lowered the KLA-110 Launch Amplifier gain from 45 dB to 14 dB, the output fell from 122.9 dBµV to 92.8 dBµV. So a change of 31 dB in the Antiference settings caused 30.1 dB change in the output measured by our signal analyzer. When we changed the output power of the KCC-110 Channel Convertor from 80 dBµV to 60 dBµV, the measured output changed from 92.8 dBµV to 73.3 dBµV, i.e. by 19.5 dB. This is an amazing exactness!

To sum it up, Antiference surprised us not only with exceptional workmanship but also with a very good performance on adjacent channels and an excellent calibration of the gain setting. Whatever values you choose, you will exactly get these at the output. The Kingay KLA-110 by Antiference blocks all unwanted signals and provides your cable system with a very clean signal for each channel.

5




6




**5. Our exemplary settings ready. When the "Write" button is pressed, the settings will be sent to the Channel Converter.**

**6. When all three Channel Converters and Launch Amplifier are programmed, the Headend Status window may look like that.**

## Expert Opinion

**Jacek Pawlowski**
TELE-satellite
Test Center
Poland

**+**
- **Outstanding workmanship**
- **Very easy programming**
- **Wide gain adjustment and excellent calibration of gain settings**
- **Using adjacent output channels does not spoil system performance**

**–**
- **Initial connection to the PC should be explained in more detail**

## TECHNICAL DATA

| | |
|---|---|
| **Manufacturer** | Antiference, UK |
| **Fax** | +44-1675-463478 |
| **E-mail** | sales@antiference.co.uk |
| **Web page** | www.antiference.co.uk |
| **Model** | KLA-110 Launch Amplifier & KCC-110 Channel Convertor/Processor |
| **Function** | Filtering, amplifying and converting DTT channels to new frequencies |
| **Input frequency range** | 44 – 862 MHz |
| **Output frequency range** | 44 – 862 MHz |
| **Channel bandwidth** | 7/8 MHz |
| **Input level range** | 65 – 95 dBµV |
| **Output level adjustment (KCC-110)** | 60 – 80 dBµV |
| **Gain adjustment (KLA-110)** | 14 – 45 dB |
| **Output S/N and spurious** | > 55 dB |
| **Noise figure** | < 2 dB |
| **Power supply** | 110 – 240 V AC, 50/60 Hz |

# Tsinghwa
# GT-278


DTMB

## The Best DTMB Receiver for High Definition

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- With PVR function
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- Excellent multimedia functions
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- Supported standards: DTMB
- 换台快捷
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USB HDMI HDTV

# 地面数字电视在深圳和香港是免费播出

# How to Upgrade the Desing NDS3975 Firmware

The NDS3975 is a very complex device and for the more resource hungry tasks like MPEG4 decoding it features a separate hardware board, which uses a FPGA ("field-programmable gate array"). This is doubtless the best way to implement such functionality, since it allows reprogramming the FPGA – the equivalent to exchanging the chip.

Because of this, there are two separate firmware upgrades for the NDS3975: one is called a SW-upgrade and corresponds to the regular firmware of the receiver, while the other, called HW-upgrade, upgrades the FPGA.

On top of this, the NDS3975 can be upgraded in different ways, which comes in handy when many such devices need to be flashed in one go or when this job needs to be carried out remotely, without physical access. The following table summarizes the different possibilities.

| Upgrade Type | File Extension | NMS port Using RJ45 cable | USB Disk | ASI/IP INPUT using TS Player or IRD(CI) Sender | JTAG using USB-Blaster cable |
|---|---|---|---|---|---|
| SW | *.bin | Yes | - | - | - |
| SW | *.upg | - | Yes | - | - |
| SW | *.ts | - | - | Yes | - |
| HW | *.jic | - | - | - | Yes |
| HW | *.pof | - | - | - | Yes |
| HW | *.hw | Yes | - | - | - |

We went the easy road and used the NetWorkUpdate tool, which was provided with the firmware files. This is the most convenient way to update the NDS 3975, since it can be done remotely using the network. We did the update with SW-firmware version v2.16, our equipment had v2.10 installed.

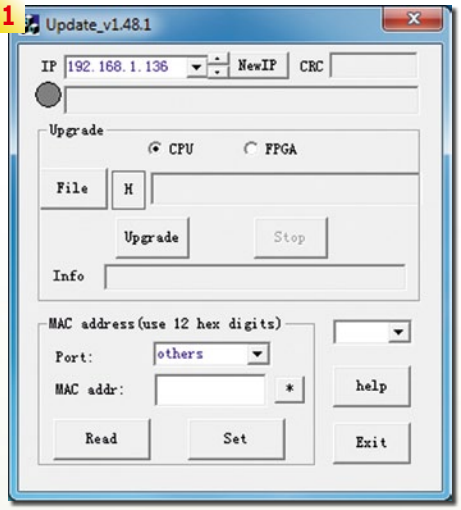
After rebooting the IRD, we verified the installed firmware version using menu "8 VERSION(SNMP)" and indeed, it showed "SW 02|2.16 HW 1.06".

The procedure to do the HW-upgrade is exactly the same, one has just to check the FPGA option within the NetWorkUpdate tool instead of leaving it selected to CPU. The file is uploaded to the IRD and then flashed. It is very reassuring to see feedback of this procedure and after a short while the tool informs about the successful update. The receiver can now be rebooted from within the NetWorkUpdate tool, allowing for a fully remote operation.

Still, we got curious about the JTAG HW-upgrade option and opened the NDS3975. The first thing we noticed was how well designed the board is and the exceptional quality of the manufacturing process. Immediately we localized the FPGA-board with its JTAG-connector. The PCB clearly labels this port as being the JTAG port. It is very reassuring to know that Desing offers its end-users to upgrade the FPGA-board this way, since a failed HW-upgrade would otherwise render this remarkable device useless. Thumbs up!

No doubt, Desing did think this one through and provides excellent support and update possibilities. Being able to quickly update whole batches of IRDs without physically touching them is the most productive way to keep all IRDs updated. Add to this the fact that the IRD keeps on working during the update process and can be rebooted only when it is most suitable and you will conclude that you are dealing with a premium product. We specially liked the fact, that there is even a JTAG way to update the HW-firmware.

1

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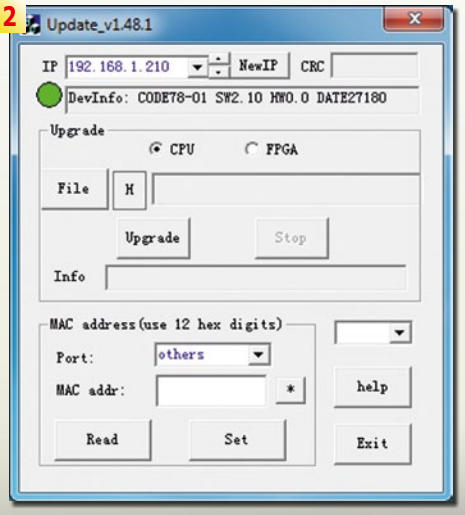




■ In TELE-audiovision 01-02/2013 we reported on the NDS3975, a professional IRD manufactured by DEXIN. In this report we describe how to upgrade its Firmware.

www.TELE-audiovision.com/13/01/desing

## SW Update

1. Start the NetWorkUpdate tool (Update_ v1.48.1).

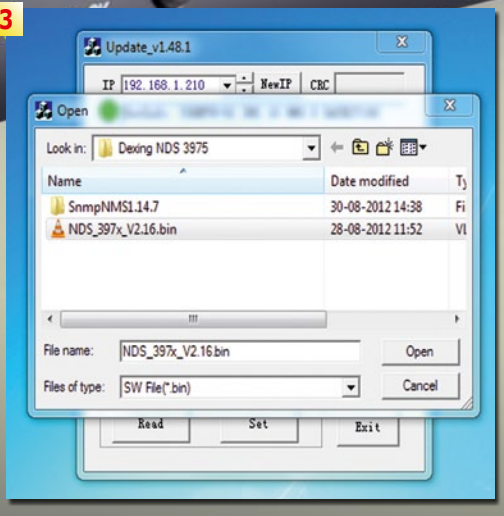
2. Fill in the correct IP address of the NDS 3975.

3. Select the firmware file. Notice that it has a *.bin file extension.

4. During the flashing process, the progress is shown on the window. It is important to not interrupt this procedure. Interestingly, the IRD continues to work normally during this process. This means that the upgrade can be done during regular working hours and the reboot done at a more convenient time.

5. The message “Update successful!” means that the flashing has been completed and that the IRD can be rebooted to start the new firmware version.


3

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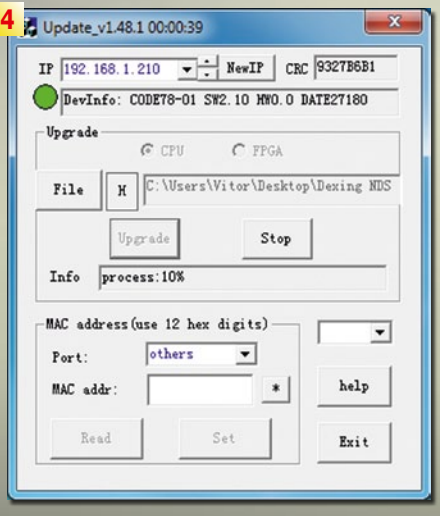


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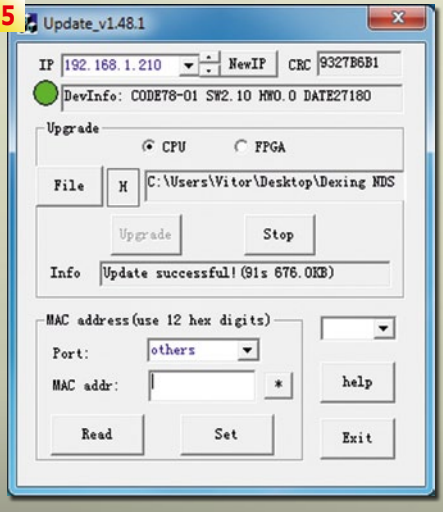
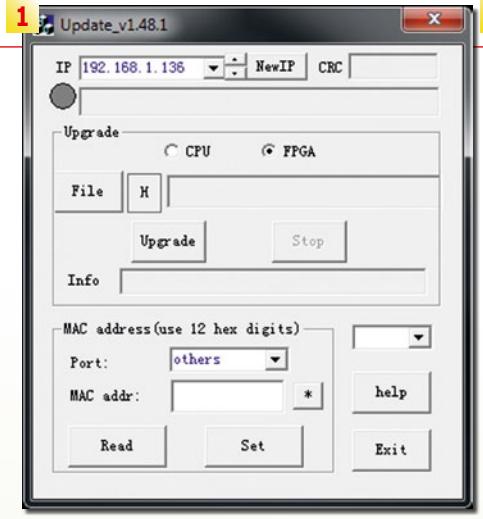
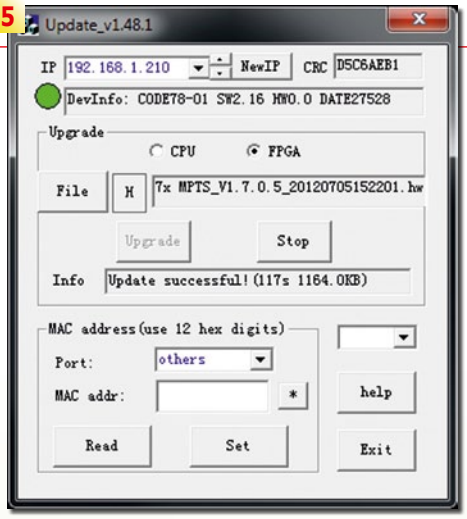
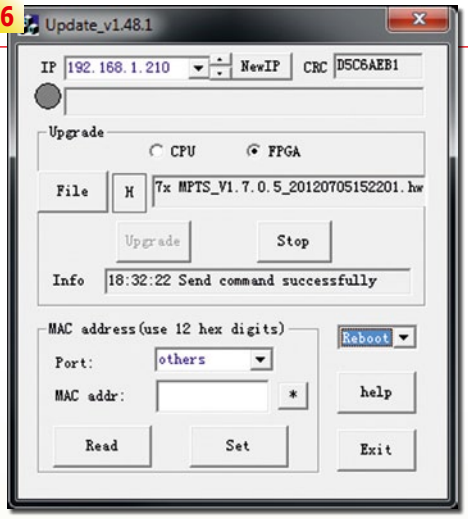
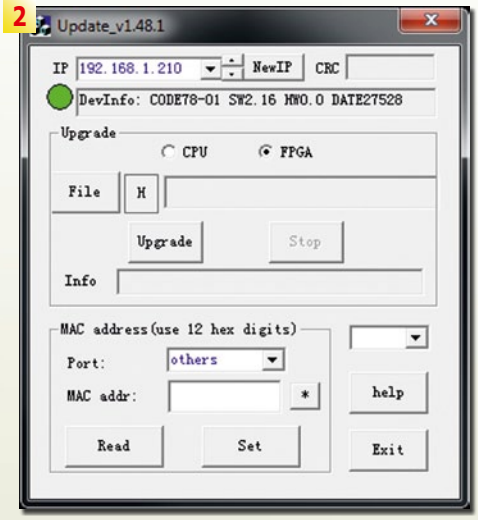
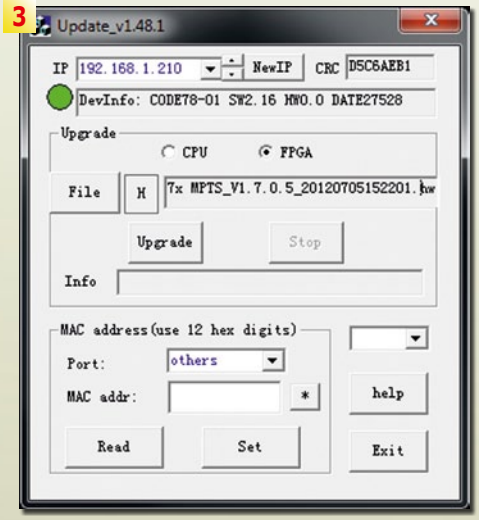


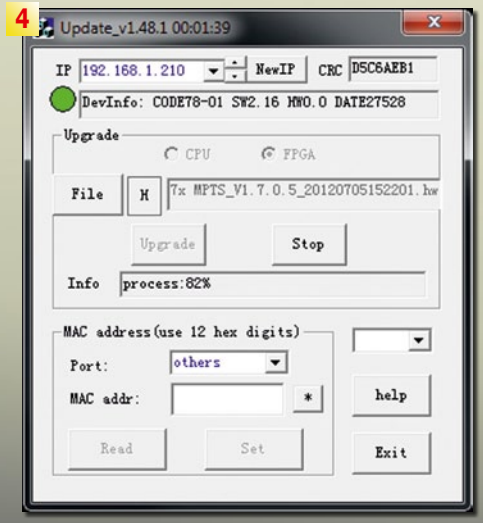




## HW Update

**1. The NetWorkUpdate tool can be used for the HW-upgrade, too. Just make sure that the FPGA option is now selected.**

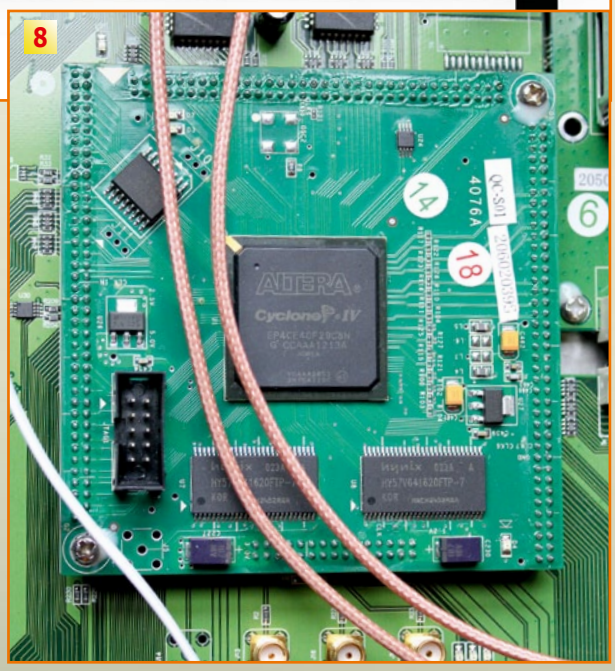
**2. Again, fill in the correct IP address of the NDS 3975.**

**3. The firmware file for the HP-upgrade has to have a *.hw file.**

**4. Press the Upgrade button to start the process. The tool keeps the user informed about the progress – no doubts about what is happening!**

**5. Successful upgrade!**

**6. The IRD needs to be rebooted in order to boot the new firmware. This can be done remotely with update tool at a convenient time. During the upgrade, the IRD remains fully operational.**




## JTAG

**7. Inside view of the NDS3975 – excellent build quality and structured layout.**

**8. The piggy-back FPGA board featuring its own JTAG connector, clearly labelled on the PCB and compatible with the regular USB-Blaster cable.**

# Highlights

www.spaun.com Quality made in Germany

***Compact Headend 8 / 16 x DVB-S(2) into QAM***
*BluBox 8 and BluBox 16*

- 8 / 16 x DVB-S(2) (QPSK/8PSK) into DVB-C (QAM)
- For the reception of 60/120 TV programs SD/HD and 30/60 Radio programs
- Compact dimensions and high energy efficiency
- LNB control with 14/18 V + 22 kHz or DiSEqC
- Configuration via LAN/IP
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- Two individual input ports




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*SPAROS SAT HD*

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- MPEG4-display and measuring
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- DiSEqC control
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- Robust, impact-resistant housing
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***Optical Transmitter***
*SOTx 1310607 NF*

- Frequency range of 47 ... 2200 MHz
- Laser output power: +6 dBm
- Quattro- and QUAD-LNB support

***Optical Receiver***
*SORx 1310607 NF and SORx 1310607/1 NF*

- 4-way / 1-way receiver in a compact housing
- Remote powerable through one coaxial output


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# Открывая секреты AZBox ME Super Box


- ***обновление прошивки сделано легко***
- ***благодаря поддержке OpenPLI разработчики по всему миру работают на различных версиях прошивки***
- ***новая базовая версия открывает новые возможности***
- ***кнопка восстановления AZBox – это ваша***
- ***«страховочная сетка»: если вдруг что-то пойдет не так, вы всегда можете вернуться к изначально установленной прошивке***

# Часть 4: Прошивка

# Firmware for the AZBox ME and MiniMe

**Vitor Martins Augusto**

There is a large and very active community of software developers for the AZBox, which means owners of any variant of the AZBox range are blessed with a huge variety of different firmware versions to try out. Yet, many questions beg for an answer before we start tinkering with firmware. Can any firmware be used on any AZBox model? What's the difference between different firmware versions in the first place? Which special functions do they offer? This part of our AZBox series deals with all those topics and also discusses difficulties you may encounter with firmware experiments. To start with, please remember that you cannot just select any firmware for your AZBox and expect it to work like a charm. Why is that?

Well, even though the AZBox ME can store up to three independent firmware versions in its flash memory (two versions for the AZBox MiniMe), all of them have to share one joint kernel. So what's all that talk about firmware and kernel? Keep reading to find out!

Each Linux operating system is made up of three distinct components: boot loader, kernel and user interface. Every time a Linux-based receiver like the AZBox is turned on, the boot loader is launched at first. Its main jobs are checking and initialising the hardware so that the kernel can then be loaded. This so-called kernel is the actual centrepiece of the operating system and it features all vital functions that breathe life into the computer or – as in our case – the receiver. One thing the kernel does not provide, however, is a direct interface between user and machine. This is the job of the operating system. To complicate things further, the name Linux actually only refers to the kernel, even though the different Linux distributions sharing the same kernel are also called that way…

Let's try now to clear things up a little. The kernel is developed completely independently from the Linux distributions and from time to time new kernel versions are made available for Linux receivers. Yet, these are of no use to owners of those receivers until developers of new firmware distributions use the new kernel as the core of their firmware. What's the reason for new kernels in the first place?

The same as for any updated piece of software – new functions and bug fixes. As far as the AZBox is concerned, how-

## Update

**1. The boot loader menu for firmware updates starts automatically when the receiver ist started with an inserted USB memory that contains a valid firmware update.**

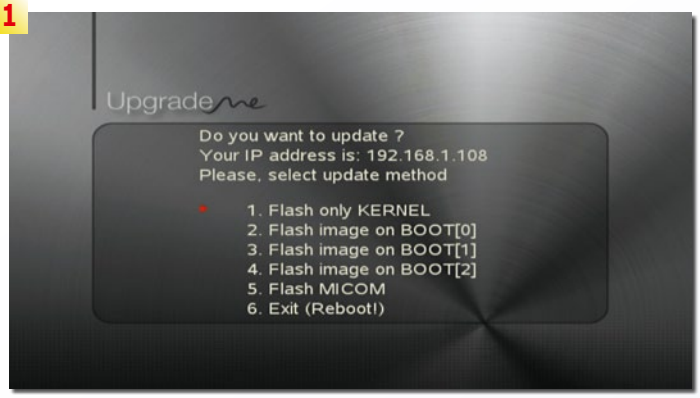
**2. The firmware update normally contains a kernel and the operating system. It is possible to just update the kernel.**

**3. Never turn off the receiver during a flashing process. But you can relax – the AZbox Me and MiniMe have a recovery function. If the flashing is interrupted (i.e. due to a power failure), you can just boot a recovery image!**

**4. Make sure to get the right file…**

**5. … and this time, do not interrupt the process, otherwise you will not be able to use the remote controller.**

1

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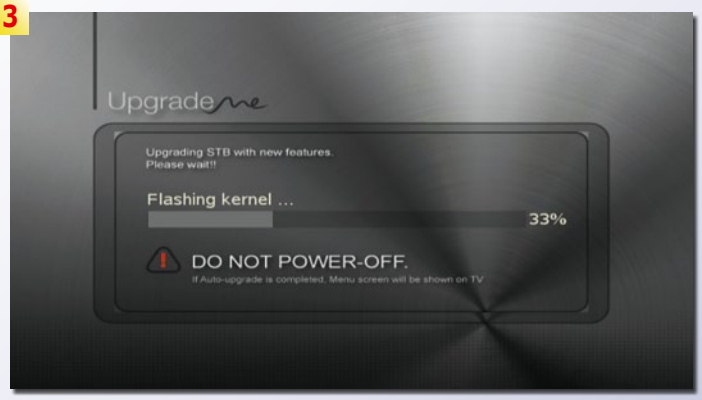


4


5

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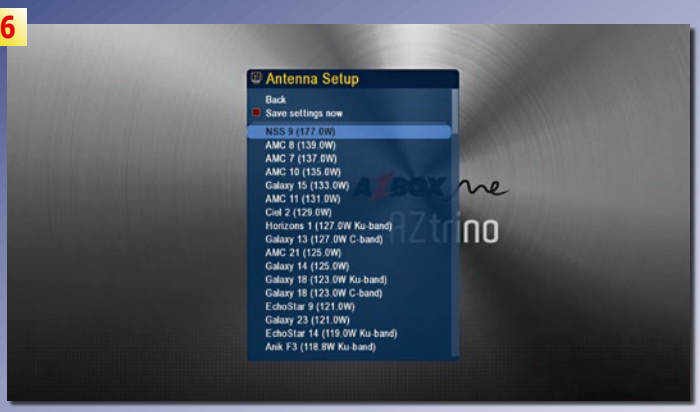







## AZtrino

**6. The Canadian AZtrino version only includes satellites covering North-America!**

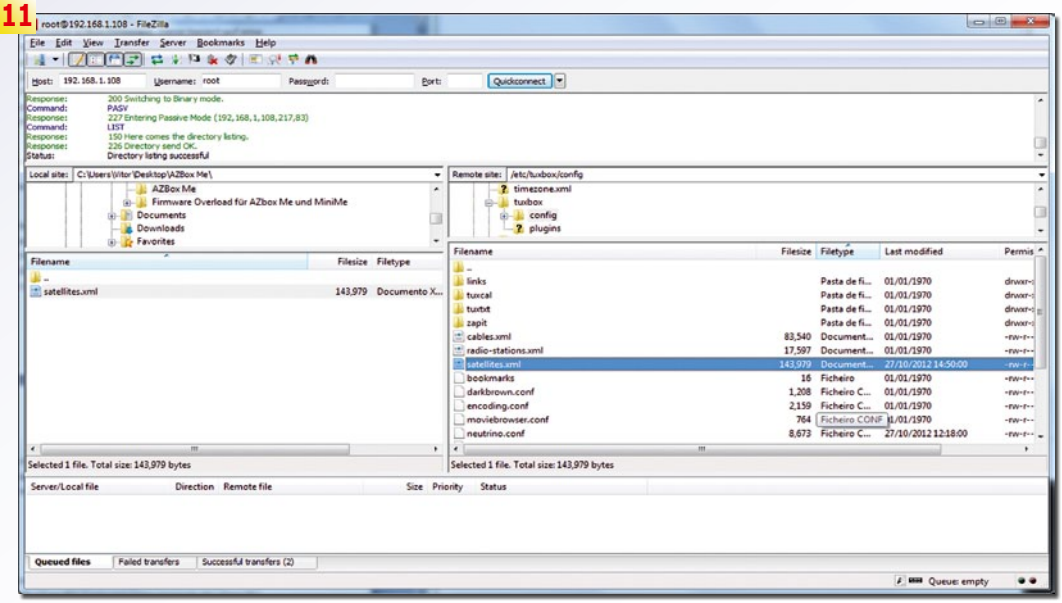
**7. Version v1.85 features a fully implemented blind scan, which is why this firmware is so popular.**

**8. After exchanging the satellites.xml file with one for European markets, the search will include satellites of this region.**

**9. The GUI presents itself plain and simple, yet no information is missing**

**10. Finally, with AZtrino v2.0RC2 the Stream Information screen is working as expected: the received signal is displayed over time – ideal for long term signal monitoring.**

**11. How to exchange the satellites.xml file? This picture says it all.**




ever, there is another piece of advice you must always heed: All firmware versions that are stored in the flash memory at the same time must share the same kernel, which in turn means all three firmware distributions (two for the MiniMe) must have been developed for exactly the same kernel.

If we look at an actual receiver now, we find that it comes with a main processor and the required firmware stored in the flash memory, but also with an additional processor-controlled circuit board that is called front processor. As the name somewhat implies, its job is to receive and process infrared commands sent from the remote control as well as to control the receiver's display and manage the standby mode of the box. In order to reduce power consumption, the front processor is capable of switching off the entire receiver and then monitors whether the power switch is pressed or a pre-programmed timer event takes place, which needs to be recorded, for example. In such a case the front processor will switch on the receiver again.

The front processor comes with a flash memory of its own which also holds corresponding firmware. In general, this specific firmware hardly ever needs to be updated, even though there might be instances when the manufacturer wants to implement new

functions here as well or has to fix a software bug. In the AZBox ME this front processor is called MICOM, and new firmware version 2.0 for this processor was released on 13 September 2012.

This new version resolves an issue with automatic switch-on, so that it is no longer required to press the power button on the remote control or on the receiver itself after using the mechanical power switch on the back panel of the box. In addition, it is now possible to also use the button on the receiver to change into and out of the standby mode. These two fixes may not sound like a big deal, but they nonetheless vastly enhance the AZBox user-experience. In a word, if you own an AZBox we strongly recommend going for this improved firmware version.

There are several ways to initiate a firmware update for the AZBox ME and MiniMe. One is to switch on the receiver while keeping the VOL+ button on the remote control pressed. Next, you can key in the receiver's IP address in the address line of your browser on the PC. Keep an eye on the display of the AZBox ME, which will show the receiver's IP address (for the AZBox MiniMe you might have to look it up in the DHCP list of the router). Shortly after, the browser will show the website of the boot loader which allows you to select your preferred memory position.

Next, you select the firmware file with the *.img extension and tell the receiver whether or not you want it to automatically re-boot after flashing. You can of course opt to install more than one parallel firmware versions, and in that case you should not select the automatic re-boot option so that you can return to the boot loader menu after flashing a firmware version in order to repeat the same procedure for the second (and/or third) firmware.

Alternatively, you may want to use a USB memory for installing new firmware to the AZBox ME and MiniMe. Simply save the firmware files onto the USB memory, plug it into the USB interface of the receiver and re-start the box. The boot loader will automatically detect the memory with the new firmware files and – provided the box runs on kernel version 3.3.1 or above – a special flash menu will be launched which allows you to select your preferred memory position. In addition, it is also possible to update the MICOM front processor, and we did just that by installing the MICOM v2 firmware without further ado and without any troubles whatsoever. The only thing you have to make sure is that you select the MICOM version that is developed for your particular receiver. The MICOM v2 firmware for the AZBox ME will not work with the AZBox HD, for example.

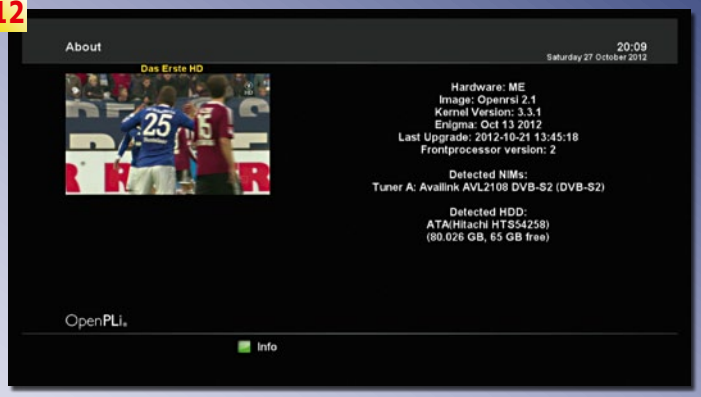
If your receiver has an older kernel version (below 3.3.1) installed, the flash menu will not pop up automatically. Instead, you have to observe the display on your receiver. Another point worth mentioning is that the file format of the firmware is different for USB updates than for browser updates. While an *.img file is required for browser updates, you need a USB-compatible format for USB updates, which consists of three individual files:

- Image0.jffs2
- Update.ext
- Zbimage-linux-xload

The files always have the same name, irrespective of the firmware version, but you have to be careful: The name of the first file (Image0.jffs2) must be adjusted to reflect the desired memory position. For example, if you want a specific firmware version to be saved at position 2, you have to change the name of the first file into 'Image2.jffs2'. Not a big deal, but one of great importance!

Remember: Right after switching on the AZBox ME or MiniMe or after resetting the receiver (by pressing the power button on the receiver for five seconds) it is possible to select the desired flash memory position with the firmware version you would like to run. It may feel a bit awkward at first to find the right moment for pressing 0, 1 or 2 (only 0 and 1 for the MiniMe) but after a couple of tries you get the knack of it: Simply wait a few seconds after switching on the receiver and then keep the appropriate button pressed until you can see some progress

12

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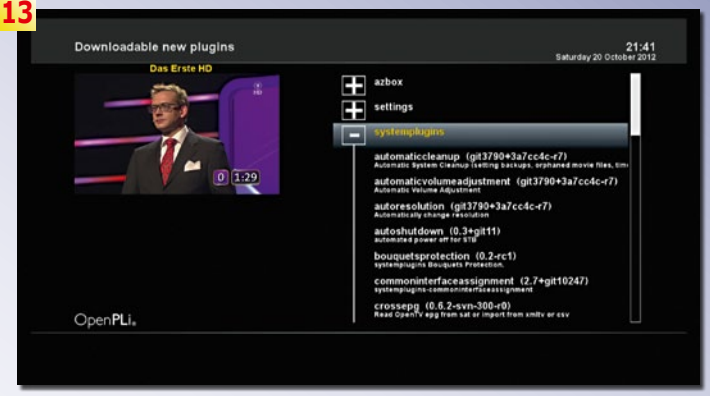


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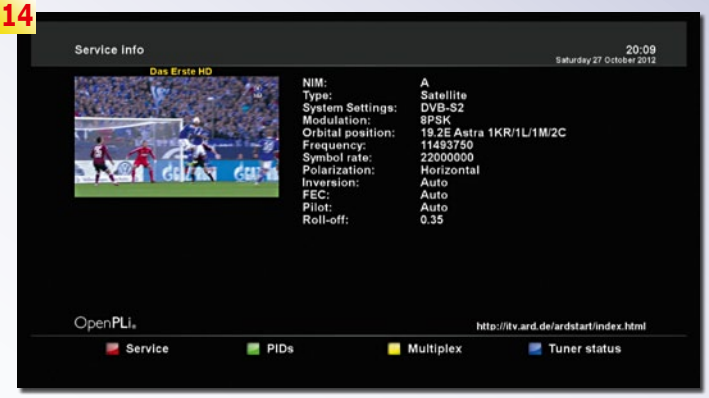



15

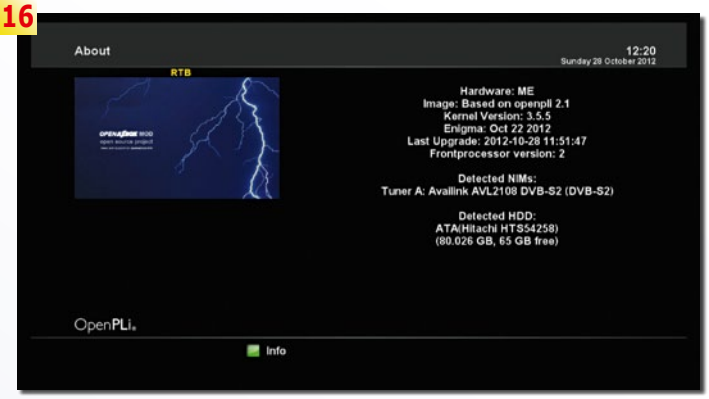

## OpenRSI

**12. About screen of OpenRSI – notice the kernel version 3.3.1**

**13. Lots of Plugins can be installed directly from the receiver through the internet.**

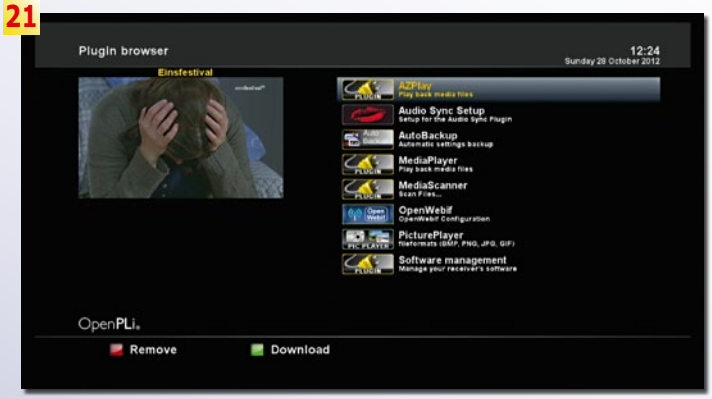
**14. This Linux firmware is very complete and user friendly and even the default skin looks great.**

**15. An one annoying bug was fixed, too. Finally it is possible to call the videotext using the TXT-button on the remote control**









on the screen. The AZBox ME shows the selected memory position on the display as well and once your choice appears on it you may safely release the button on the remote.

So which firmware version is worth giving a try? We recommend AZtrino v1.6 (Mini-Me) / v1.7 (ME).

This is the official AZBox firmware. AZtrino is based on a user interface that is radically different from all other firmware versions. While you may be underwhelmed by its visual appearance at first, you will definitely begin to appreciate its benefits after a short period of familiarisation. It is very streamlined and straightforward and even feels more responsive than other firmware options. It goes without saying that it offers all relevant functions and features such as blind scan, media player and so on. For the AZBox ME you should choose version 1.7, while for the MiniMe version 1.6 is required.

The Canadian distributor of the AZBox ME offers a firmware version for North America (versions 1.77, 1.82 and 1.85) which is slightly more advanced and hence also runs a tad more reliably. DXers, in particular, prefer that firmware thanks to its enhanced blind scan function. While users in other countries are of course free to install that firmware as well, they should make a point of saving a backup of all settings beforehand, since this US firmware only includes satellite positions that can be received

## OAM

**16. About screen of OAM, featuring the brand new kernel 3.5.5 – unfortunately you cannot use this firmware in parallel with the other kernel v3.3.1 based firmware images. That will certainly change when all teams release their v3.5.5 based firmware versions.**

**17. In this firmware, the media player has been replaced by a custom player called AZPlay.**

**18. AZPlay feels a lot more integrated in the firmware.**

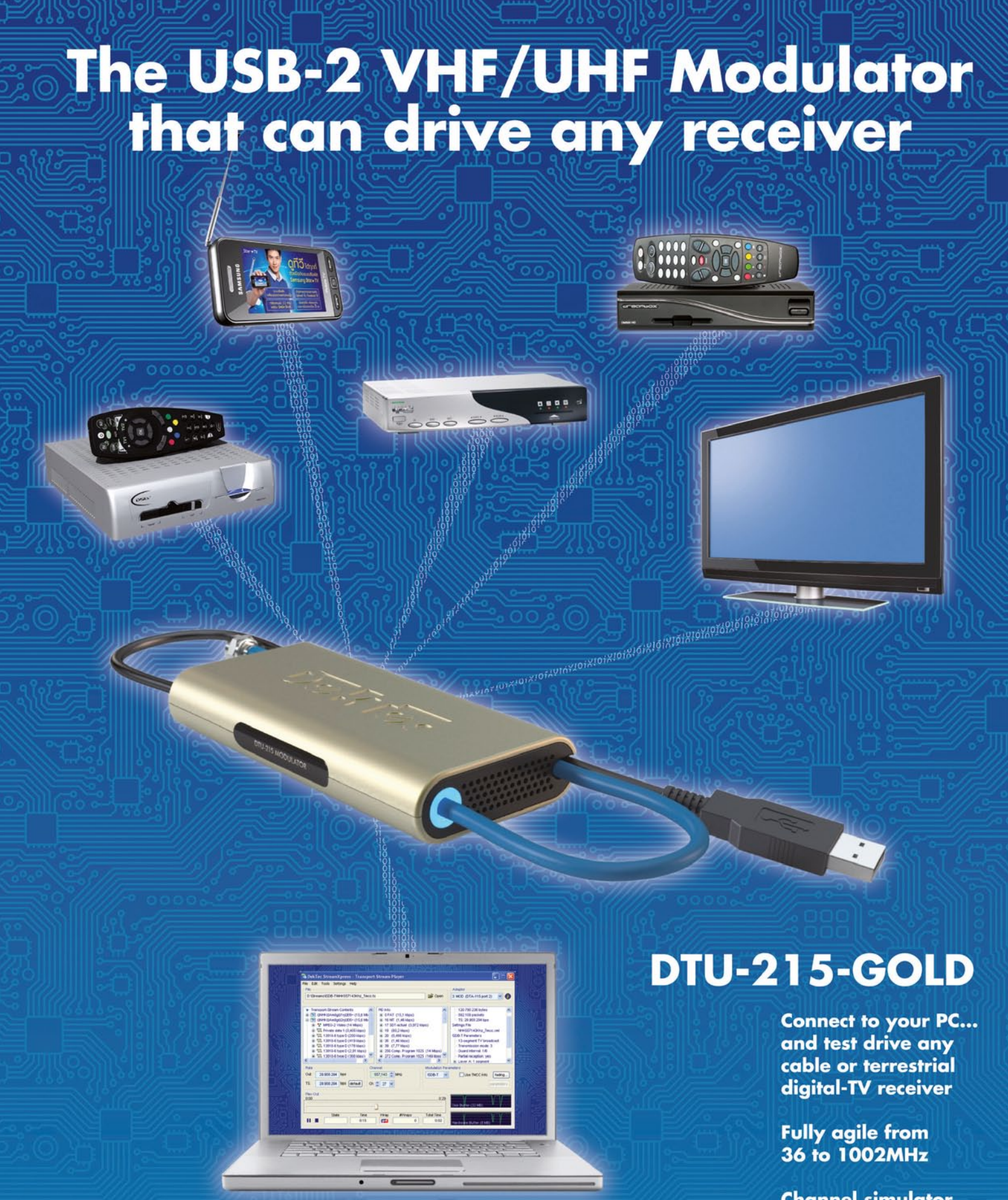
**19. And naturally it supports subtitles, which can be configured to suit the individual requirements.**

**20. As usual with OpenPLI-based firmware releases, the GUI is easy to use and features all possible functions.**

**21. A few Plugins are pre-installed and many more can be installed. Since this is a pre-release, the plug-in servers are not online, so the user must transfer the Plugins himself, using FTP.**

**22. Thumbs up for this cool plugin, called "Satfinder": finally bars that are big enough to be read from distance.**

# The USB-2 VHF/UHF Modulator that can drive any receiver




## DTU-215-GOLD

**Connect to your PC... and test drive any cable or terrestrial digital-TV receiver**

**Fully agile from 36 to 1002MHz**

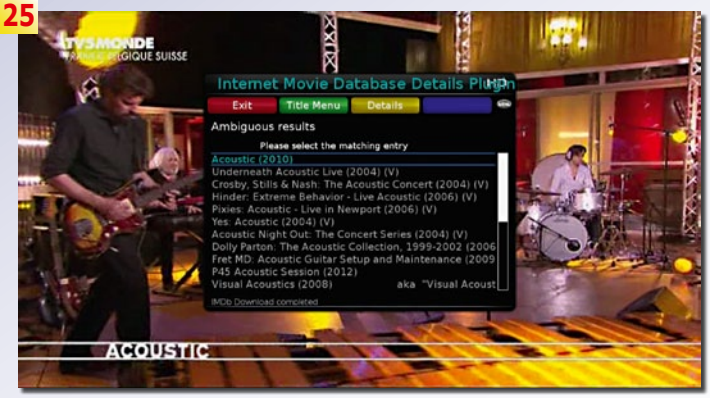
**Channel simulator included**

DekTec's USB modulator DTU-215-GOLD is an option-packed compact modulator that can cope with any cable or terrestrial modulation standard used throughout the world, including DVB-T2, DVB-C2 and ISDB-T. The modulator comes with streamer software that can run on a PC or laptop. The RF output of the modulator can be connected directly to the antenna input of a digital-TV receiver. As it is powered from the USB-2 bus, no external power adapter is required. This modulator is the ideal tool for demonstrations, research and development and to test drive setup boxes and decoders. For more information visit our website where you also will find our local resellers worldwide.

DekTec

www.dektec.com








in North America. How do you do that?

With an FTP client you need to copy the 'satellites.xm' file from the /etc/tuxbox/config directory of your receiver to your PC and after flashing firmware version 1.85 you copy it back to the original directory of the receiver. This is an absolute must, since otherwise a blind scan will not work. Please also note that this firmware is only compatible with the AZBox ME, not the MiniMe. We tried it out on both, but the screen stayed dark with the MiniMe.

All official AZtrino firmware versions still use the old v2.6.22 kernel. So if you want to use the current OpenRSI v2.1 simultaneously there is only one way out of this dilemma: Use the unofficial beta version called AZtrino v2.0 RC2 which is already available from many Internet forums and which uses the new v3.3.1 kernel.

We also loved the new boot loader: When you plug in a USB memory stick with the new firmware and re-boot the receiver a dedicated boot loader menu appears on the TV screen which greatly facilitates firmware updates. Keeping your eyes glued to the receiver display and pressing a button at exactly the right moment are now things of the past. In general, we found this firmware to be an excellent choice and one thing we particularly appreciated is the fact that you can now call up a visual presentation of all reception parameters over a longer period of time.

If you're not a fan of AZtrino or if you want to make full use of the huge offering of skins, settings and extensions that are available on the Internet you may want to look at the OpenRSI firmware, which is an offspring of the OpenPLI firmware. It gives you the tried-and-tested standard Linux user interface and thankfully you'll also realise quickly that its developers have made giant leaps forward when compared to our previous test. In addition, this firmware comes with a very handy software manager than can be used to install all sorts of software components right on the receiver, provided it has access to the Internet. The OpenRSI firmware can easily be installed alongside the AZtrino v2.0 RC2 firmware and we can strongly recommend both for the AZBox ME as well as the MiniMe. At long last, teletext is available and actually working as well – in the past the TXT button did not launch the corresponding software feature.

The OAM (Open AZBox Mod) Pre-release 7 is a completely new project, which currently is only available as a pre-release. What makes this firmware version interesting is that it uses the new v3.5.5 kernel which comes with new drivers for some DVB-C/T USB receivers as well as for USB memory sticks. Yet there is also a major drawback: OAM cannot be used together with the other firmware versions for the time being. As soon as you install it the kernel will be updated as well, which means the other firmware versions (which use the previous kernel version) cannot be launched any longer.

While it is of course possible to re-install the older kernel version again by copying the 'zbimage-linux.xload' onto a

## Persian Empire

**23. Main menu with different menu-items.**

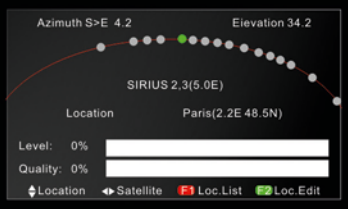
**24. The pre-installed skin looks different than usual. You don't like it? Don't delete the firmware – try to install a different skin first! There are many skins to choose from the download server and this can be done directly at the receiver using just your remote control!**

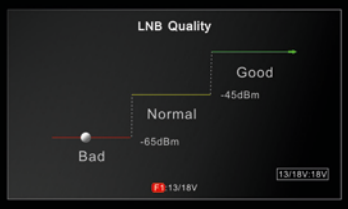
**25. This is a great function: you can automatically have the AZBox search the IMDB (Internet Movie Database) to display further information about the current program. Even if your provider does not include a proper EPG, you will from now on know everything there is to know about the concert, series or movie you are watching.**

**26. Interestingly, this firmware features a file browser in the main menu.**

**27. Of course you get all information about the current stream.**

# DVB S2






- Installation Meter & Full Measurement for DVB-S2
- Real-Time and Multi-Analyzing Spectrum
- Constellation Chart
- LNB Test MDU & Unicable
- BER, S/N(MER),FEC Measurement
- Auto Search,Blind Search,NIT Search,Manual Search
- Satellite Name & Degree Auto Detective & Display
- Auto DiSEqC1.0/DiSEqC1.1/DiSEqC1.2,USALS
- Local satellites list showing automatically
- Easy upgrading by Ethernet & USB & RS232 Port
- Satellite List Editable by Editor via PC
- Li-ion Battery(2350mAH), last 6 hours, Fast Charge(2 to 3 hours)
- Accessories: Adaptor,Car Charger,upgrading cable,AV cable,
- Water-Proof Bag,Compass,User Manual
- Size:162x100x42(mm) Weight: 0.45kg

*Tiny But Mighty*


Size:162mmx100mmx42mm



Worldwide Dealers Are Welcome, And Your Sales Territory Will Be Well-Cared

## Milestone DTV Device Creator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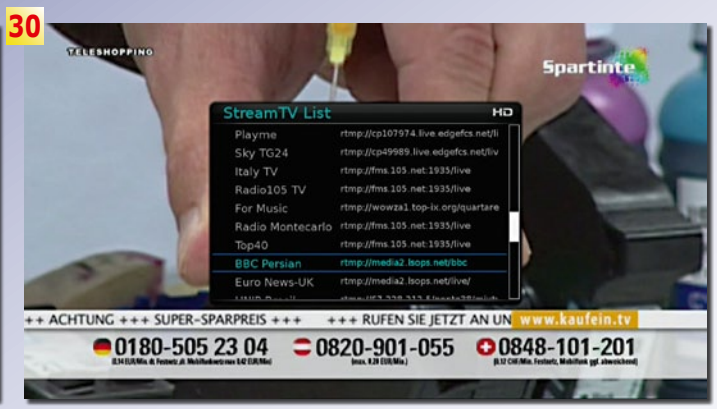





USB memory this will in turn mean that the OEM firmware will become useless. If you want to use the OAM firmware in parallel with OpenRSI v2.1 and AZtrino 2.0 RC we recommend searching for and installing OAM pre-release 5, since this also requires the v3.3.1 kernel.

The Persian Empire Release Candidate 2 firmware is basically a modified OpenRSI firmware and comes with a number of pre-configured plug-ins and skins. The developers have gone to great lengths to come up with a user-friendly firmware and it shows: Even first-time users should quickly get the knack of it. Once set up you only have to run the installation assistant and then have a fully-fledged receiver at your disposal that will provide endless viewing pleasure. Obviously, you can arrive at the same result with the original OpenRSI firmware as well, but Persian Empire saves huge amounts of time and research effort, particularly if you're happy with the ready-made configuration this firmware provides.

These are busy times for AZBox developers, and thanks to the fact that this receiver type is fully OpenPLI-compatible we can expect that software variations and improvements will go a long way for both the AZBox ME and MiniMe receivers, making these boxes genuinely fit for the future.

If you want to catch a sneak peek of what the future might hold just have a look at the currently offered OAM firmware. While it is true that its reliance on the latest kernel version restricts the range of alternative firmware versions that can be used in parallel, this disadvantage will shortly become a thing of the past. Once AZtrino and OpenRSI become compatible with the new kernel as well, all three versions will be on equal footing.

As always, we spared neither effort nor expense during our test as we tried out countless firmware versions and even accidentally rendered the receivers inoperable due to wrong kernel/firmware combinations. But that's not to worry: Simply install a compatible firmware version and you're ready to rock again. While most of the time the problem was an unfortunate selection of firmware and kernel versions, at one time we almost totally wrecked the AZBox, something insiders refer to as 'bricking'. Yet again, we didn't worry too much since both the AZBox ME and the MiniMe feature a miraculous recovery switch on the back panel: No matter what has gone wrong, use this switch and a fresh installation of the boot loader in the flash memory will get you out of trouble.

The AZBox ME and the MiniMe have become very dear to our hearts and with constantly pushing the limits the fun just doesn't stop.

## Persian Empire

**28. The plug-in browser. The Persian Empire firmware comes with the most Plugins pre-installed and even then you can install further plug-ins using the green button. From here you can download further skins, too**

**29. The media player has its own look and feel – this is skin art at its best.**

**30. Congratulations to the Persian Team: they incorporated a full featured list of streaming many TV channels.**

**31. And yes – we tried it and it really works.**

**Firmware versions discussed in the report can be downloaded from the following websites:**

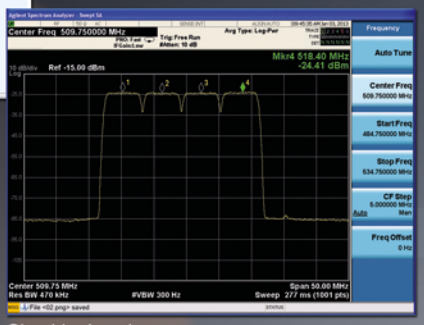
- **www.azbox.com**
- **www.azbox.ca**
- **www.openrsi.org**
- **www.openazbox.info**
- **www.persianpros.org**

| Firmware | Kernel | Special Features |
|---|---|---|
| AZtrino v1.6 (MiniMe)/v1.7 (Me) | 2.6.22 | Official image. |
| AZtrino v2.0 RC2 | 3.3.1 | Beta version with numerous bug fixes and new functions such as a boot manager for flashing via USB . |
| OpenRSI v2.1 (2012-10-13) | 3.3.1 | Reliable and tried-and-tested Linux firmware with all imaginable features and functions. |
| Open AZBox Mod Prerelease 5 | 3.3.1 | Older beta version that uses the same kernel as OpenRSI v.2.1 and AZtrino v2.0 RC and therefore can be used in parallel. |
| Open AZBox Mod Prerelease 7 | 3.5.5 | Current beta version with many new functions, requiring the latest kernel version and supporting a range of DVB-T/C and Internet receivers via USB. |
| Persian Empire RC2 | 3.3.1 | Modified OpenRSI firmware with numerous pre-installed plug-ins and settings as well with its own skin. |

**Chart: Overview of currently available firmware versions for the AZBox ME and MiniMe**

WEB NMS Interface
4HDMI to 4ATSC MPEG2 MPEG4 HD

Input Channels



Shoulder Level


Wall Mount

# MPEG2/MPEG4 HD Encoder Modulator

- Turn MPEG2/MPEG4 HD Video signals into a real digital RF
- 4*HDMI input; 1*HDMI or 2*HDMI optional

## Key Features

- 1080P/1080I/720P Full HD resolution
- MPEG2 HD & MPEG4 AVC/H.264 HD video encoding
- MPEG-1 Layer II, (MPEG-2 AAC, MPEG-4 AAC available) audio encoding
- 1*DVB-C/ATSC/ISDB/DVB-T, 2*DVB-C/ATSC/ISDB/DVB-T, 4*DVB-C/ATSC quality RF out optional
- ASI in/out with remux; MPTS or 4*SPTS IP out
- RF mixed in/RF mixed out
- Frequency range: 30~960MHz
- Programmable video/audio/PCR PID
- Programmable channel name and logical channel number insertion
- Excellent modulation quality MER≥42dB
- LCD display, remote control and web NMS management
- Best quality and Breakthrough price


Rack

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http://www.dsdvb.com/english ▪ E-mail: sunyu@dsdvb.com

# Revealing the Secrets of the AZBox ME Super Box

## Part 1: Blindscan

Read Full Report

www.TELE-audiovision.com /12/05/azbox-me

## Part 2: Multimedia

Read Full Report

www.TELE-audiovision.com /12/07/azbox-me


## Part 3: Plugin-Installation

Read Full Report

www.TELE-audiovision.com /12/09/azbox-me


## Part 4: Firmware

Read Full Report

www.TELE-audiovision.com /13/03/azbox-me

# Roku2 XD


- *SD и HD TV через интернет*
- *Также может быть использован как радио*
- *Большой выбор программ для любого приложения*
- *Выдающееся качество аудио и видео с*
- *1080p и Dolby 5.1*

# Miniature Streaming Player

Thanks to its feather-light weight of only 84gms (3 ounces) and its slim size you can slip the box in your pocket and take it with you wherever you go. Its high-gloss plastic housing gives off a stable and cleanly designed impression.

The included remote control that came with our test model has a mere 11 buttons, four of which make up the group of ring buttons, and as hard as it is to believe, these 11 buttons give you complete control of the Roku 2 XD Streaming Player!

Before the box is ready to use, you have to spend a short time with the Installation Assistant. After that, the user is asked to register the hardware via the Internet; the user is directed to an Internet site and provided with an activation code. Once the site has been accessed on a PC and all the registration information is entered, the user then supplies the activation code shown on the box thus ending the initial installation of the Roku 2 XD. The box then switches over to the main menu.

All of these steps functioned correctly during our tests; unfortunately though, the registration process can only be completed if a valid payment method is set up (credit card, PayPal, etc.). The manufacturer promises to keep this information confidential in order to prevent any unauthorized use of this information but those users that only want to use the box for its free content and don't need any of the extra features that come at a cost might take issue with this requirement.



The Roku 2 XD's main menu is made up of two sub headings, System Settings and Channel Store.

Since the box is shipped from the factory without any Apps pre-installed, the user would need to download them directly from the Roku Channel Store via the Internet. After momentarily pressing a button on the remote control to access the Channel Store from the main menu, a huge selection of downloadable Apps is made available to the user that are sorted by free and paid Apps. At well over 500 Apps, we quickly gave up counting all of them.

# BT ready to take off

## We are back providing broadcast uplinks

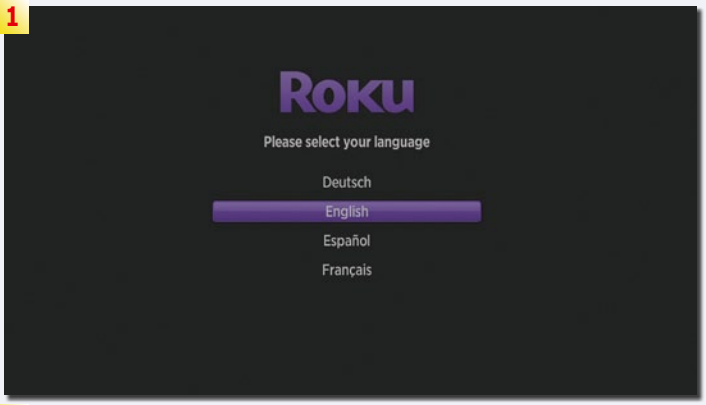
Satellite Program Providers can take advantage of BT´s superior technical quality at our South-West England´s Satellite Uplink Station:

- fiber connected to all parts of the world
- direct access to more than half of all satellites worldwide
- perfectly equipped for HDTV
- ready for 3DTV

BT

Contact Harry Formosa, harry.formosa@bt.com, BT Group plc, BT Centre, 81 Newgate Street, London EC1A 7AJ, United Kingdom

1. The Roku 2 XD can present the OSD in German, English, Spanish and French
2. The setup of an Internet connection via WiFi worked perfectly
3. The Roku 2 XD needs to be activated via its own Internet page
4. Settings menu
5. The video signal from our test model, in addition to SD, can also be provided in 720p HD and 1080p Full HD
6. Stereo and Dolby Digital 5.1 audio outputs are available
7. The Roku Channel Store with over 500 Apps
8. The Plex streaming service provides its own individual free App for the Roku 2 XD box
9. Even popular games like Angry Birds is available in the Roku Channel Store
10. A Roku Game Remote is needed for some of the games
11. Even social networks such as Facebook can be accessed via the Roku 2 XD
12. If you want to buy an App, the purchase needs to be confirmed with the PIN code set up during registration





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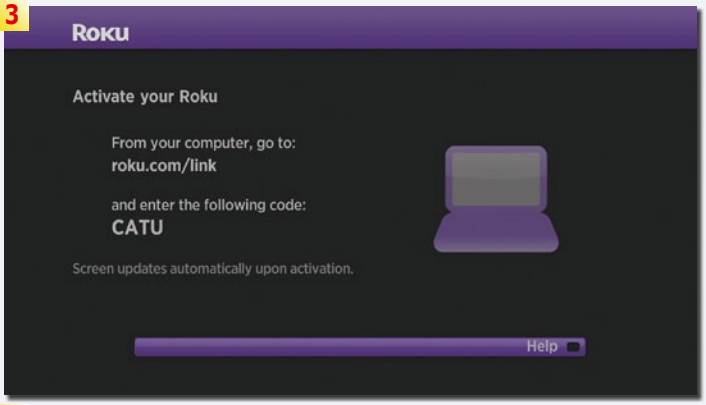


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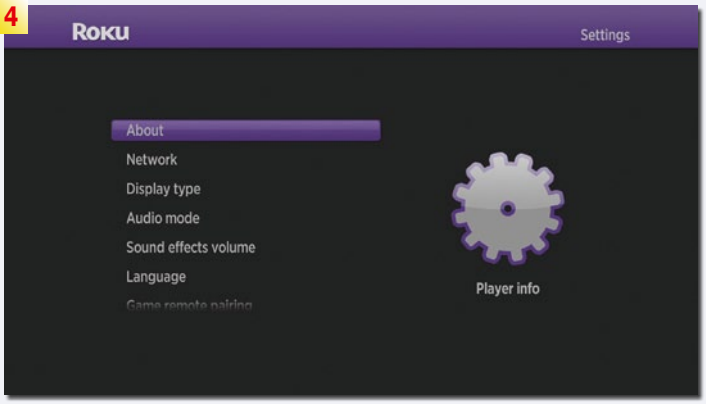


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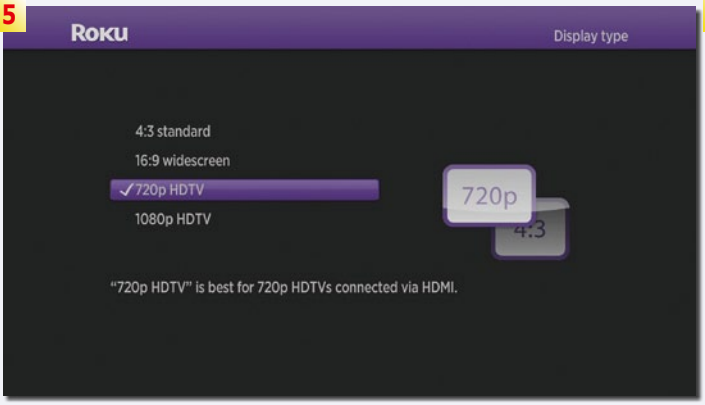


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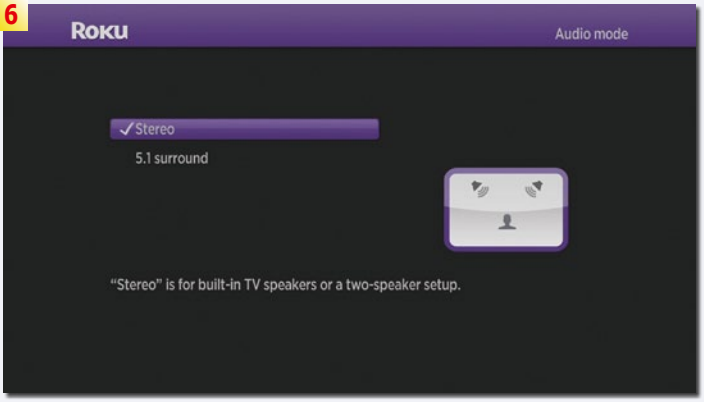


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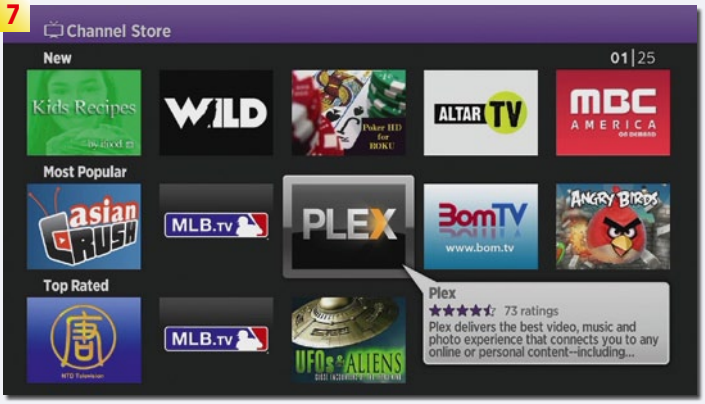


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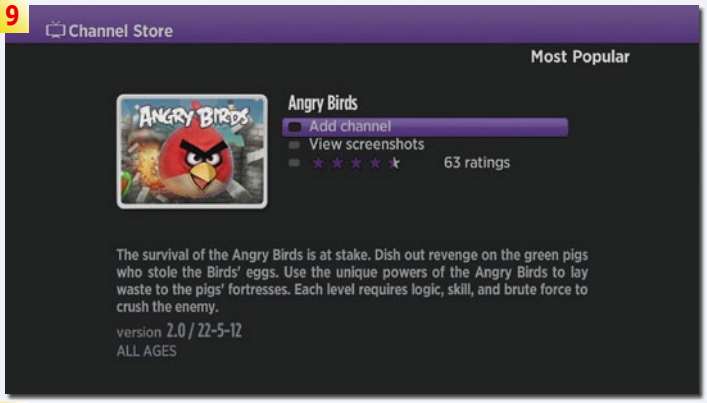


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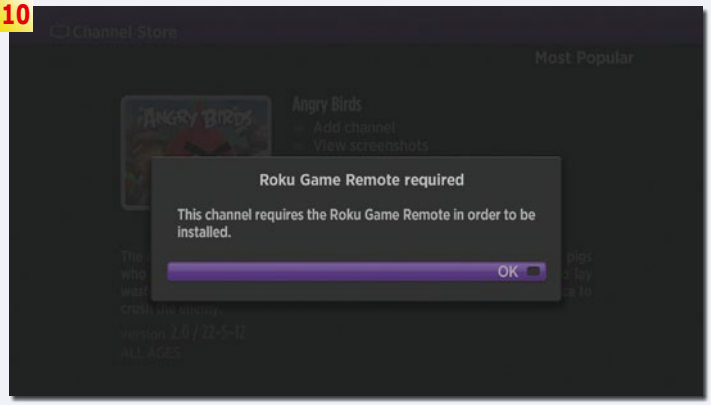


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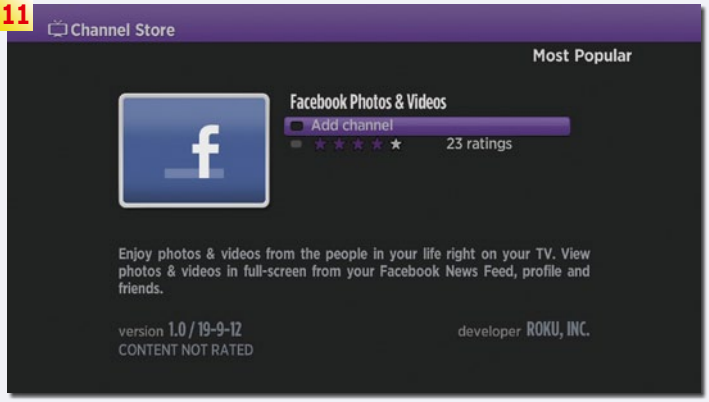


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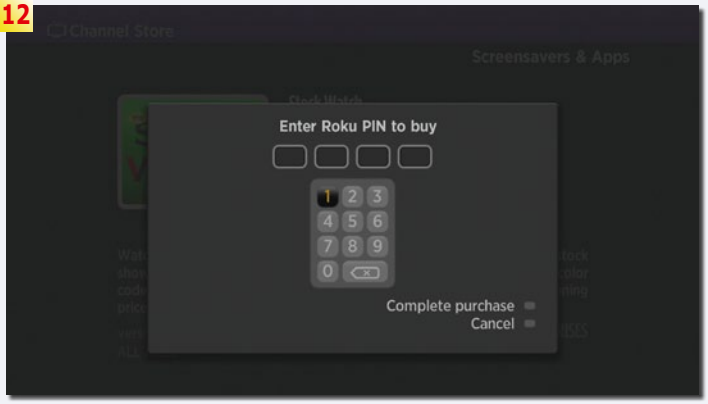

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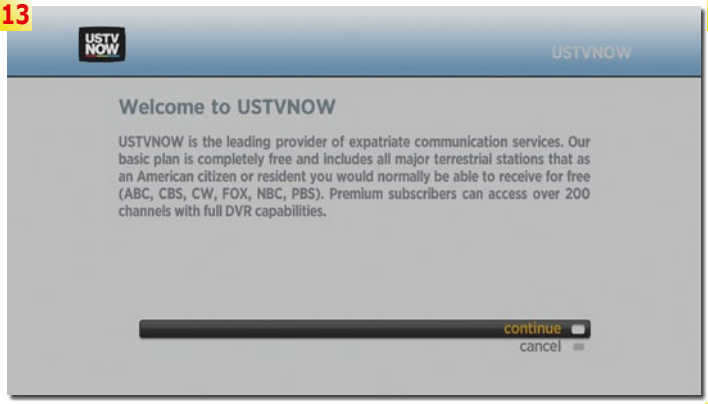


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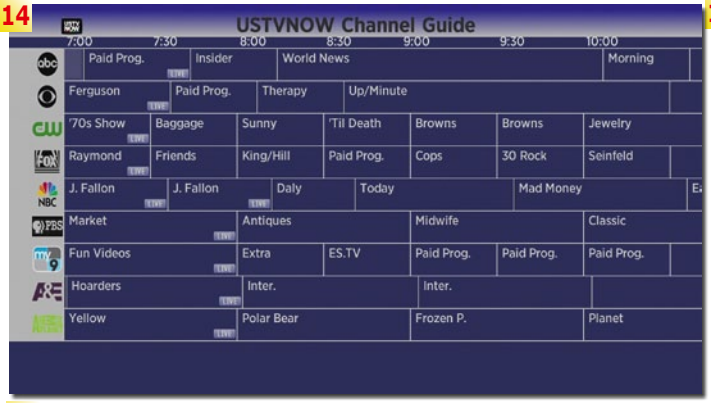
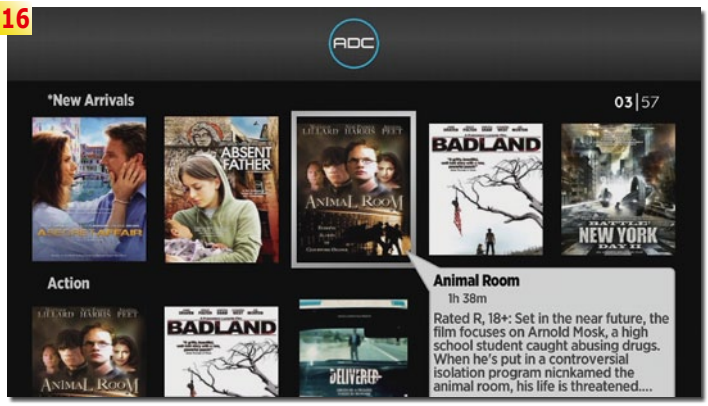



15

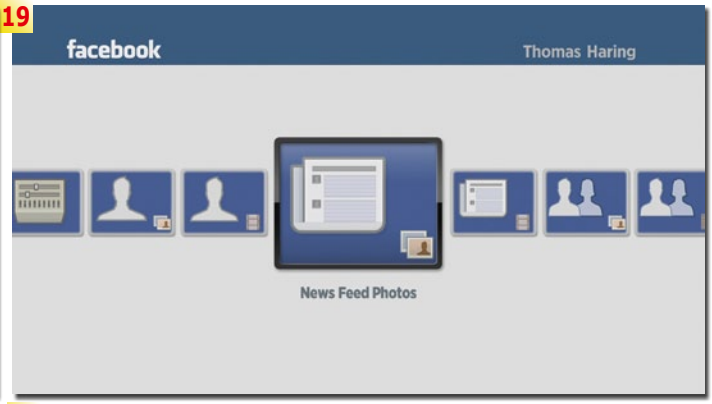

16




17


18


19




20


21


**13. USTV Now lets you receive American channels outside of the USA**

**14. The USTV Now EPG**

**15. The USTV Now picture quality is quite good but doesn't reach HD levels. PVR capabilities are available with a subscription**

**16. The ADC video service offers numerous interesting and exciting movies via the Internet and the Roku 2 XD**

**17. Internet Radio – no problem for the Tunein App**

**18. Radio stations from the USA via the Roku 2 XD box**

**19. Facebook via the Roku 2 XD box**

**20. You can easily display pictures and videos from your Facebook friends**

**21. Flixster provides access to current movie and DVD trailers**

# Transponder Streams

## for testing STB and headends

ATSC

DTMB

DVB-C

DVB-S

DVB-S2

DVB-T

DVB-T2

ISDB-TB

Off-Air Streams From All Major Digital TV Standards Around the World.

## Ideal for Remote Testing of STB and Headends.

Availabe in lengths of 30 seconds and 5 minutes on USB memory sticks or by FTP download.
File format: .ts

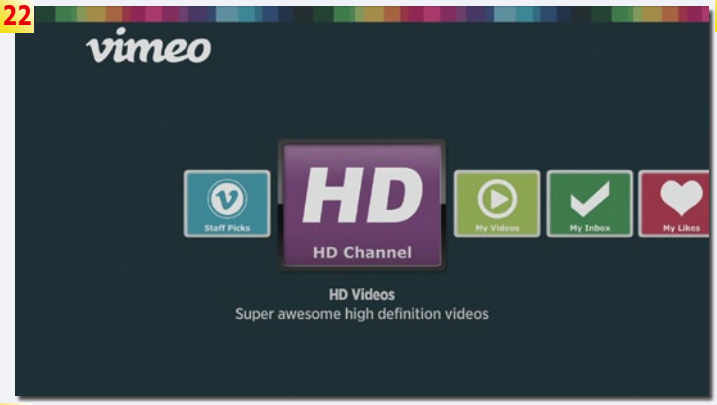
***Streams available:***

| | |
|---|---|
| **ATSC** | with HDTV (USA) |
| **ATSC** | with 1 Single Channel (USA) |
| **ATSC** | with 2 Audio PIDs for 1 Video (USA) |
| **ATSC** | with High Null Packets (USA) |
| **ATSC** | with Wrong TS ID (USA) |
| **ATSC** | Fully Packed (USA) |
| **ATSC** | Channel Name Missing (USA) |
| **ATSC** | Identical Channel Names (USA) |
| **ATSC** | Mechanical Channel Names (USA) |
| **DTMB** | with HDTV (China) |
| **DTMB** | with false video descriptor (China) |
| **DTMB** | with MHEG (Hongkong) |
| **DVB-C** | in Nagravision 3 (Portugal) |
| **DVB-S** | with 3D (ASTRA) |
| **DVB-S** | with MPEG2 and H.264 mix (PALAPA) |
| **DVB-S** | in MIS (ATLTANIC BIRD) |
| **DVB-S2** | with HDTV (HOTBIRD) |
| **DVB-S2** | with MPEG 4:2:2 (EUROBIRD) |
| **DVB-S2** | with 3D (TURKSAT) |
| **DVB-S2** | with HDTV (AMAZONAS) |
| **DVB-S2** | with 3D (THOR) |
| **DVB-S2** | with 1Seg mobile TV (AMC 6) |
| **DVB-T** | with radio (Netherlands) |
| **DVB-T** | with MHEG (UK) |
| **DVB-T** | as retransmission off satellite (Qatar) |
| **DVB-T2** | with HDTV (Germany, UK) |
| **ISDB-T** | with 1Seg mobile TV and HD (Brazil) |

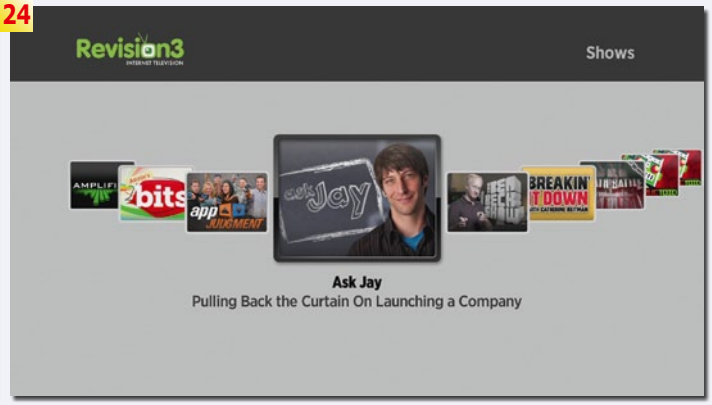
and many more according to standard

**www.transponderstream.com**

22

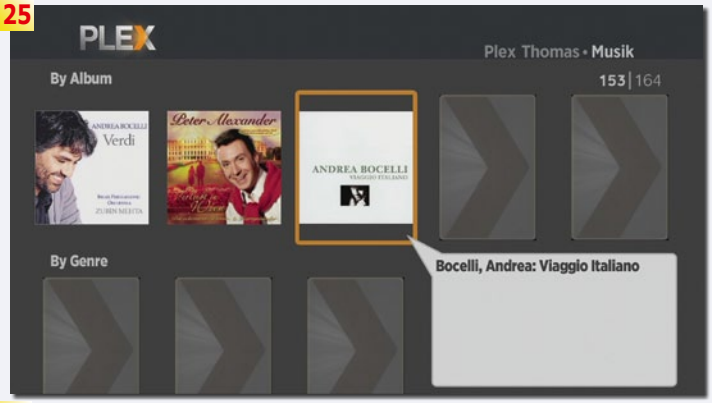



24




23


25




## Expert Opinion

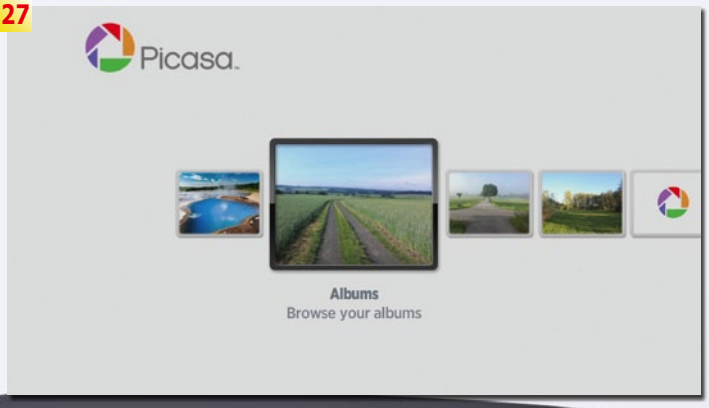
**Thomas Haring**
TELE-audiovision
Test Center
Austria

\+ **Well conceived concept, sophisticated hardware and an enormous selection of Apps highlight the Roku 2 XD box. It's easy to use and functioned without any problems during our tests. Thanks to video playback at resolutions up to 1080p, the best possible picture quality can be achieved.**

− **Unfortunately, there's no RJ45 network interface as well as no coaxial or optical digital audio output. Providing payment information during registration didn't appeal to us at all; it would have been better to simply make it possible to deactivate those Apps you have to pay for.**

26


27




**22. Thanks to the free Vimeo App, high quality Internet clips can be viewed via the Roku 2 XD box**

**23. BomTV lets you watch TV from India via the Internet**

**24. Revision 3 provides a platform for artists, amateur movie producers, etc., to showcase their creations to the public**

**25. Access to our iTunes library via the Plex App on the Roku 2 XD. The cover art from our albums had a few glitches**

**26. Thanks to the different signal encodings, various video playback resolutions and data rates are available through Plex**

**27. The free Picasa App gives you access to all the pictures that you saved with Google Picasa**

# THE BIG CHINA MANUFACTURER ADDRESS LIST


Contact ALuoSat
luo.shigang@ALuoSat.de

**China Manufacturer Database***: 1500 Manufacturers in mainland China complete with address in Chinese and contact details of Production Manager

*regularely updated

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# AWARD WINNING 21 DIGITAL RECEIVERS OF 21ST CENTURY

## 这些是获得最高奖的产品

| | |
|---|---|
| Manufacturer | Panodic |
| Website | www.panodic.com |
| Function | DVB T / DVB T2 Receiver |
| DVB T2/LAN | • / — |
| PVR | • |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | • / — |

TELE audiovision AWARD 03-04/2013

**Panodic HDT-275C**
Great receiver for the new HDTV era in digital terrestrial TV in future-proof DVB-T2

TELE-audiovision International Magazine

**Business Voucher**

www.TELE-audiovision.com/13/03/panodic

*Read TELE-audiovision Test Report*


Energy Efficiency Rating eco friendly 0.53 power factor tested by TELE-audiovision

| | |
|---|---|
| Manufacturer | Tsinghwa |
| Function | DTMB Receiver |
| LAN | — |
| PVR | • |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | — / • |

TELE audiovision AWARD 03-04/2013

**Tsinghwa GT-278**
Rock-solid receiver with excellent speed reaction time

TELE-audiovision International Magazine

**Business Voucher**

www.TELE-audiovision.com/13/03/tsinghwa

*Read TELE-audiovision Test Report*


Energy Efficiency Rating eco friendly 0.53 power factor tested by TELE-audiovision

| | |
|---|---|
| Manufacturer | Skyworth |
| Website | www.skyworthdigital.com |
| Function | DVB T / DVB T2 HDTV Receiver |
| DVB T2/LAN | • / — |
| PVR | • |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | — / — |

TELE audiovision AWARD 01-02/2013

**Skyworth HTA6**
A rock-solid receiver for HDTV over the terrestrial antenna

TELE-audiovision International Magazine

## Expert Opinion

www.TELE-audiovision.com/13/01/skyworth

*Read TELE-audiovision Test Report*


Energy Efficiency Rating eco friendly 0.45 power factor tested by TELE-audiovision

| | |
|---|---|
| Manufacturer | Jiuzhou |
| Website | www.jiuzhou.com.cn |
| Function | DVB T & Android STB |
| DVB S2/LAN | — / • |
| PVR | • |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | — / • |

INNOVATION TELE audiovision AWARD 11-12/2012

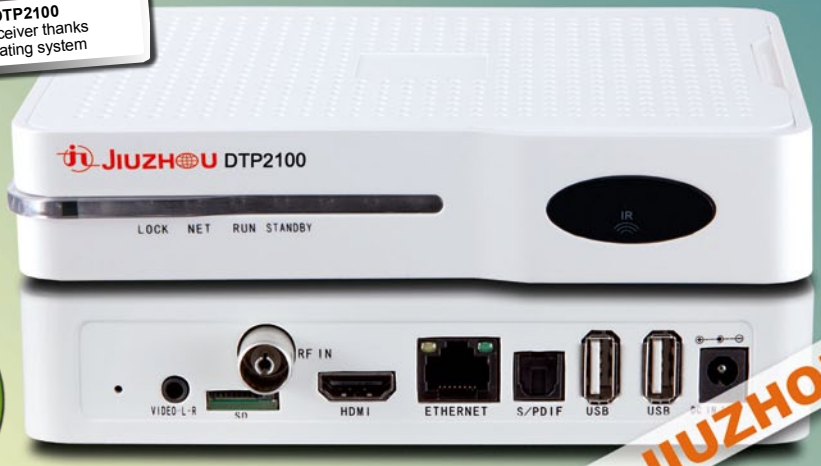
**JIUZHOU DTP2100**
Cutting-edge receiver thanks to Android operating system

TELE-audiovision International Magazine

## Business Voucher

www.TELE-audiovision.com/12/11/jiuzhou

*Read TELE-audiovision Test Report*




Energy Efficiency Rating eco friendly 0.55 power factor tested by TELE-audiovision


| Manufacturer | Panodic |
|---|---|
| Website | www.panodic.com |
| Function | DVB-S / DVB-S2 Receiver |
| DVB-S2/LAN | • / — |
| DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | • / — |

TELE audiovision AWARD 11-12/2012

**Panodic HDS275**
Best designed mini-receiver for the best HD reception

TELE-audiovision International Magazine

**Business Voucher**

www.TELE-audiovision.com/12/11/panodic

*Read TELE-audiovision Test Report*


| Manufacturer | AZBox |
|---|---|
| Website | www.azbox.com |
| Function | HDTV DVB-S/DVB-S2 Miniature HDTV Linux Receiver with Multimedia Features |
| DVB-S2/LAN | • / • |
| Channel Memory | unlimited |
| DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 / USALS |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | — / • |

TELE audiovision AWARD 09-10/2012

**AZBox mini ME**
Excellent mini-receiver with Network features - ideal for a home network

TELE-audiovision International Magazine

**Expert Opinion**

www.TELE-audiovision.com/12/09/azbox-mini-me

*Read TELE-audiovision Test Report*

| | |
|---|---|
| Manufacturer | Amiko |
| Website | www.amikostb.com |
| Function | DVB S2 / DVB T & DVB C Triple Tuner PVR Receiver |
| DVB S2/LAN | • / • |
| Channel Memory | unlimited |
| DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | • / • |

INNOVATION TELE audiovision AWARD 06-07-08/2012

**AMIKO ALIEN 2**
Unbeatable combination of features and function – for excellent viewing pleasure!

TELE-audiovision International Magazine

## Expert Opinion

www.TELE-audiovision.com/12/07/amiko

*Read TELE-audiovision Test Report*



| | |
|---|---|
| Manufacturer | Panodic |
| Website | www.panodic.com |
| Function | Small DVB T HD PVR Receiver |
| DVB S2/LAN | — / — |
| DiSEqC | — |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | • / — |

TELE audiovision AWARD 06-07-08/2012

**Panodic HDT-127A DVB-T**
Well-equipped DVB-T Mini-Receiver

TELE-audiovision International Magazine

## Expert Opinion

www.TELE-audiovision.com/12/07/panodic

*Read TELE-audiovision Test Report*


| | |
|---|---|
| Manufacturer | Amiko |
| Website | www.amikostb.com |
| Function | DVB S / DVB S2 & DVB T Combo Receiver with PVR |
| DVB S2/LAN | • / • |
| Channel Memory | unlimited |
| DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | • / • |

TELE audiovision AWARD 04-05/2012
**AMIKO STHD-8820 CICXE PVR**
Perfect Box to Receive all Available HDTV Programmes

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/05/amiko

*Read TELE-audiovision Test Report*



| | |
|---|---|
| Manufacturer | Skyworth |
| Website | www.skyworthdigital.com |
| Function | Very small DVB S2 PVR Receiver with HDMI |
| DVB S2/LAN | • / • |
| DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | — / — |

TELE audiovision AWARD 04-05/2012
**Skyworth HS-18 DVB-S2**
Sophisticated, fully-featured miniature receiver

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/05/skyworth

*Read TELE-audiovision Test Report*


| | |
|---|---|
| Manufacturer | Panodic |
| Website | www.panodic.com |
| Function | DVB-T Mini Receiver with HDMI and PVR |
| DVB-S2/LAN | — / — |
| DiSEqC | — |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | — / — |

TELE-audiovision International Magazine

## Expert Opinion

www.TELE-audiovision.com/12/05/panodic

*Read TELE-audiovision Test Report*


| | |
|---|---|
| Manufacturer | AZBox |
| Website | www.azbox.com |
| Function | HDTV DVB-S/DVB-S2 Linux Receiver with Multimedia Features and large Flash-memory for 3 Boot Images |
| DVB-S2/LAN | • / • |
| Channel Memory | unlimited |
| DiSEqC | 1.0 / 1.1 / 1.2 / USALS |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | — / • |

TELE-audiovision International Magazine

## Expert Opinion

www.TELE-audiovision.com/12/03/azbox-me

*Read TELE-audiovision Test Report*

# CHINA

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President

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85774 Munich-Ufg, GERMANY

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Fax: +49-89-92185023
Email: luo.shigang@ALuoSat.de
Website: www.ALuoSat.de

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# AWARD WINNING 21 SIGNAL ANALYZERS OF 21ST CENTURY

# 这些是获得最高奖的产品

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/13/03/horizon

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | Horizon Global Electronics |
| **Website** | www.horizonhge.com |
| **Function** | Digital Satellite Meter for DVB S and DVB S2 Signals |
| **Frequency Range** | 950 ~ 2150 MHz |
| **Video Output** | — |
| **Built-in Monitor** | LCD display |


TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/13/01/kws

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | KWS-Electronic |
| **Website** | www.kws-electronic.de |
| **Function** | Handheld Signal Analyzer with Spectrum for DVB S, DVB S2 |
| **Frequency Range** | 910 ~ 2150 MHz |
| **Video Output** | yes |
| **Built-in Monitor** | 5,7" Color-TFT, VGA Resolution |

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/11/satlink

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | Fujian Baotong |
| **Website** | www.sat-link.com.cn |
| **Function** | Digital Meter & Receiver for DVB-S and DVB-T Signals |
| **Frequency Range** | 47 ~ 862 MHz & 950 ~ 2150 MHz |
| **Video Output** | yes |
| **Built-in Monitor** | 4.3 inch display |


TELE audiovision AWARD 11-12/2012

**Satlink WS-6936**
Very easy to use signal meter which also serves as receiver.

SATLINK

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/11/horizon

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | Horizon Global Electronics |
| **Website** | www.horizonhge.com |
| **Function** | Digital Meter for Analogue, DVB-T and DVB-T2 Signals |
| **Frequency Range** | 48 ~ 862 MHz |
| **Video Output** | — |
| **Built-in Monitor** | LCD display |


TELE audiovision AWARD 11-12/2012

**HORIZON HD-T2**
One of the world's first DVB-T2 signal analyzers with exceptional data

HORIZON

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/11/deviser

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | Tianjin Deviser Electronics Instrument |
| **Website** | www.devisertek.com |
| **Function** | Optical Power Meter |
| **Frequency Range** | -43 dBm ~ +25 dBm |
| **Video Output** | — |
| **Built-in Monitor** | LCD display |


TELE audiovision AWARD 11-12/2012

**DEVISER AE 120**
**Optical Power Meter**
Extremely simle to use but at same time very accurate

DEVISER

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/09/deviser

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | Tianjin Deviser Electronics Instrument |
| **Website** | www.devisertek.com |
| **Function** | Professional Meter for DVB-T, DVB-C and CATV (analog TV) |
| **Frequency Range** | 5 ~ 1000 MHz |
| **Video Output** | — |
| **Built-in Monitor** | 320 × 240 TFT display |


TELE audiovision AWARD 09-10/2012

**DEVISER DS2400T**
This is by far the best handheld measuring instrument for DVB-T, DVB-C and CATV I have come across. Deviser has done an excellent job!

DEVISER

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/05/spaun

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | SPAUN Electronic |
| **Website** | www.spaun.com |
| **Function** | DVB-S / DVB-S2 and DSS Signal Analyzer |
| **Frequency Range** | 950-2150 MHz |
| **Video Output** | — |
| **Built-in Monitor** | 4.3" TFT LCD display (16:9) |

TELE audiovision AWARD 04-05/2012

**SPAROS SAT HD**
Very useful meter for setting up critical satellite systems


TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/03/satcatcher

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | SatCatcher |
| **Website** | www.satcatcher.com |
| **Function** | Digital and analog cable TV meter |
| **Frequency Range** | 46~862 MHz (for digital TV) and 46~870 MHz (for analog TV) |
| **Video Output** | — |
| **Built-in Monitor** | 120 x 64 3.5" LCD color display |

TELE audiovision AWARD 02-03/2012

**Satcatcher Digipro C Max**
More than a cable meter: includes everything a professional installer needs

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/01/horizon

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | Horizon Global Electronics |
| **Website** | www.horizonhge.com |
| **Function** | Satellite and terrestrial antenna meter |
| **Frequency Range** | 45~861 MHz (terrestrial) and 950~2150 MHz (satellite) |
| **Video Output** | — |
| **Built-in Monitor** | LCD display |


TELE audiovision AWARD 12-01/2012

**Horizon HD-STM**
Perfect choice for an installer who values a practical instrument.

TELE-audiovision International Magazine

# Expert Opinion

www.TELE-audiovision.com/12/01/deviser

*Read TELE-audiovision Test Report*

| | |
|---|---|
| **Manufacturer** | Tianjin Deviser Electronics Instrument |
| **Website** | www.devisertek.com |
| **Function** | Satellite Antenna Meter |
| **Frequency Range** | 950~2150 MHz |
| **Video Output** | — |
| **Built-in Monitor** | LCD display |

TELE audiovision AWARD 12-01/2012

**Deviser S20 Satellite Meter**
Ideally suited to fastly install dishes

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Omar Hawary, Business Development Manager, EMEA, Video Technology Group, **CISCO**


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iabm International Association for Broadcasting Manufacturers

Asia Pacific Satellite Communications Council

GVF Global VSAT Forum

sspi Society of Satellite Professionals International

WTA World Teleport Association

# CHINA


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# AWARD WINNING

## 21 IPTV/WebTV RECEIVERS OF 21ST CENTURY

## 这些是获得最高奖的产品


| | |
|---|---|
| Manufacturer | Roku |
| Website | www.roku.com |
| Function | Streaming Player |
| WIFI/LAN | • / — |
| Internal Storage | no |
| HDTV | yes (up to 1080p) |
| CVBS/HDMI | • / • |
| USB/SD Card | — / • |

TELE-audiovision International Magazine

**Expert Opinion**

www.TELE-audiovision.com/13/03/roku

*Read TELE-audiovision Test Report*


| | |
|---|---|
| Manufacturer | LookeeTV |
| Website | www.lookeetv.com |
| Function | Multimedia Player for local media and Internet |
| WIFI/LAN | • / • |
| Internal Storage | yes, 1.14 GB |
| HDTV | yes (up to 720p) |
| CVBS/HDMI | • / • |
| USB/SD Card | • / • |

TELE-audiovision International Magazine

**Expert Opinion**

www.TELE-audiovision.com/12/11/lookee

*Read TELE-audiovision Test Report*

| | |
|---|---|
| Manufacturer | AZBox |
| Website | www.azbox.com |
| Function | HDTV DVB S/DVB S2 Miniature HDTV Linux Receiver with Multimedia Features |
| DVB S2/LAN | • / • |
| Channel Memory | unlimited |
| DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 / USALS |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | — / • |

TELE-audiovision International Magazine

**Expert Opinion**

www.TELE-audiovision.com/12/09/azbox-mini-me

*Read TELE-audiovision Test Report*

TELE audiovision AWARD 09-10/2012

**AZBox mini ME**

Excellent mini-receiver with Network features - ideal for a home network


| | |
|---|---|
| Manufacturer | Amiko |
| Website | www.amikostb.com |
| Function | DVB S2 / DVB T & DVB C Triple Tuner PVR Receiver |
| DVB S2/LAN | • / • |
| Channel Memory | unlimited |
| DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 |
| S-Video/HDMI | — / • |
| Scart/Digital Audio | • / • |

TELE-audiovision International Magazine

**Expert Opinion**

www.TELE-audiovision.com/12/07/amiko

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INNOVATION TELE audiovision AWARD 05-07-08/2012

**AMIKO ALIEN 2**

Unbeatable combination of features and function – for excellent viewing pleasure!

| Manufacturer | Logitech |
|---|---|
| Website | www.logitech.com |
| Function | IPTV Receiver |

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www.TELE-audiovision.com/12/03/googletv

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| Manufacturer | Jiuzhou |
|---|---|
| Website | www.jiuzhou.com.cn |
| Function | IPTV Set-Top-Box |
| Stream Protocol | UDP |
| Menu Standards | HTML4, Javascript 1.5, Java Virtual Machine |
| WLAN | • (via USB stick) |

TELE audiovision AWARD 12-01/2011

JIUZHOU DTP8300
IPTV Receiver Equipped with Top-Notch Technology

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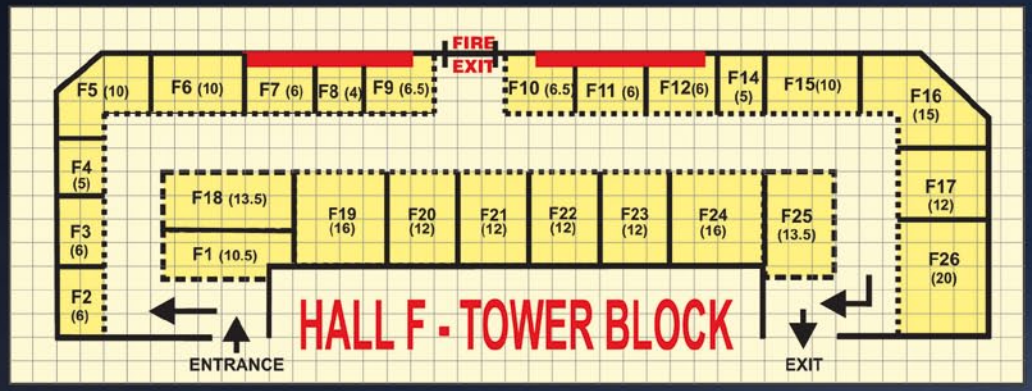
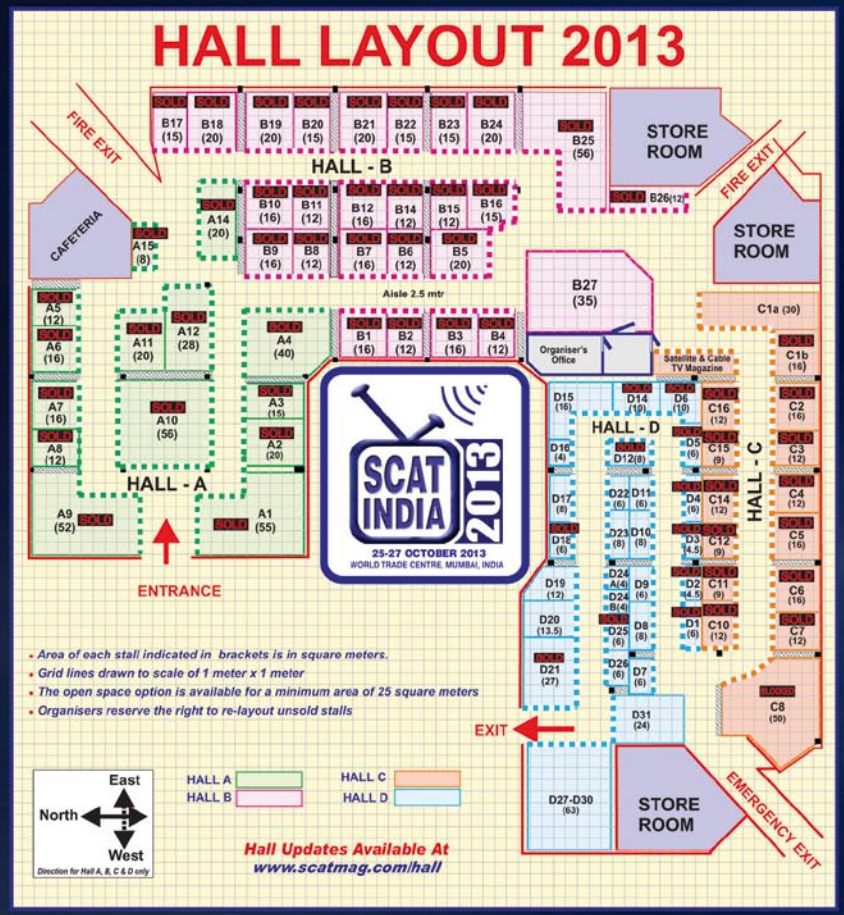
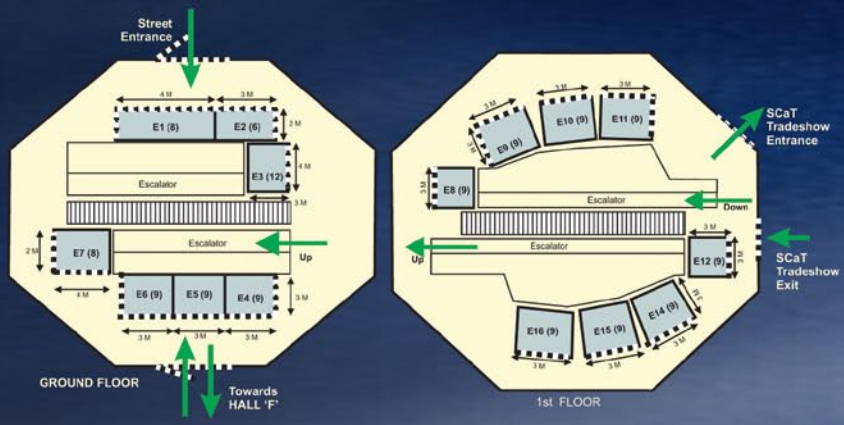



# HALL LAYOUT 2013

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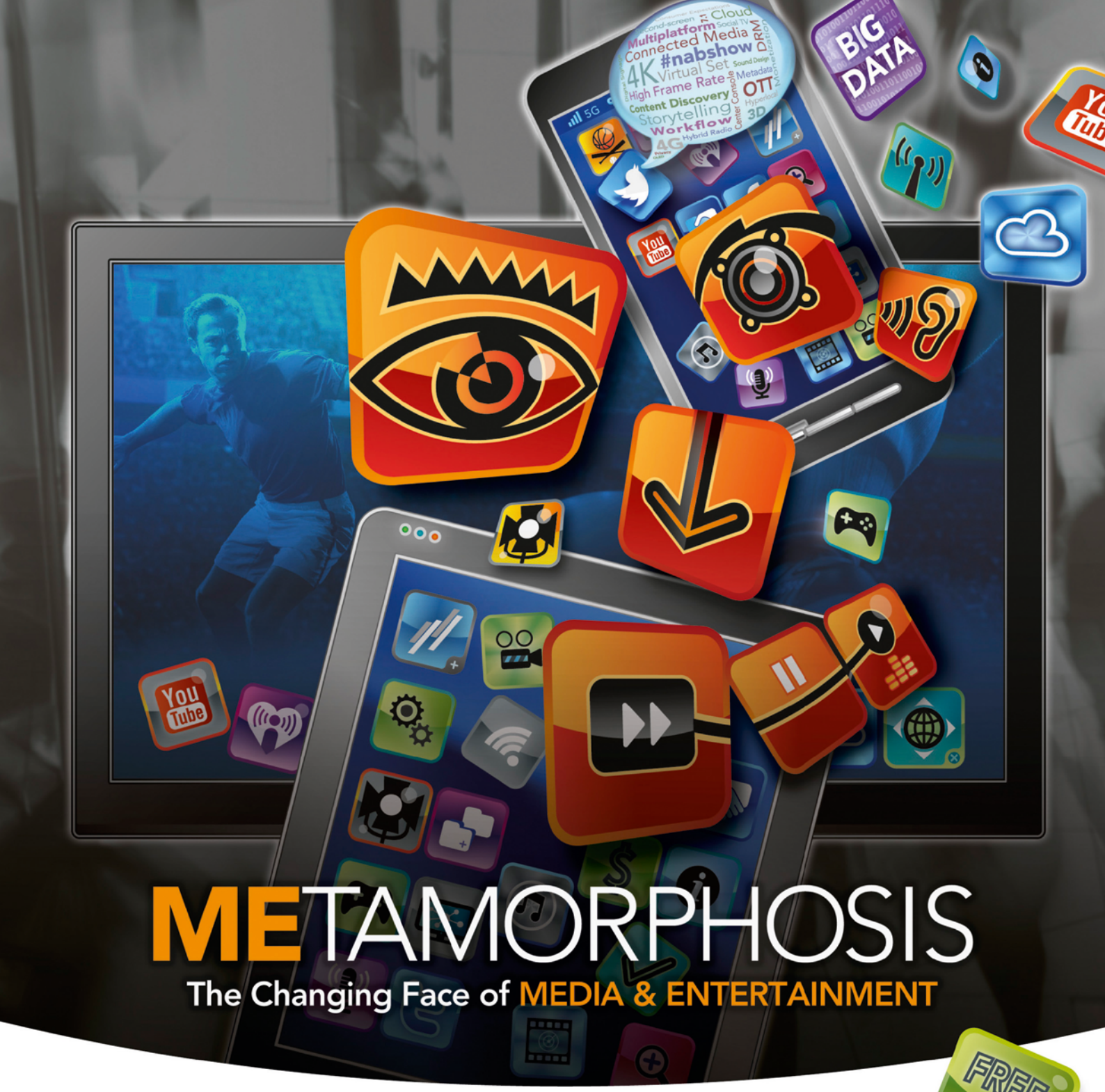


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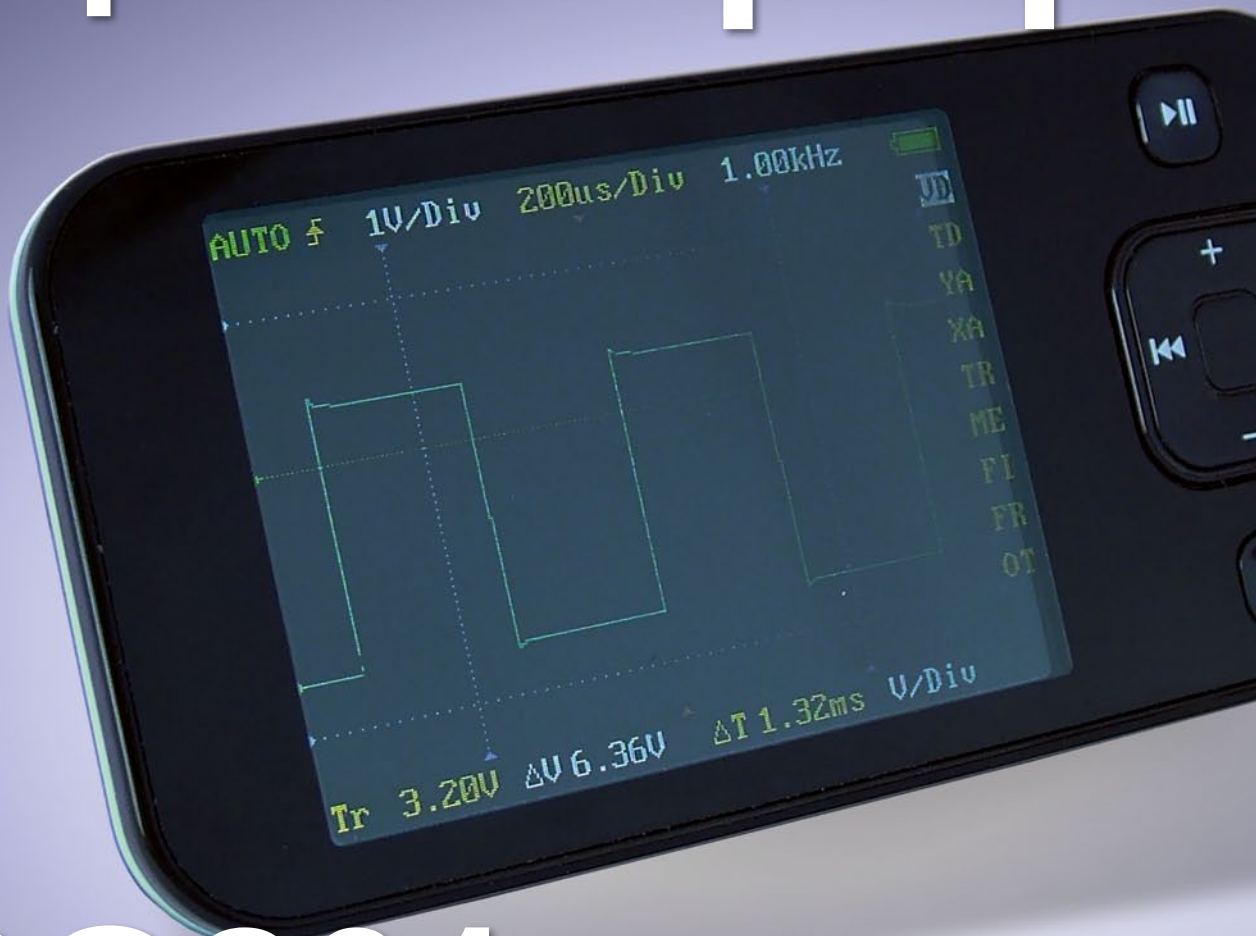
# Карманный осциллограф DSO201




- ***Предоставляет простой и легкий способ проверять основные функции спутниковой системы***
- ***Производит 22kHz сигнал***
- ***Также может быть использован для проверки аудио и видео сигналов***
- ***Особенно хорош для обнаружения комплексных ошибок***


■ The DSO201 operates with an integrated signal generator that is capable of generating an acceptable 22kHz signal

# A Small Oscilloscope Aids in Measurements

**Vitor Martins Augusto**

**Antenna installers are sometimes confronted with problems that they can't solve even with a higher-end satellite signal analyzer. The pocket oscilloscope DSO201 provides an interesting alternative. We tested it as a signal analyzer for satellite installations.**

The DSO201 represents an open source development of the hardware and software. It is based on an ARM Microcontroller that comes with the necessary inputs and outputs. From the outside, the DSO201 looks similar to an MP3 player; even the buttons have the same symbols. But instead of an output for a headphone, there's an input for the included oscilloscope test probe. Aside from that, there's also a small slit in one corner with a metal pin. But this is not for fastening a carrying strap; instead it's an output for the integrated signal generator. The color screen is easy to read and at 320 x 320 pixels its resolution is sufficiently high enough. A battery charger is not included although any typical mini USB charger can be used to charge the DSO201.

Since with this oscilloscope we are dealing with an Open Source design and that the circuit board layout and the source code are freely accessible, a variety of firmware versions are available. All oscilloscopes with the DSO201 label are compatible with each other and can be operated with different firmware versions that can be downloaded, for example, from http://code.google.com/p/dsonano/. After several tests with the preinstalled firmware, we opted to install the popular "BenF" firmware. This version was optimized for speed and comes with some sophistication.

But the more important question that needs to be answered is: how do you upload the new firmware? Short of finding a description on how to do this, we copied the two firmware files onto a MicroSD card. But after ten attempts to try and start a flash process, we knew

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it was time to throw in the towel and have a look in the Internet for instructions. Finding this wasn't exactly easy but finally after a tutorial we understood why it didn't work using the MicroSD card. The firmware is flashed via the USB port. In order for this to work, you need DfuSe. This turns out to be a demo tool to update firmware that can be downloaded for free from www.st.com/stonline/stappl/resourceSelector/app?page=resourceSelector&doctype=SW_DEMO&ClassID=1734.

Next the oscilloscope must be started in Bootloader mode. This is done by turning on the oscilloscope while holding down the minus (-) button. A notification identifying Bootloader mode appears on the screen and the DfuSe tool automatically recognizes the oscilloscope. We recommend that you first create a backup of the existing firmware before proceeding. To do this select "Choose" in the "Upload Action" field. Select a name for the file, for example, "backup.dfu" and click on "Upload". Now you can upload alternative firmware at your leisure. We recommend the "DSO BenF Firmware v3.61". This consists of two files, "DSO BenF APP v3.61.dfu" and "DSO BenF LIB v3.52.dfu". Start both of them one after the other and then restart the DSO201.

In comparison to a multimeter that only shows the current voltage level, an oscilloscope displays the voltage over a period of time and it makes analog and digital signal visible. With a multimeter you can, for example, check to see if the 14VDC power for an LNB in horizontal polarization is available. The 22kHz signal that is used to switch between an LNB's low and high band cannot be seen with a multimeter; it's a square wave signal with a frequency of 22kHz but with a varying voltage of less than 1.0 volt. A multimeter would simply continue to display 14V. An oscilloscope can make a square wave signal visible and thereby lets you confirm, for example, if a receiver is properly producing a 22kHz signal.

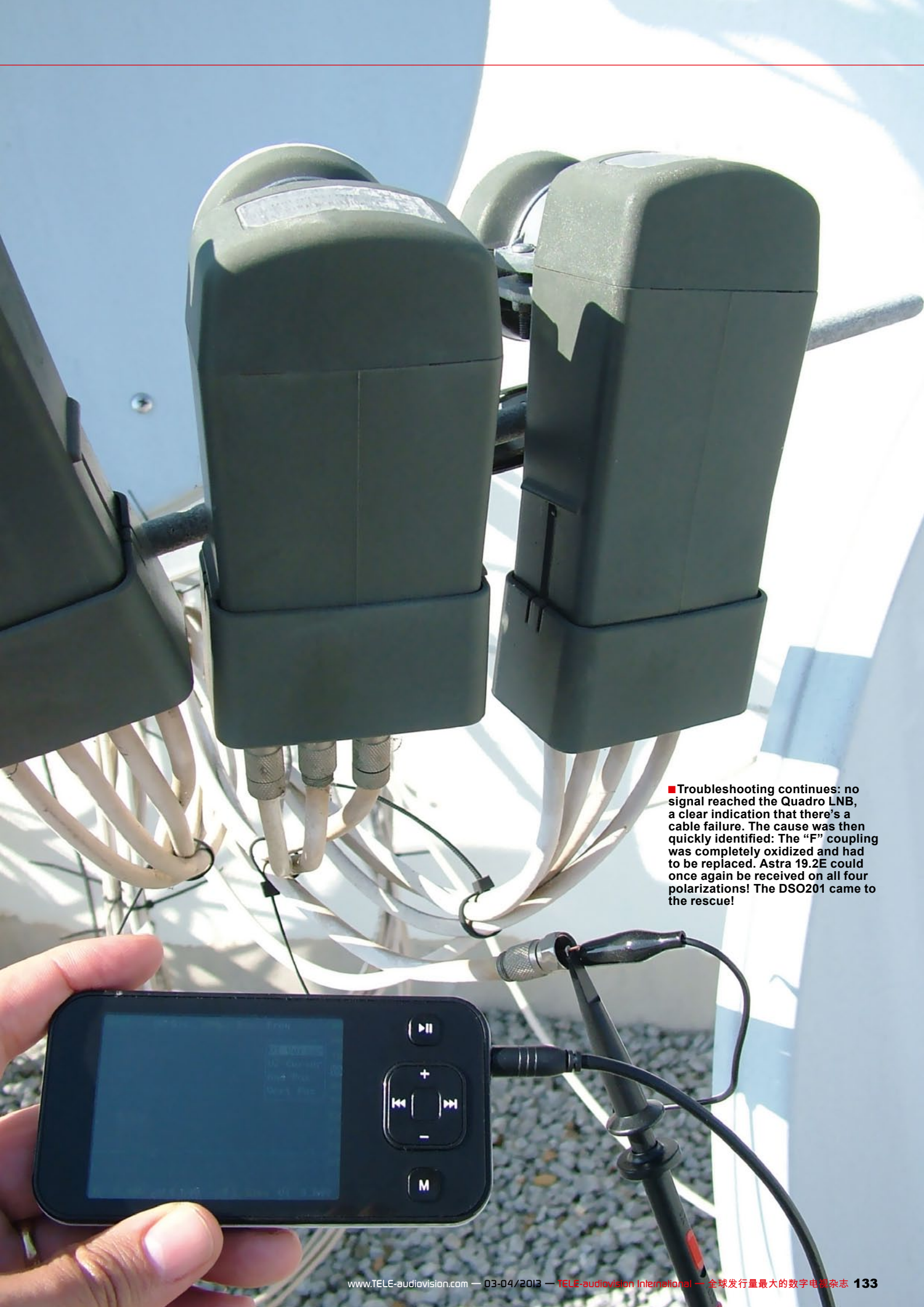
The main feature of an oscilloscope is its resolution. This describes the frequency that the scope can measure. Professional analyzers can perform fast measurements with over 100MHz. The DSO201 is promoted as having a bandwidth of 1MHz but this is more of a marketing value. In reality the bandwidth of handheld oscilloscopes should be reduced by a factor of ten in order to obtain more realistic values. So how else would you use the DSO201 in satellite applications beyond measuring the 22kHz signal?

As previously mentioned, an oscilloscope measures a voltage over a period of time. This time period is user-settable, typically from 1µs to 1s or even longer. This value represents the time period on the x-axis while the voltage is represented by the y-axis. When the end of the x-axis is reached, the display restarts from the beginning. With analog oscilloscopes with a CRT, the cathode beam is simply returned to the left side of the screen and starts moving once again to the right. Without any additional configuration a very confusing and fidgety image would be displayed; the return sweep in the x-axis usually doesn't occur at an ideal time for the next graphic to be offset generated. To solve this there's the Trigger function. This function only allows a new graphic to be generated when the voltage level reaches a predefined level. With periodic swings a freeze-frame image is created. The Trigger function offers two parameters: the voltage limit value and the the Trigger type:

- Decreasing
- Increasing
- Single shot
- Continuous

A horizontal marker is raised or lowered to mark the voltage level where the oscilloscope begins a new measurement from the left side of the screen. The DSO201 can offset the null point above the x-axis so that signals that exist before the Trigger point can be made visible. In order to read the results, a modern oscilloscope comes with a Pause function that freezes the current screen image. Two horizontal and two vertical markers can then be placed as needed on the display so that the voltage and time period can be read. The calculated minimum and maximum values along with the delta value are then displayed. The DSO201

**Troubleshooting: the vertical/lowband polarization could not be received from Astra 19.2E. The DSO201 was used to determine that the multiswitch was OK**



■ **Troubleshooting continues: no signal reached the Quadro LNB, a clear indication that there's a cable failure. The cause was then quickly identified: The "F" coupling was completely oxidized and had to be replaced. Astra 19.2E could once again be received on all four polarizations! The DSO201 came to the rescue!**

has the capability to automatically measure and display the frequency of a periodic signal.

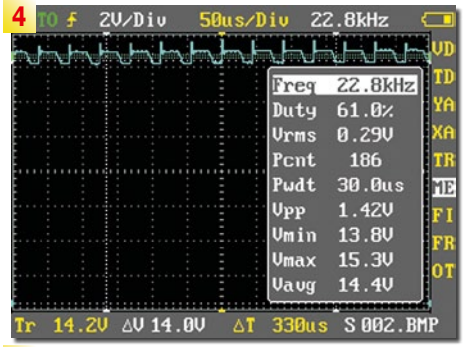
Our interest in the DSO201 has to do with a big problem that can be encountered in a satellite antenna installation. Customers routinely complain that they can't receive every channel. Many times the cause of this is faulty supply voltage to the LNB, a defective 22kHz signal, sometimes it's a defective tuner and very often it's simply the LNB that is no longer up to snuff. Most satellite signal analyzers can't be used to troubleshoot these problems especially when there are no substitute receivers or LNBs.

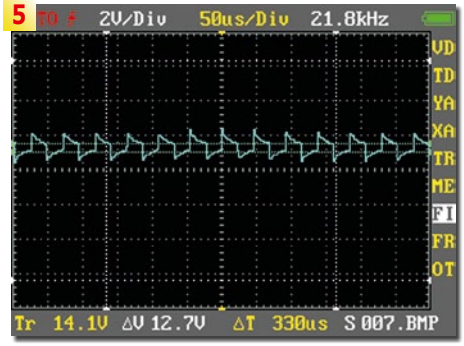
An oscilloscope, on the other hand, can quickly pinpoint the cause of the problem:

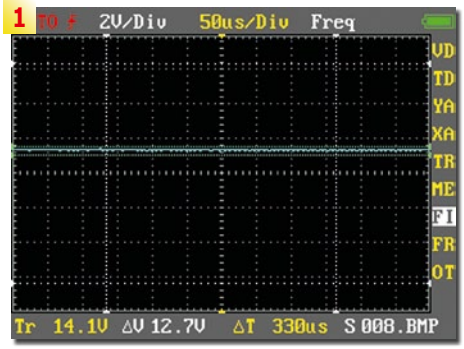
• 14/18V Troublesooting: To check and see if the LNB is getting the proper voltage, a multimeter would be good enough. The voltage measured at the inner conductor should be 14VDC for vertical polarization and 18VDC for horizontal polarization. But with the DSO201 this voltage can not only be measured, it can also be monitored over a short period of time so that, for example, any dropouts or pulses can be made visible.

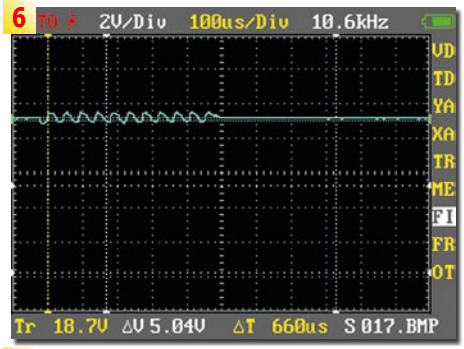
• 0/22kHz Signal: More and more often we see older receivers or signal analyzers that can no longer properly switch to the high band. The question the installer has to answer: is the tuner defective or is it the LNB? With the DSO201 you can instantly determine if the 22kHz signal is available and if it's of sufficient quality. In theory it should be a square wave signal but in reality different receivers produce very individualized switching signals.

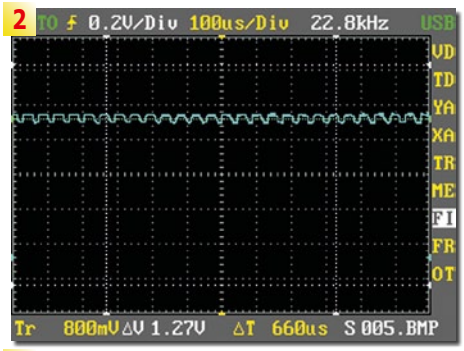
• DiSEqC Commands: Another problem could be faulty switching between different satellite positions. DiSEqC switches have a tendency to fail especially if they're mounted on the antenna mast. In our experience the life span of a DiSEqC switch is about four years before at least one input no longer functions correctly. The DSO201 can't be used to interpret the DiSEqC commands, but they can be made visible. So, the DSO201 can be used to confirm that the signals are being sent and that they are reaching the corresponding multiswitch.

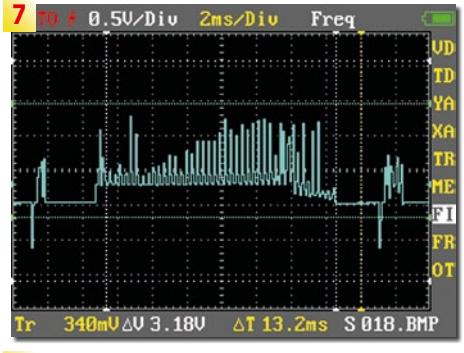


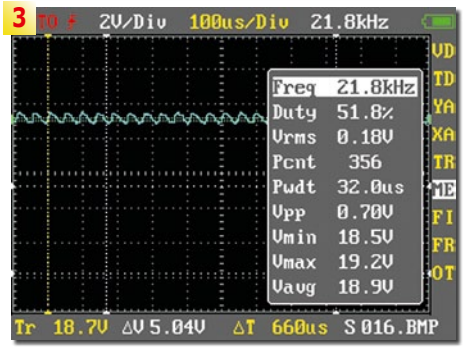



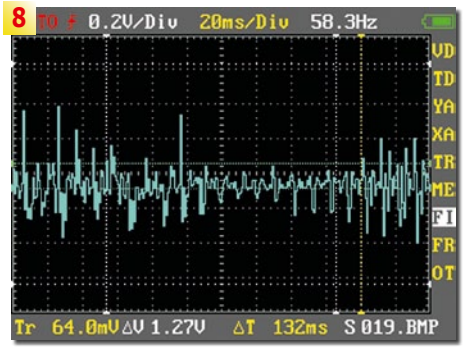




**1. 14.1V and a straight line – the LNB was switched to the vertical low band.**

**2. The tuner provides the 22kHz signal to switch to the high band. The DSO201 automatically displays the signal in the upper right. The shape of the signal is quite good indicating that the tuner is using an optimal signal generator.**

**3. Checking the tuner of a receiver. The 22kHz signal in reality is only 21.8kHz and the voltage level averages 18.9V (horizontal polarization). This is all OK to guarantee the proper switching of the LNB.**

**4. With another receiver the frequency is 22.8kHz and for the vertical polarization we measured 14.4V.**

**5. With this receiver the signal doesn't exactly look like a square wave yet it's still correctly interpreted by our LNBs; the DSO201 also indicates an acceptable frequency of 21.8kHz.**

**6. Even DiSEqC commands can be displayed by the DSO201 but for the most part they can't be interpreted. But at least you can confirm that a signal is being sent and also arriving at the input of the multiswitch. While the DiSEqC command is being sent, the 22kHz signal is momentarily interrupted!**

**7. Here the DSO201 is displaying a video line. Clearly recognizable to the left is the black edge band and the line synchronization pulse as well as the black edge band on the right side.**

**8. Almost everyone has already seen an audio signal on an oscilloscope.**

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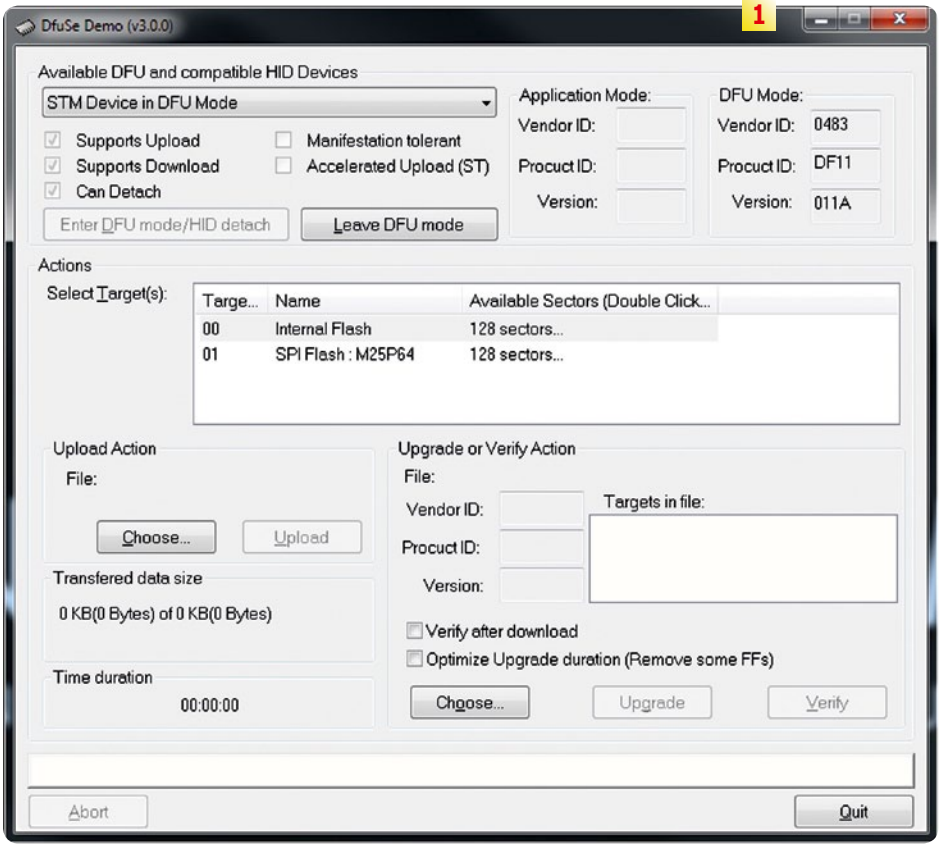
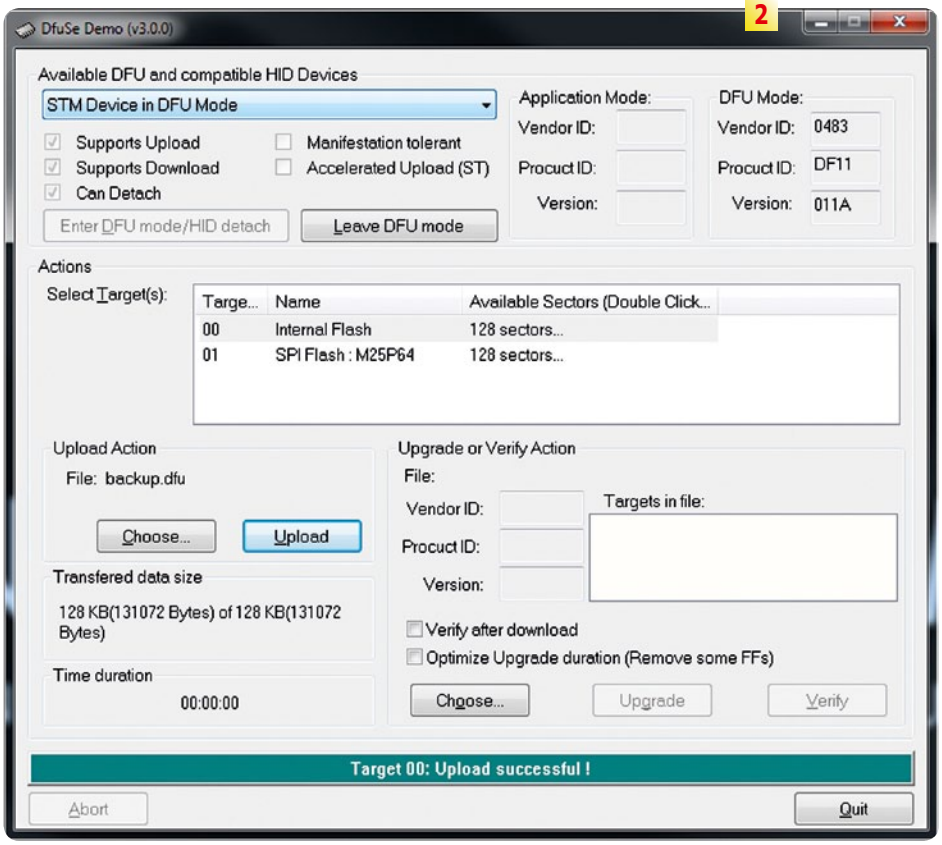
• RS-232: The DSO201 can also be used to display the RS-232 signals, that is, the serial interface communications. It's not possible to log or interpret these signals but you will be able to recognize, just like with DiSEqC commands, that data bits are being sent or received. And with a little practice, the baud rate can be identified. We recommend preparing an extra adapter with which the RX and TX data lines can be more easily probed since it would be very hard to get to the corresponding pins of the interface.

• Video-Signal: The best way to check a composite video signal is with a TV but a picture doesn't always make it to the TV screen. There could be a fault with the receiver or with the TV, or the problem could be with the cable. If you as an installer don't have a substitute at hand, the DSO201 can help. It can present the TV picture lines that are easy to recognize based on the blanking intervals. Not much practice is needed to determine if a video sig-





**The DSO201 can easily be used on all the different receiver outputs to determine if a signal is present without the need of cables or monitors.**




**1. The DSO201 is programmed with the help of the DfuSe demo application. The device is turned on by holding down the VOL button and connected to a PC via the USB interface. DfuSe should show "STM Device in DFU Mode" in the upper left.**

**2. First you should create a backup the preinstalled firmware. Click on "Choose" to name the file and then on "Upload". When the status line below shows "Target 00: Upload successful!" you can safely upload alternative firmware. In an emergency you can reload the backup.**

nal is useable based on the graphic.

• Audio-Signal: Just like with the video signal, the DSO201 can also display the audio signal. This makes it easy to determine if an audio signal is present or if there's a problem inside the receiver. A small tip: make sure the volume isn't turned all the way down, the mute function isn't active or if only the digital audio output is active…

You'll always come across something that doesn't work and yet with the DSO201 oscilloscope the problem can typically be isolated in just minutes. Sometimes the LNB voltage fails, sometimes the 22kHz generator becomes defective. More often than not though it's a problem in the cabling: the wrong cable is connected to the multiswitch and no signal reaches the TV room. The DSO201 can help in an instant.

If you're not expecting a powerful, professional-class digital oscilloscope, you won't be disappointed with the DSO201. The scope is quite small and relatively inexpensive. It has become a standard piece of test equipment here in our test center; it takes up less room than a multimeter and is a perfect troubleshooting tool.

# One Day in the Test Center...

Our test center is always busy. There are receivers, signal analyzers, TV cards, etc. that constantly need to be tested. Unfortunately, you can't get around the fact that there will sometimes be failures. And so I had my own little dumb mishap: everyone knows that you shouldn't plug in or unplug an LNB cable while the tuner is turned on so as to avoid any short circuits. But if you're in the middle of a test and need to quickly move a cable around, you might be inclined to ignore this golden rule.

Last night while I was undergoing an extreme satellite card test that involved switching back and forth between different antennas, I wanted to connect the motorized antenna one more time. I unplugged the cable and then wanted to plug it in to the antenna when a small spark jumped from the center conductor to the outside shield. This wouldn't be the first time that this happened to me but at some point in subsequent tests I no longer had a proper signal. Of course, I thought, the tuner had failed. But it wasn't that simple; I was still able to display transponders with CrazyScan although the antenna wouldn't turn and actually the spectrum should have appeared differently.

To make a long story short, I used to DSO201 to determine that the tuner was no longer supplying the necessary 14/18V. That I was still able to receive transponders was only because the antenna had a twin LNB. The necessary voltage was being supplied by other satellite signal analyzers that were also connected. That's why it was possible to receive a signal but not possible to switch between polarizations. And it's exactly these kinds of "failures" where the DSO201 would be a perfect tool to find out what's going on.

A useful tip: if you want to move cables around on a satellite PC card without having to turn the PC on and off, simply end the TV application. This would also turn off the power to the tuner and a short circuit would then not cause any damage.

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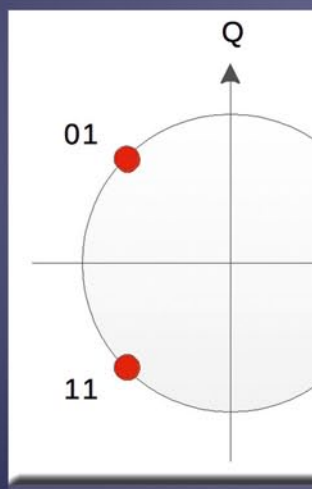
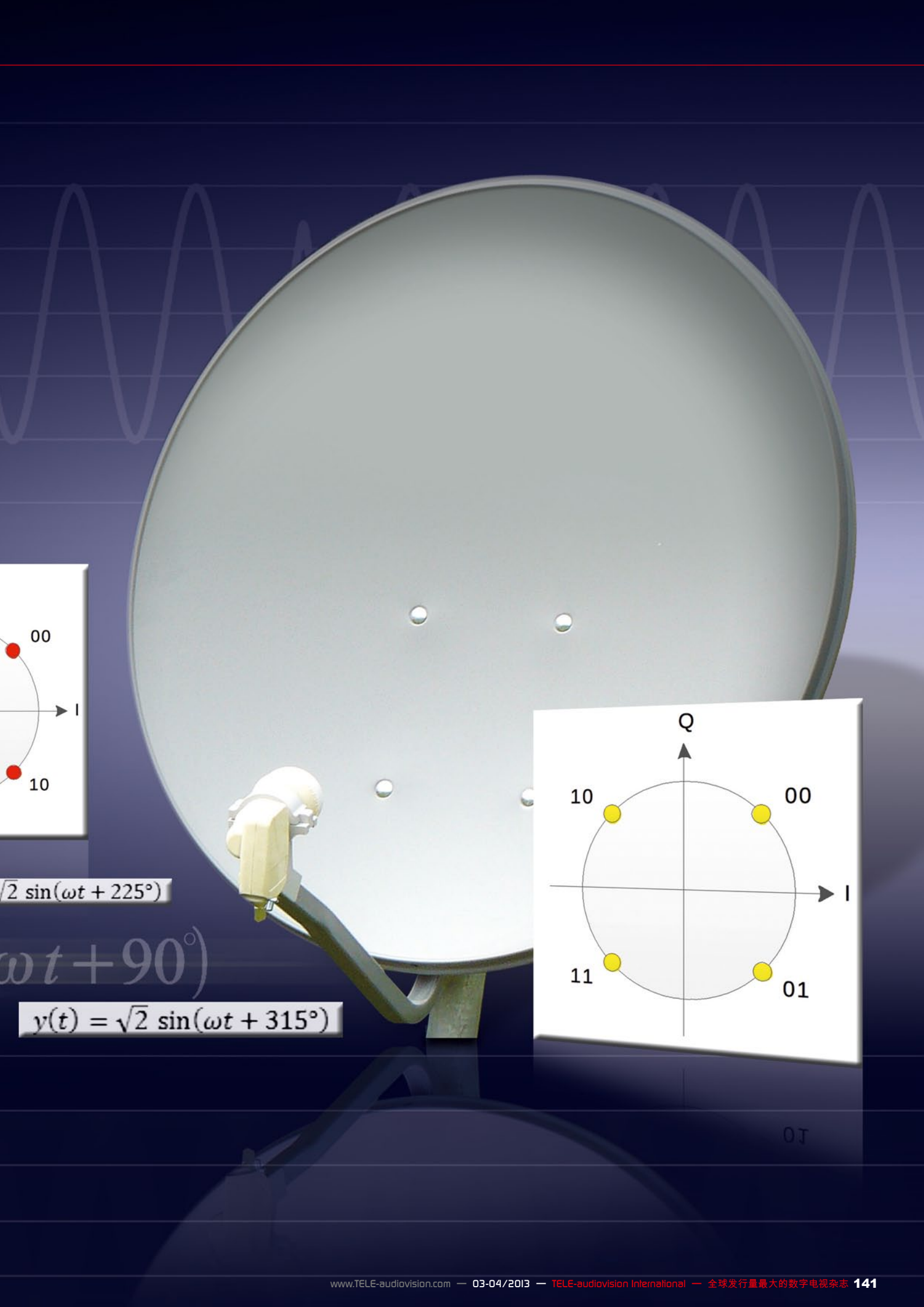



$y(t) = \sqrt{2}\sin(\omega t + 45°)$

$y(t) = \sqrt{2}\sin(\omega t + 135°)$

$y(t) = I x \sin \omega t + Q x \sin$

- *как автоматически определять сдвиги фаз*
- *возврат перевернутых сдвигов фаз*
- *нахождение синхронизационых байтов*
- *как констеляционная диаграмма показывает*
- *замещенные вектора*


00
I
10
$\sqrt{2}\sin(\omega t + 225°)$
$\omega t + 90°)$
$y(t) = \sqrt{2}\sin(\omega t + 315°)$
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*Jacek*

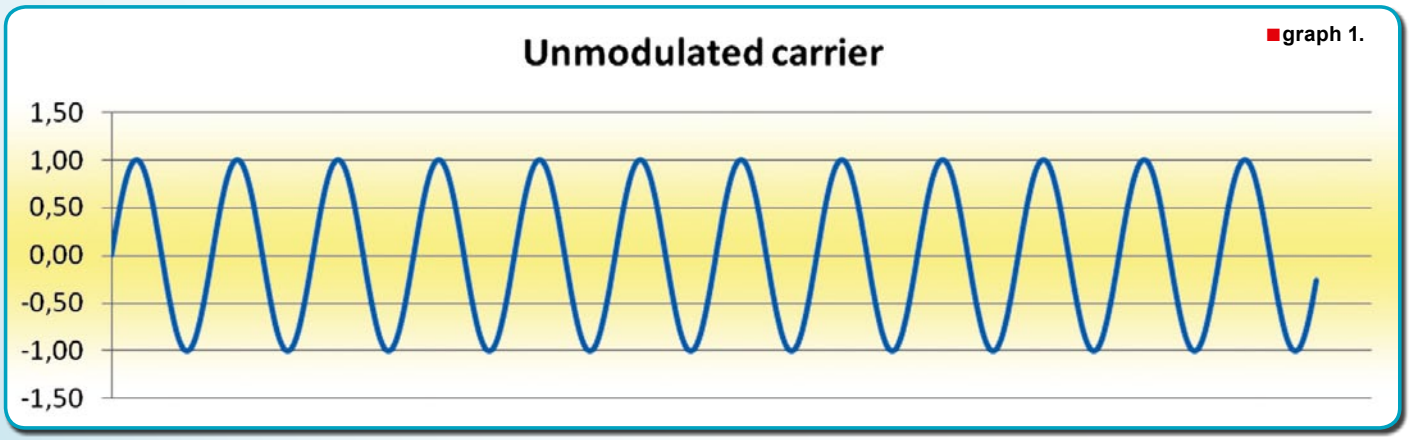
**As satellite signal analyzers become more and more affordable, many satellite enthusiasts decide to buy and use them. When they start playing with their new instruments, they sometimes encounter terms not so obvious to everybody. Transponder frequency, symbol rate, FEC or polarization are commonly used and most of the users have no problem in apprehending their meaning. But I/Q vectors can be a puzzle for some of the fans. You can see "I/Q Normal" and "I/Q Inverted" (or "I/Q Swapped") options in some analyzer screens. What does it mean? In fact, it is not anything complex and we will explain it in a simple way in this feature article.**

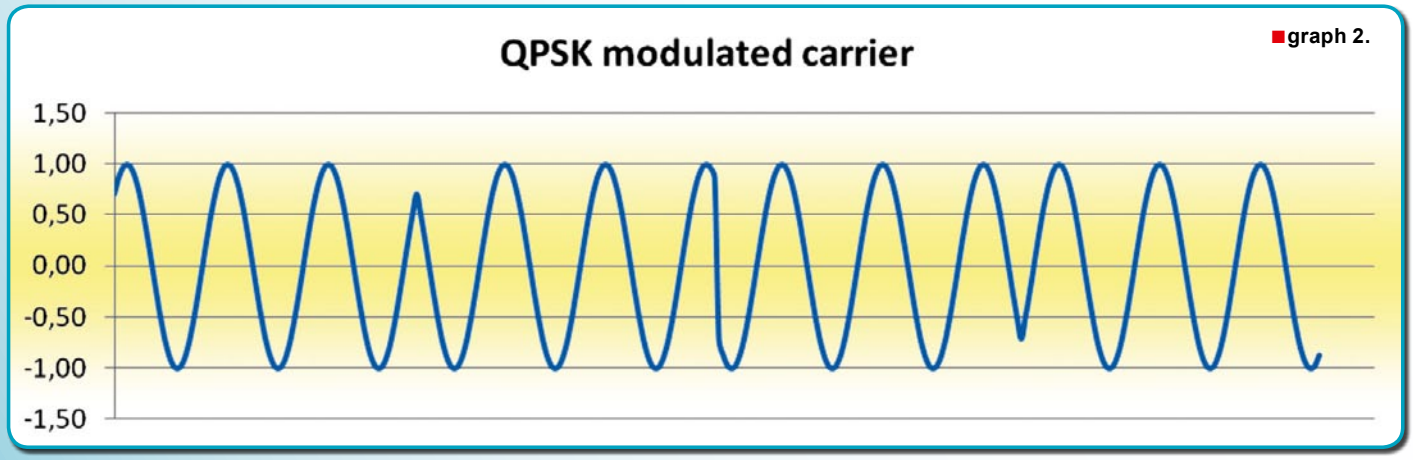
Let's consider the simplest form of modulation used in satellite TV – QPSK. In this modulation, the sinusoidal signal amplitude remains unchanged but its phase can change at regular intervals. For example, if we have a transponder broadcasting with a symbol rate of 27.5 Ms/sec, its phase can change 27.5 million times in a second. Or we can say that one symbol lasts for $\frac{1}{27500000}$ sec (about 36 nanoseconds). There are four phase shifts allowed in QPSK what corresponds to four different symbols.

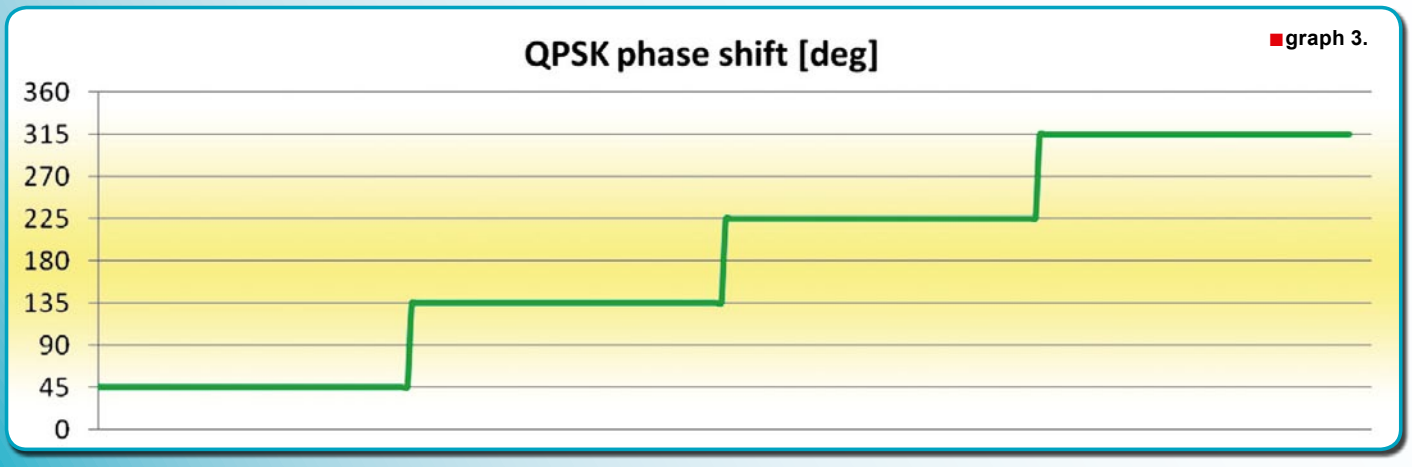
| Phase shift | Symbol |
|---|---|
| 45° | 00 |
| 135° | 01 |
| 225° | 11 |
| 315° | 10 |

In the figures below (graph.1-3), you can see an example of a QPSK modulated carrier with all four possible phase shifts in the order: 45°, 135°, 225°, 315°.

In this example, there are



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four symbols sent: 00, 01, 11 and 10. Just to remind you, in QPSK, a symbol is a pair of subsequent bits.

Phase shifts are produced by summing a carrier signal with the auxiliary signal of the same frequency but shifted in phase by 90°. A QPSK modulated signal can be defined as:

$$y(t) = I \times \sin \omega t + Q \times \sin(\omega t + 90°)$$

The resulting y(t) is also a sine function but its amplitude and phase depends on the I and Q values. In QPSK modulation I and Q can be equal either to 1 or to -1. Therefore we have four different possibilities for y(t):

$$y(t) = \sqrt{2}\,\sin(\omega t + 45°)$$
or
$$y(t) = \sqrt{2}\,\sin(\omega t + 135°)$$
or
$$y(t) = \sqrt{2}\,\sin(\omega t + 225°)$$
or
$$y(t) = \sqrt{2}\,\sin(\omega t + 315°)$$

A pair of bits is assigned to each possible state of y(t) in QPSK. This is shown graphically in a constellation. (graph 4.)

In other words, if the incoming signal is shifted 45° in phase,

$$y(t) = \sqrt{2}\,\sin(\omega t + 45°),$$

your receiver understands that two zero bits are being sent to it. If the signal is shifted by 135°, your box assumes that bits 1 and 0 have arrived and so on.

And what will happen if we swap the I and Q vectors? This may happen if somebody unintentionally sets up the headend in a wrong way or simply will not take into account the natural vector swap that takes place in some frequency conversions.

In such situation the constellation will look differently – see the graph 5.

The 45° and 225° shifts produce the same bits as previously but the remaining two: 135° and 315° are swapped.

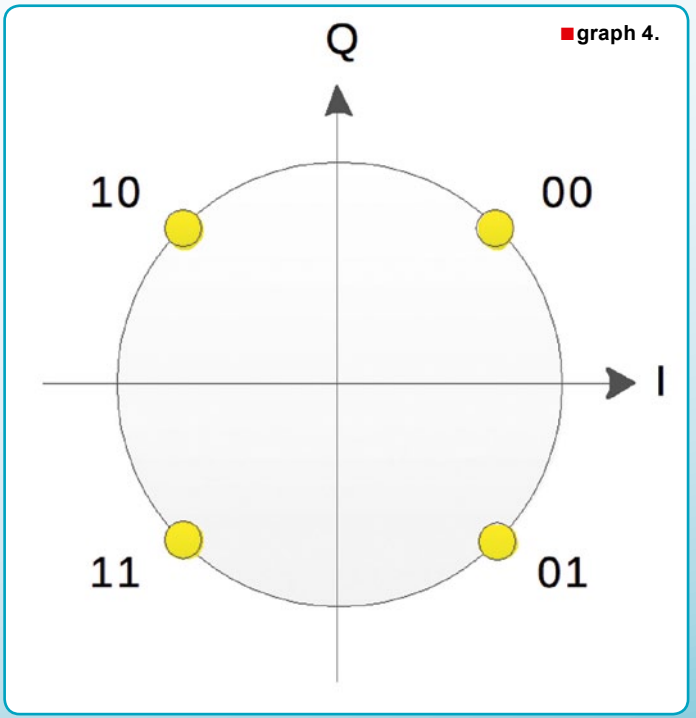
So, in a continuous flow of bits, some pairs of bits will stay undistorted (00 and 11) but the other pairs will take reverse values 10 will change to 01 and vice versa. That's the effect of inverted I/Q modulation.

Some old timers can still remember the first generation of satellite receivers that in their transponder data required the user to define I/Q Normal or I/Q Inverted. More recent receiver can automatically detect I/Q inversion and reverse the operation of their demodulators accordingly. But how is it possible to detect a I/Q swap?

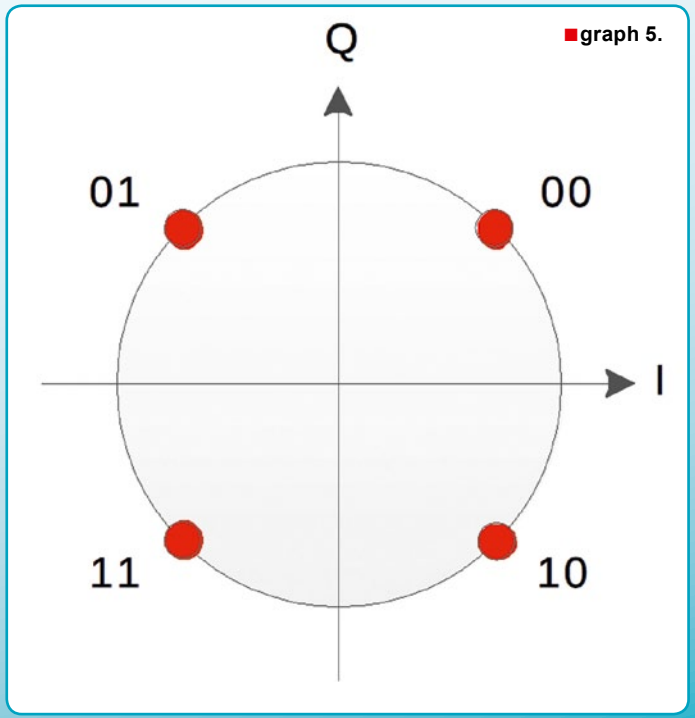
The transport stream consists of fixed length data packets. For example the DVB standard requires the packet to have 204 bytes. The very first byte in every packet is always the same 0x47 in hexadecimal notation or simply 01000111 in binary format. It is called the sync byte as it is used for synchronization. Your receiver right after tuning to a new transponder starts looking for the 0x47 bytes to find the ones located every 204 bytes in a stream. Only in this way it can start decoding the content of the packets. If it is impossible to find regularly spaced 0x47 bytes, it is a clear indication that I/Q vectors are swapped. So, the receiver also swaps I/Q signals in its demodulator because one inversion and another inversion recreates the normally modulated signal again.

The principle described above applies also to more complex modulations like 8PSK or QAM. The only difference is that I and Q can take more values than 1 and -1 as in QPSK what results in more phase shifts and amplitude values of y(t). The effect of I/Q swap is the same: some bits remain unchanged, the others are reversed (0 becomes 1 and vice versa). However, as you already know now, it is not so difficult to detect such situation and take countermeasures - simply apply additional I/Q swaps in a receiver.

Signal analyzer can detect I/Q swap on the same basis as your receiver does. QPSK modulators usually offer in their menu a possibility to invert I and Q vectors. Today, it does not make any difference to your receiver whether a transponder transmits with normal or inverted I/Q vectors. And the viewer cannot sense it in any way either.



graph 4.



graph 5.

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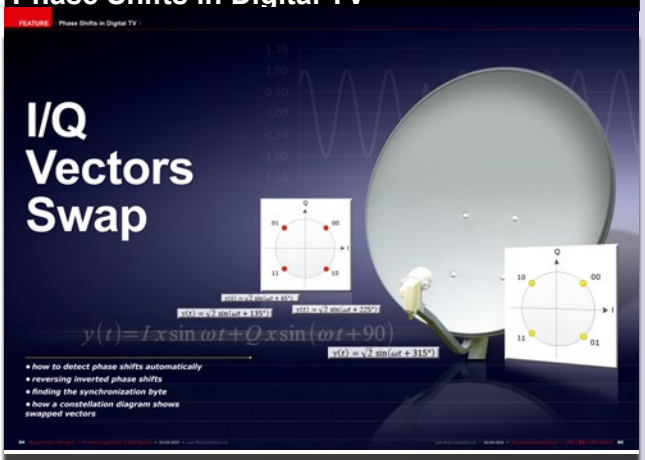


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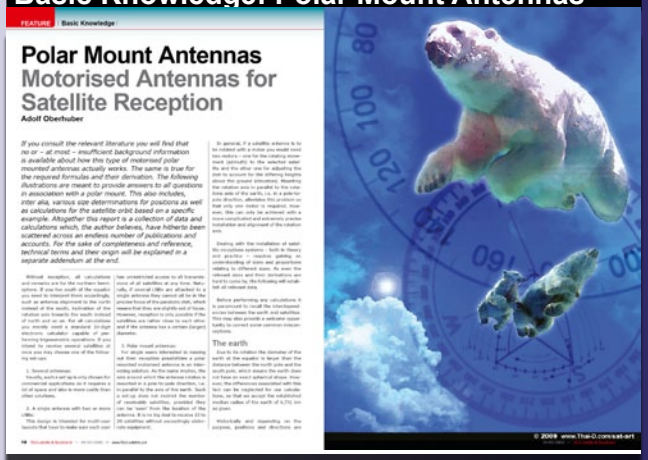
## Basic Knowledge: Polar Mount Antennas

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## Digital Terrestrial TV - 2nd Level


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## DVB-S2: Hide the SD inside the HD


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## The Secret Special Transmission Modes


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## How a tuner for VCM operates


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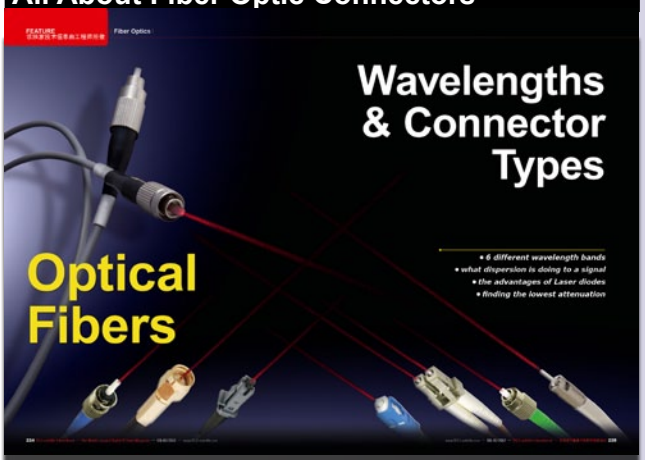
## All About Fiber Optic Connectors

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## DVB-S2 MIS Reception with VCM/ACM


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## Automatic Creation of 3D


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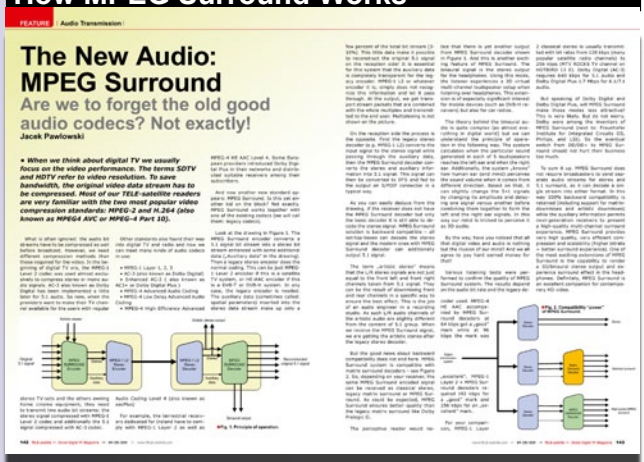
## How MPEG Surround Works

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## How a Silicon Tuner Works


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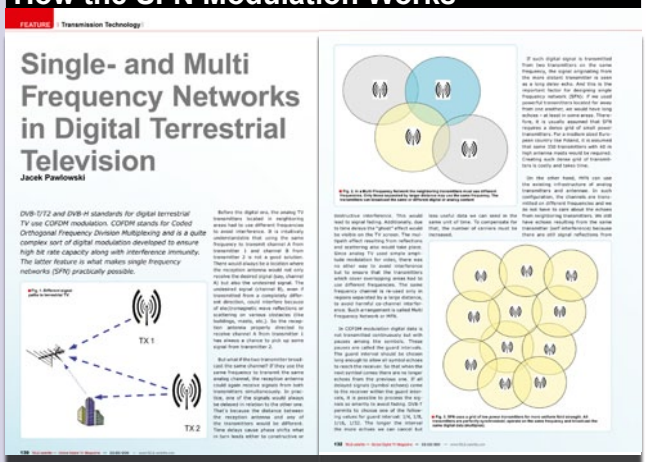
## How the SFN Modulation Works

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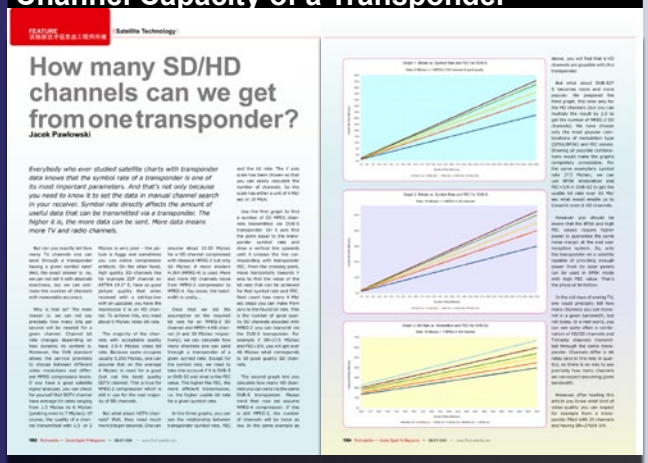
## Channel Capacity of a Transponder

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## How HbbTV Works


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## CI+ and HD+Encryption


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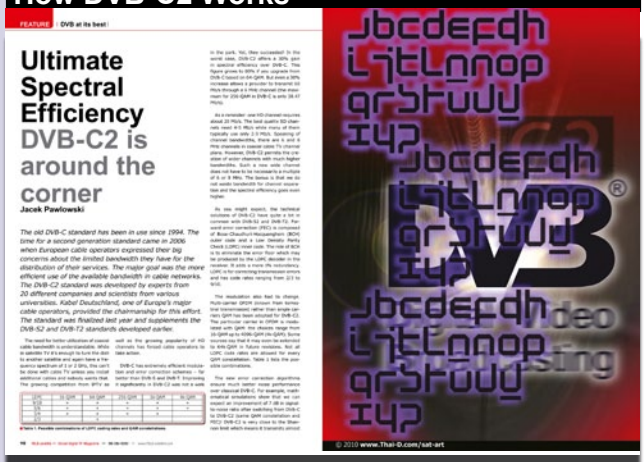
## How DVB-C2 Works

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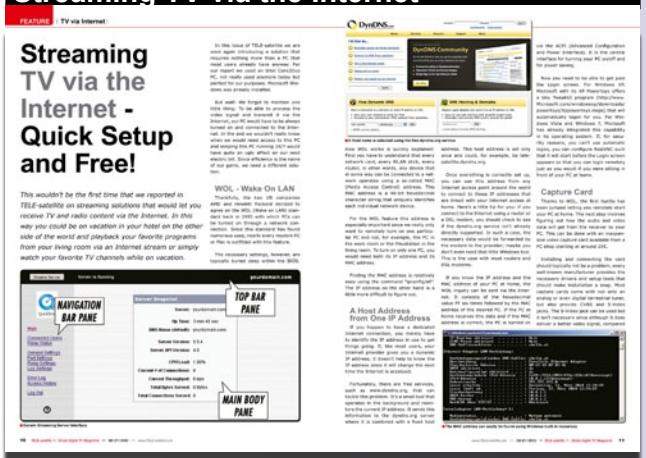
## Streaming TV via the Internet

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## How ABS-S Works


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## Testing Horizon to Horizon Actuator


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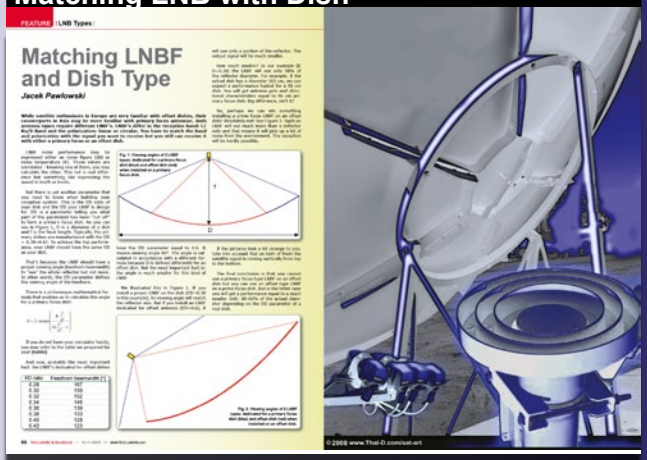
## Matching LNB with Dish

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## How SCR Works


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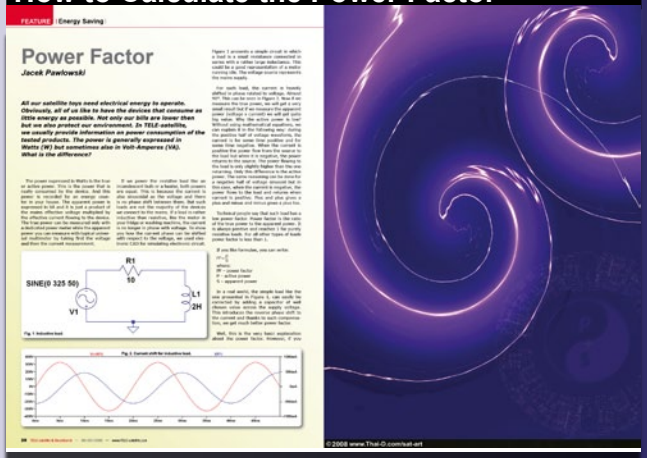
## How to Calculate the Power Factor

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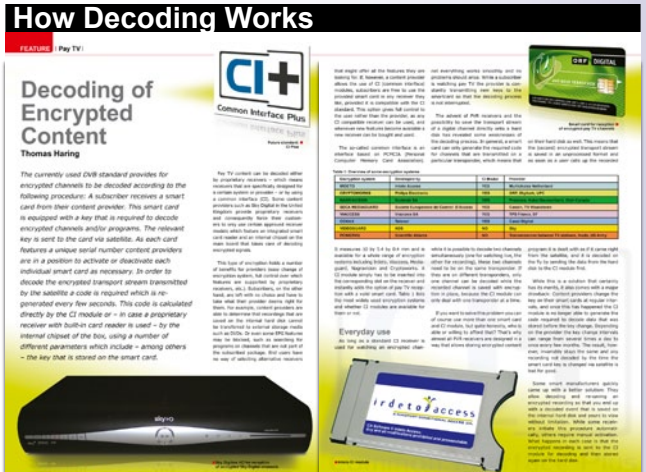
## How Decoding Works

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## How to Solve Problems with DiSEqC


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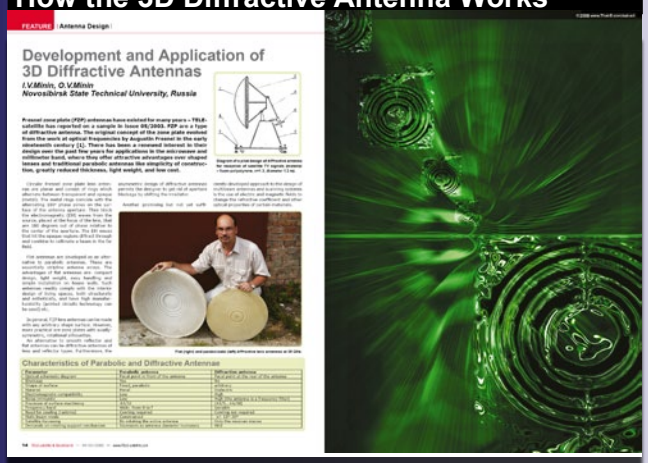
## How the 3D Diffractive Antenna Works

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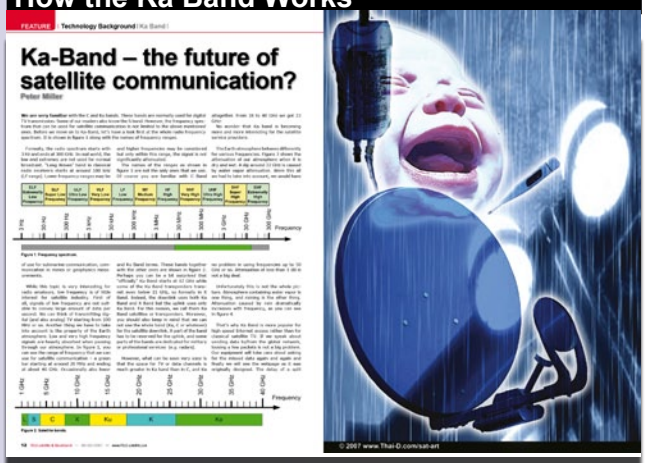
## How the Ka Band Works

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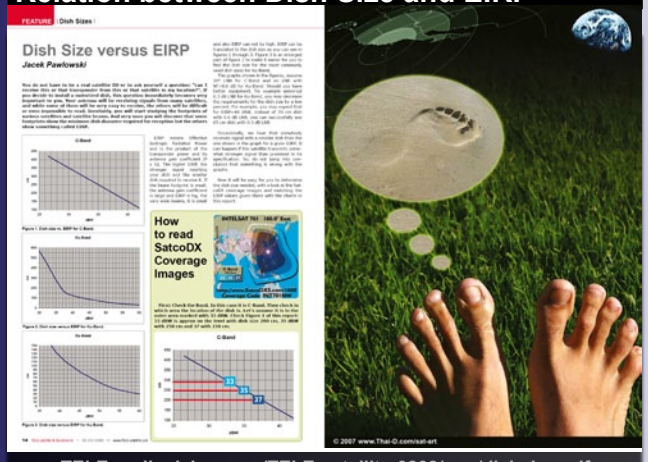
## Relation between Dish Size and EIRP

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## How MPEG Works


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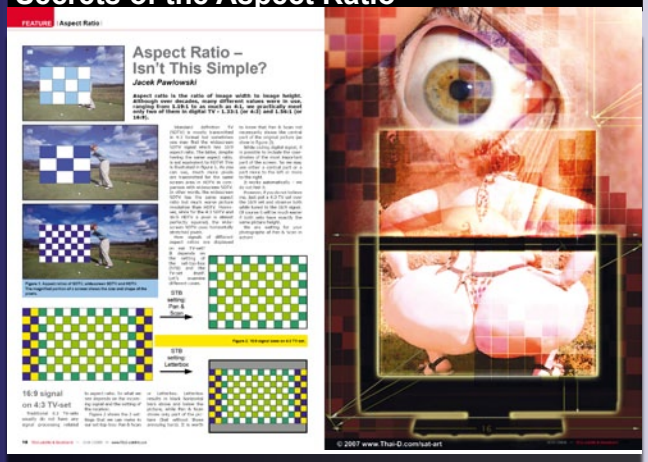
## Secrets of the Aspect Ratio

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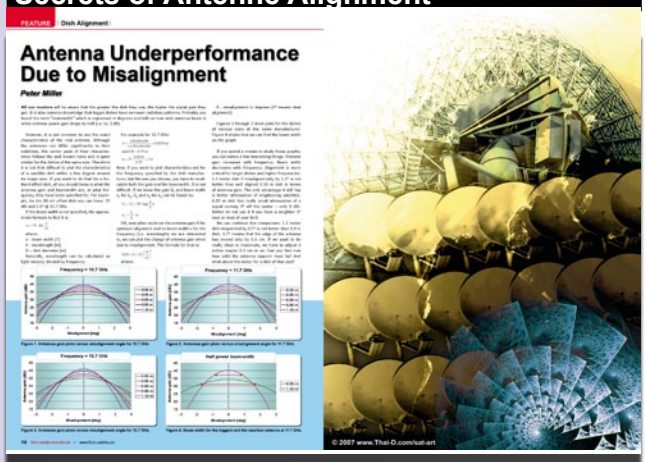
## Secrets of Antenne Alignment

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## How the Network Connection Works


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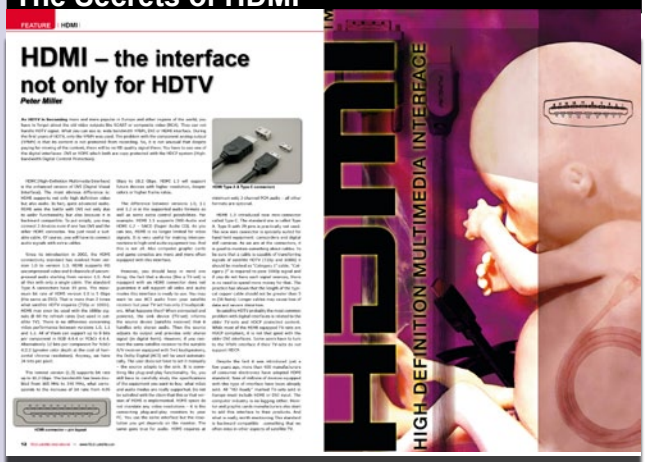
## The Secrets of HDMI

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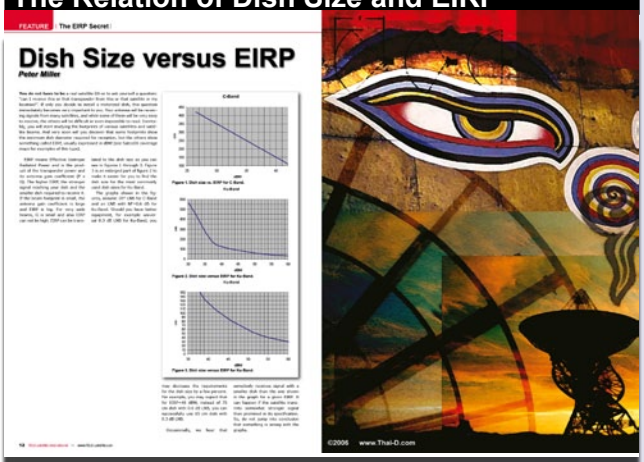
## The Relation of Dish Size and EIRP

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## The Secrets of Intermodulation


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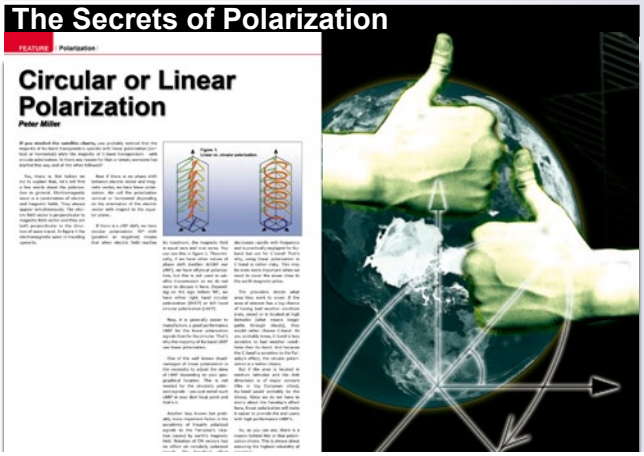
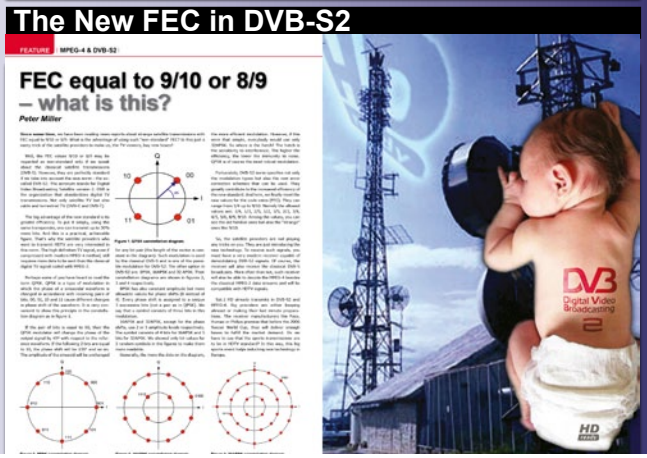
## The Secrets of Polarization




## The New FEC in DVB-S2



# Анализаторы сигнала от SAT-LINK


■ Here in this building in Quanzhou's High Tech Park you'll find SAT-LINK's headquarters and the signal analyzer's final assembly area. The circuit boards and remaining components are assembled in another location in Quanzhou.

- ***Всего пять лет на рынке***
- ***Нацелен на такую группу продуктов, как анализаторы сигнала***
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- ***Совершенно новое: комбинированные анализаторы для DVB-S2 и T2 с быстрым отображением спектра***

# SAT-LINK has only one product group: digital signal analyzers

If you do only one thing, you can fully focus on that one thing. This is Qing-Zhang Lin's philosophy. He is General Manager of the five-year young company SAT-LINK. "We only produce digital signal analyzers", confirms QingZhang Lin, "and are exclusively involved in the export market."

The company was founded only five years ago in 2008 with 20 R&D employees and 200 production employees.

■QingZhang Lin is SAT-LINK's General Manager


Five years later it has grown to 30 R&D engineers and 250 production employees.

SAT-LINK's headquarters are located in Quanzhou's High Tech Park in the Fujian province in southeastern China directly across from Taiwan. The production facilities with the latest SMT machines are in the Luojiang suburb northeast of the seven-million-inhabitant city of Quanzhou.

Since SAT-LINK only exports their products, we wanted to know where they all go. General Manager QingZhang Lin lists for us all the different regions: "60% of our production is shipped to Europe, 20% travels to the Middle East, 10% goes to North America and the rest are shipped to the remaining regions."

SAT-LINK has expanded its product range so that four different classes are covered. The top-end and thus most expensive signal analyzer comes with the largest display and an illuminated keyboard. One of the analyzers in this series, the combo SAT-LINK model WS-6936 for DVB-S and DVB-T, was already introduced by us in the 11-12/2012 issue. Business Manager Nancy tells us


1

1. Project Manager GuiHuang Huang presents SAT-LINK's high-end success model. This analyzer is available in various versions and will shortly also be available as a combo unit with DVB-S2 and DVB-T2 as well as a very fast spectrum display.

2. Nancy is Business Manager and is always on the telephone taking orders from customers from all over the world. When she's not at SAT-LINK's headquarters talking with customers on the phone, she's traveling all over the world visiting them.

3. R&D Manager Han Guang Rong is responsible for the function and development of the signal analyzers. He checks the function of SAT-LINK's devices with oscilloscopes and other professional test equipment.

that this analyzer series is very popular in Europe.

The next class of analyzers are those with smaller displays and non-illuminated keyboards. "These analyzers are especially popular in the Middle East."

There are also two brand new Satellite Finder product lines: one of these handy models even has a camera input. "This is actually in high demand in the Middle East since many people there have installed security cameras. They can use this new signal analyzer to very easily check the function of these cameras." This new satellite signal analyzer with camera input even comes with a 12V output to supply power to the security camera.

And as if that weren't enough, SAT-LINK also offers a simple Satellite Finder with a display that only shows reception parameters and therefore can be offered very inexpensively. "This instrument is, for example, very well-suited for South America", Business Manager Nancy tells us.

And with that, SAT-LINK covers the four most important functions and pricing levels and can therefore offer these devices to all the regions of the world. All of the signal analyzers also come with DVB-S2 tuners and the terrestrial versions and combo models come with not only DVB-T/T2 but will soon also be available with ATSC (for North America) and then in the following year with ISDB-TB for the South American market. "We're in the process of expanding our activities in the Americas", reveals General Manager QingZhang Lin, "and we will also have a greater presence at trade shows in that area."

While SAT-LINK in their first year was only able to sell about 10,000 pieces, five years later those production numbers have nearly quintupled. And it's especially their brand new combo model for DVB-S2 and DVB-T2 that promises to be quite a success for SAT-LINK. Since many of the countries in Europe and Africa are quickly switching over to

2

3



**1. New from SAT-LINK: the company's first Satellite Finder and thus their most inexpensive product class. It's available for DVB-S and DVB-S2.**

**2. This analyzer is also new; it even has a dedicated camera input so that security cameras can be tested. These analyzers are especially popular in regions where security cameras are standard. These signal analyzers are also available in DVB-S and DVB-S2 versions.**


■ **Test report of the SAT-LINK combo model WS-6936 for DVB-S and DVB-T in the 11-12/2012 issue**
www.TELE-audiovision.com/12/11/satlink

DVB-T2, demand for exactly this type of model is increasing dramatically. "Our newest signal analyzer also operates with a very fast spectrum display", remarks Project Manager GuiHuang Huang, who plans the technical features of their models. "Aside from that, our models also come with an HDMI output", he adds, showing how universally capable SAT-LINK's signal analyzers can be.

By focusing on the digital signal analyzer product group, SAT-LINK has managed to thoroughly penetrate the market in just the few years since its founding. By skillfully splitting the analyzers into four different classes, SAT-LINK can offer the right device for every market. And by constantly updating the compatible standards, SAT-LINK's signal analyzers are perfectly suited for each market.

# MOI

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MOI box is a dual DVB–S2 TV tuner and dual CI slot Linux server for streaming satellite TV channels to the following client end devices within your wired or wireless home network: HDTV, PC,tablet computers, smartphones,iPhone,iPad,iPod and Sony Playstation 3. For more details, please visit our website.

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DEVISER

SAT-LINK

## Signal Analyzer Production at SAT-LINK

1

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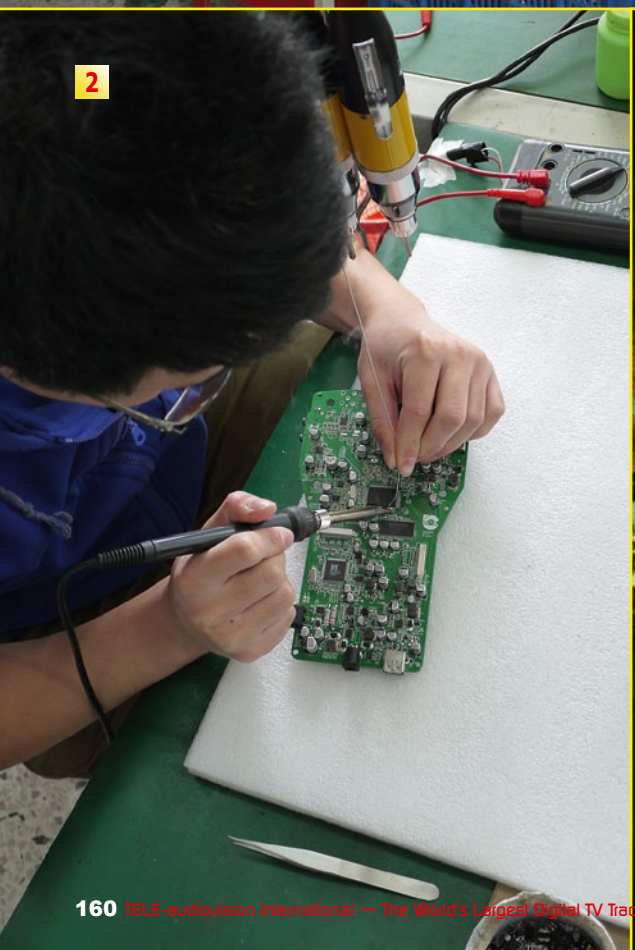

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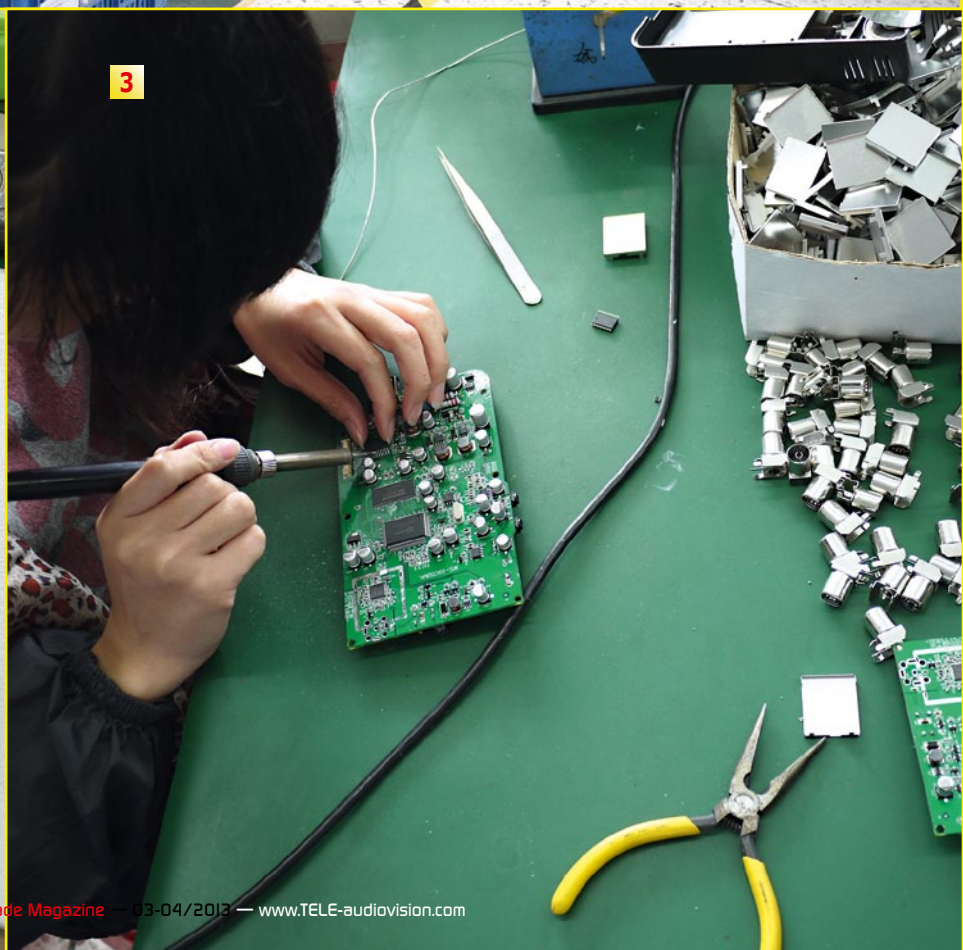


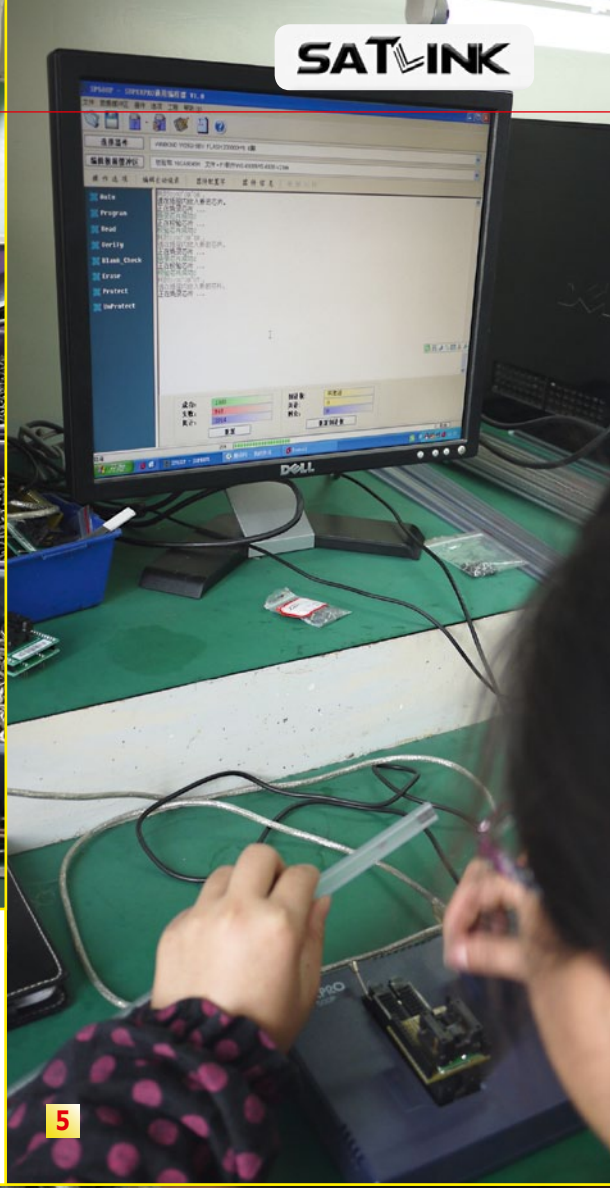


1. A look at Final Assembly. Here the completed circuit boards with the housing, the battery, the monitor, etc., are assembled into a complete signal analyzer.
2. An employee is soldering a chip
3. The connection plug is soldered.
4. The battery is installed in the housing.
5. An employee flashes the signal analyzer's memory
6. A technician checks out a defective signal analyzer.

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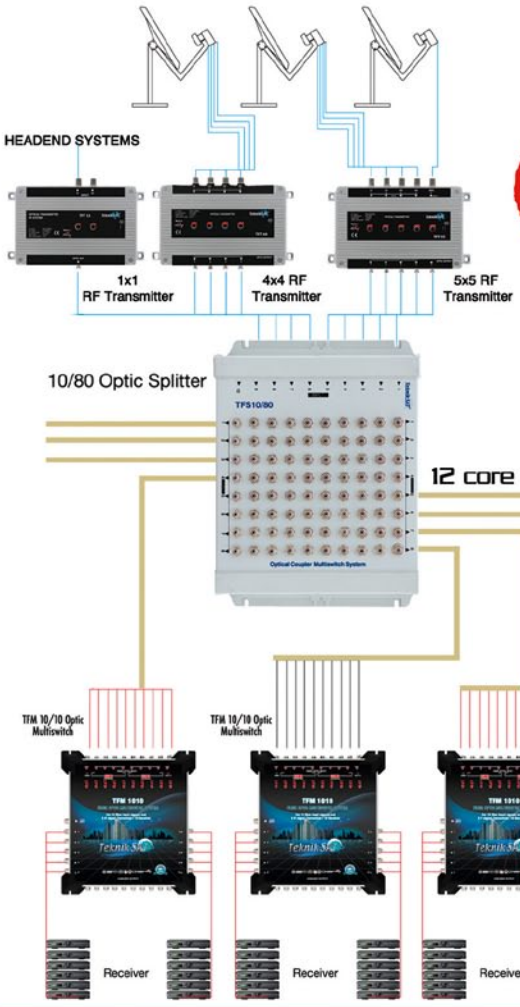
**7. Problem found: the technician identified a cold solder joint**

**8. The last functionality test: each completed signal analyzer is checked here to make sure it actually works the way it should. The technician connects each analyzer and only after a successful test can the analyzers be shipped out.**

**9. The completed analyzers undergo a 48-hour battery test here: the battery is charged for four hours and then discharged for four hours during which the antenna input is connected to a dummy load to simulate an antenna connection. This process is repeated six times to verify that the battery functions correctly.**

**10. A look in the shipping area: the SAT-LINK analyzers are packed here and prepared for transportation to the export market. Since none of these analyzers are shipped domestically to China, the entire production is exported.**

# Fiber Optic Systems

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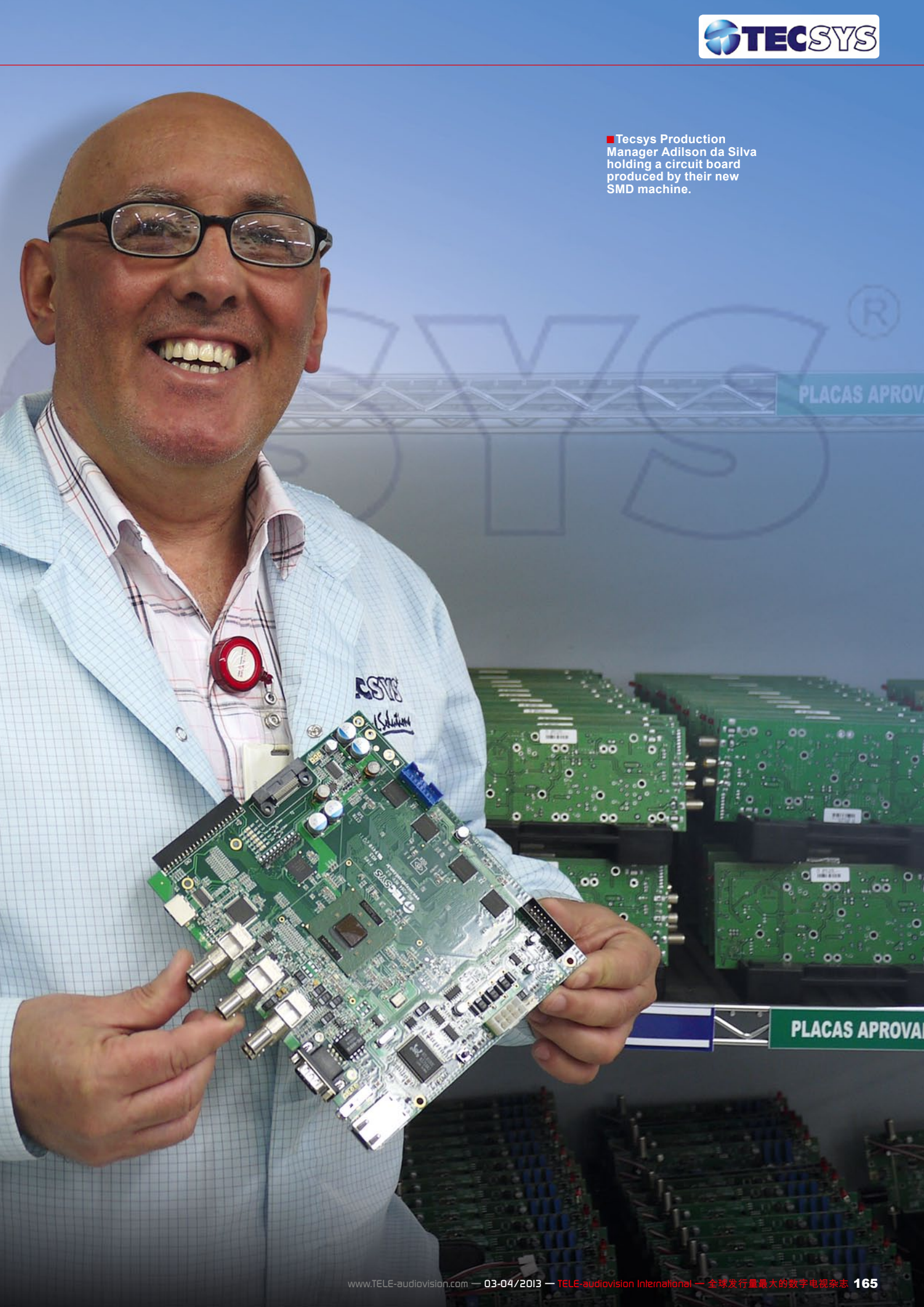
# Новая SMD линия от Tecsys

- *Очень хорошая функциональная организация*
- *Концентрируется на профессиональных спутниковых продуктах*
- *Внутренний отдел развития*
- *IRD – это их успешный продукт*




■Tecsys Production Manager Adilson da Silva holding a circuit board produced by their new SMD machine.

With a new SMD line that has been in operation since June 2012, the Brazilian manufacturer Tecsys can further increase their quality and improve their reaction time to incoming orders. Tecsys produces everything themselves.

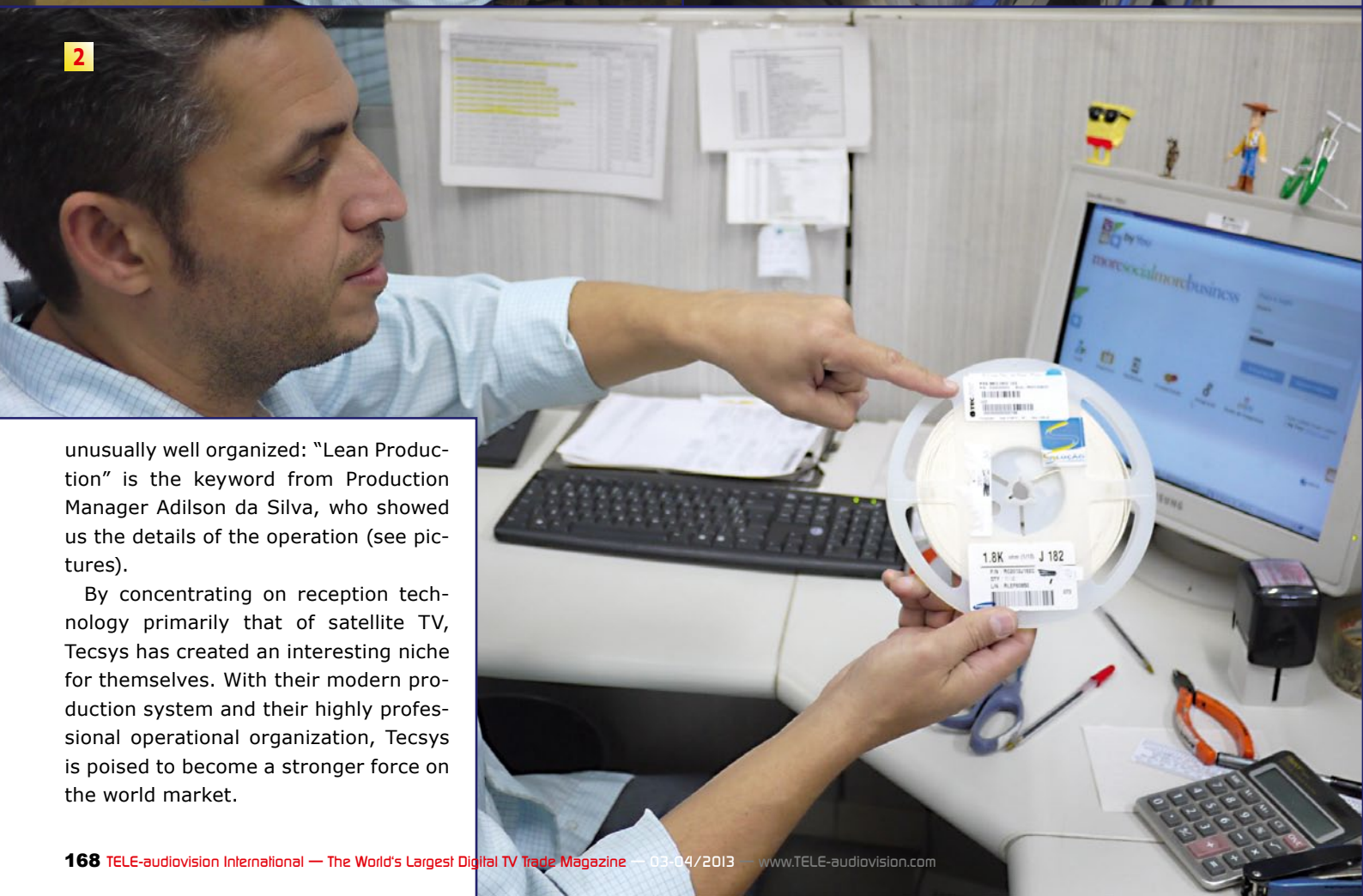
Tecsys was founded in 2000 by three partners who were all involved for many years in the TV reception industry. Today the three founders wear different hats at Tecsys: CEO is Jose Marcos Freire Martins, CCO is Jorge Alberto Ganuza and CTO is Rodolfo Vidal. CEO Jose Marcos Freire Martins explains to us how it all started: "Tecsys began as a manufacturer of SMATV products. We had seven employees and produced, for example, head ends." The company grew very quickly. "Today we have 97 employees of which 28 of them are engineers."


Tecsys produces everything that can be found in head ends, from IRDs (the company's success product) to modulators and decoders. Tecsys ships primarily to the domestic Brazilian market; many of the larger TV organizations utilize Tecsys products. Business is so good that, according to CCO Jorge Alberto Ganuza, Tecsys is planning on moving into a much larger building.

A highlight at Tecsys is their SMD line. This work was previously outsourced to another company but by installing their own production line, Tecsys is now not only much more flexible when it comes to the customer's requirements, but they can also react more quickly to changes in their own products. The entire production operation at Tecsys is

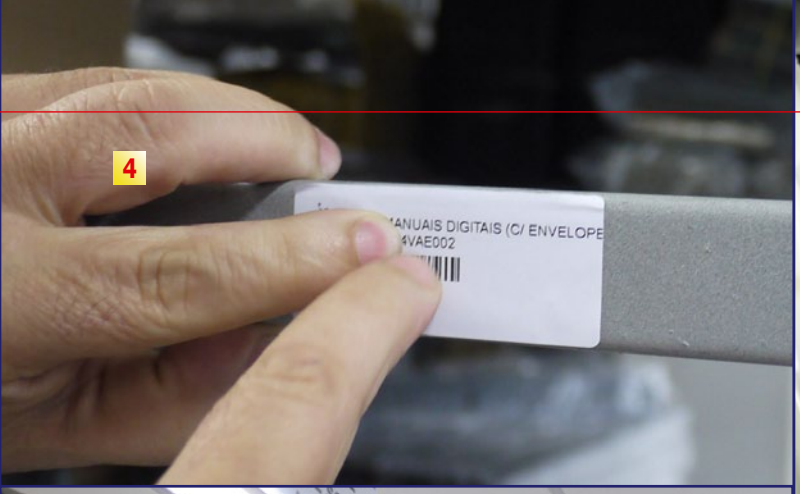
■Jose Marcos Freire Martins is one of the founders of Tecsys and is CEO of the company

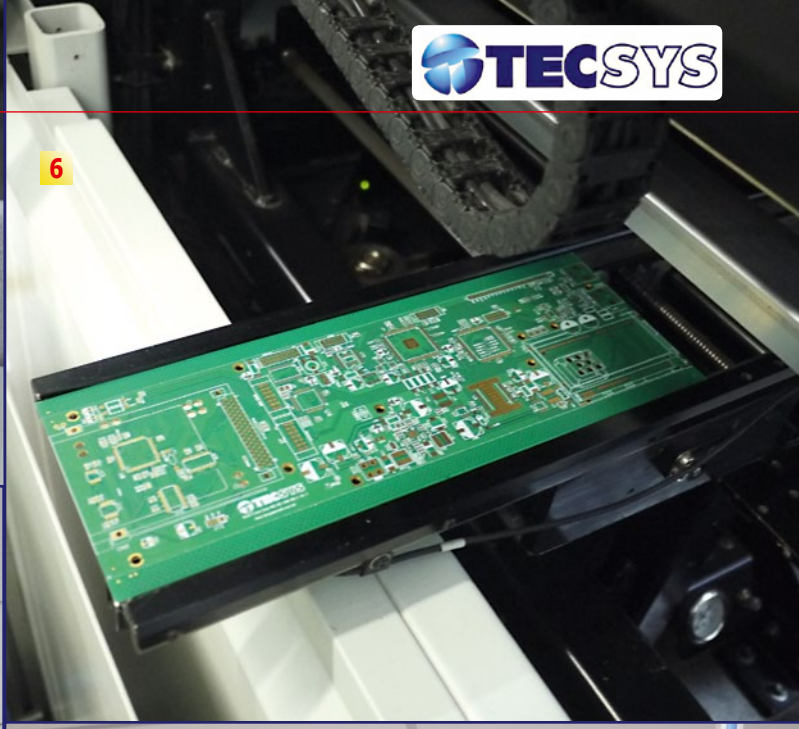

■Jorge Alberto Ganuza is also one of the three founders and is CCO


unusually well organized: "Lean Production" is the keyword from Production Manager Adilson da Silva, who showed us the details of the operation (see pictures).

By concentrating on reception technology primarily that of satellite TV, Tecsys has created an interesting niche for themselves. With their modern production system and their highly professional operational organization, Tecsys is poised to become a stronger force on the world market.






1. Bruno Renato is responsible for incoming inspection. All deliveries are sorted into three categories and color coded: red is for products that don't meet the requirements, yellow (as shown in the picture) is for those products that still need to be checked and green indicates that the products can be released to the stockroom.

2. Warehouse Supervisor is Helbert Lopes Silva. He shows us how the system functions: "Each delivery has its own barcode label."

3. A look in the stockroom with the rolls of surface mount components for the SMD machine.

4. All products are given a code that identifies its location in the stockroom. This makes it easy to find a missing production component.

5. Rodrigo Rosa is the SMD machine technician. He explains to us the production process with the SMD machine.

6. The empty circuit boards are fed into the machine.

7. Components are now placed on the board.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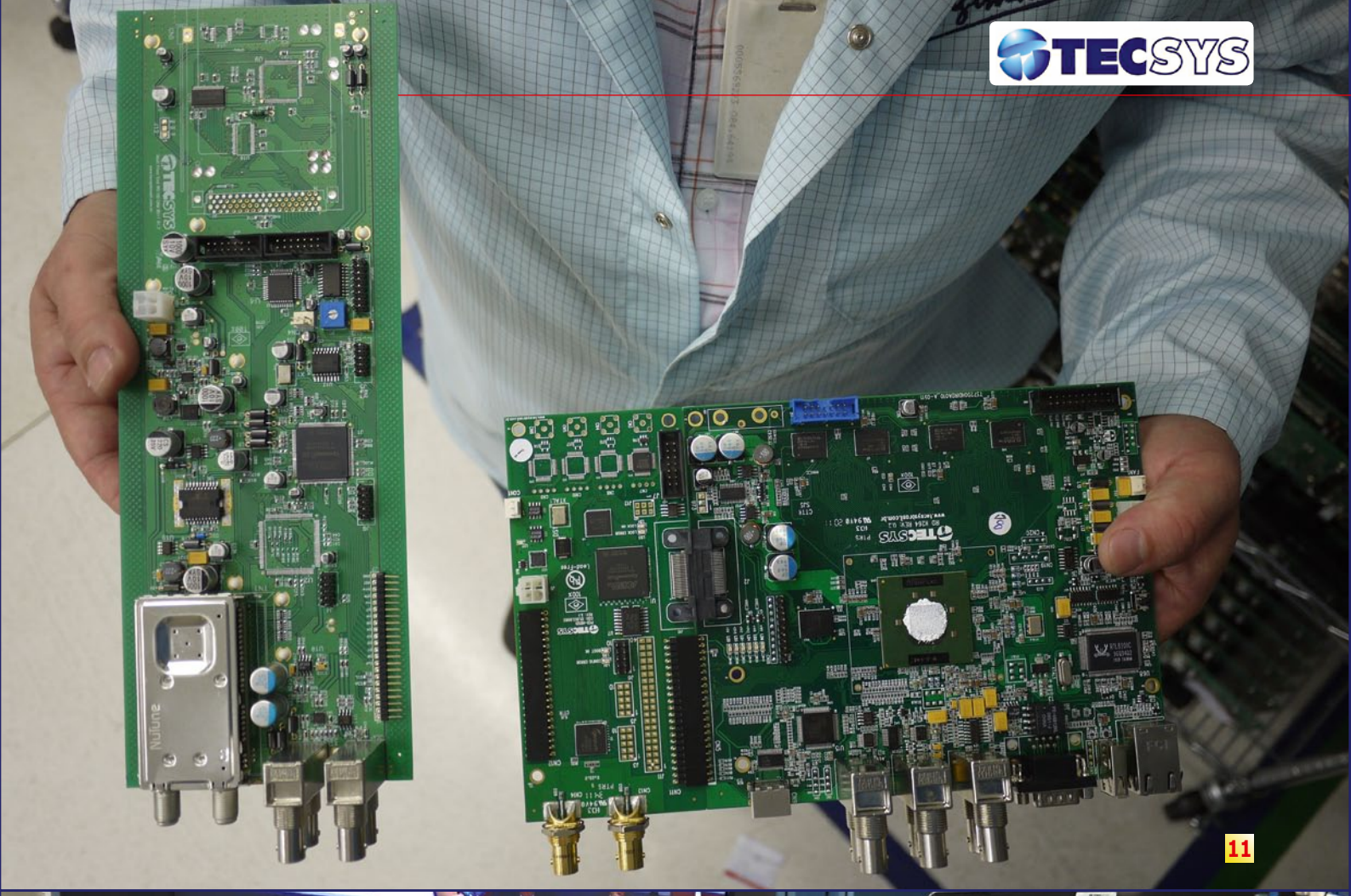
**8. Then the stuffed circuit board is placed in an oven. The circuit board is then heated to a specific temperature depending on the number of components and the size of the board. "We use software to calculate the necessary temperature that can be anywhere from 108°C to 260°C", explains Rodrigo Rosa.**

**9. Each circuit board is checked with a microscope.**

**10. The last step is the solder bath. The internal temperature reaches 246°C.**

**11. Multiple circuit boards are needed for a complete Tecsys IRD, plus there's also a power supply circuit board.**

**12. A detailed functionality check is performed before final assembly.**




11


12

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# Цзючжоу Отдел Андроид


Jiuzhou's company headquarters in Shenzhen's High Tech Park. Here you'll find 15 receiver developers that are working exclusively on the Android operating system.

# Will Android become the operating system of the future?

With an enormous R&D department, Jiuzhou has become one of the trailblazers of large receiver manufacturers for satellite, terrestrial TV and cable reception. Quite a few different operating systems can be found in these receivers but there's one operating system that everyone has been talking about for the past several years: the Android system. Here at TELE-audiovision we also have been expecting that more and more receivers would appear on the market with this operating system, yet that hasn't really happened. We introduced one of the first boxes, a DVB-T receiver - the DTP2100 from Jiuzhou, back in our 11-12/2012 issue. So, is the expected Android receiver boom now going to get off the ground?

Who better to answer this question than the Android receiver Product Manager at Jiuzhou, Yongjun Zhang, who currently is developing Android prod-


■ **In the 11-12/2012 issue we introduced the new Jiuzhou receiver DTP2100, one of the first receivers based on the Android operating system.**

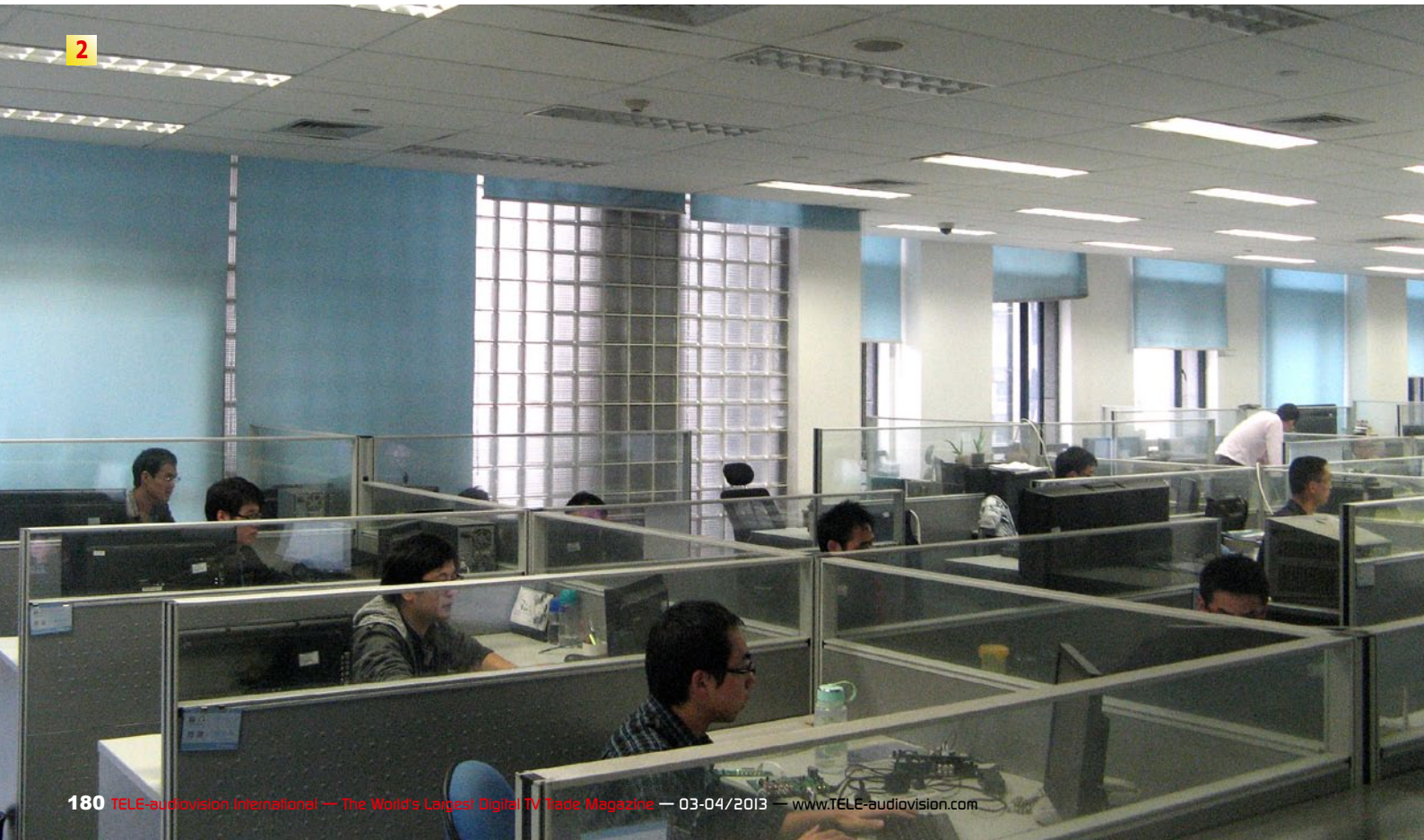
www.TELE-audiovision.com/12/11/jiuzhou


■ **Yongjun Zhang is the Android Product Manager. He's familiar with all the advantages and disadvantages of this operating system.**


1. In the Jiuzhou lobby: Android Product Manager Yongjun Zhang (left), TELE-audiovision Editor-in-Chief Alexander Wiese (center) and Demi Tao (right) from Jiuzhou's Overseas Marketing.
2. A look at the R&D Team that is developing receivers with the Android operating system.
3. Brand new: development sample of an Android receiver with WiFi.
4. A peek inside this new WiFi Android receiver.

ucts together with 15 engineers. He tells us: "We started developing an Android based receiver back in 2011 and this was with 10 engineers." The first receiver came out in 2012, the one we introduced in the 11-12/2012 issue. "A considerably better model is just being finalized; it has a 1GHZ chip, 1GB of RAM and uses a Hisilicon chipset."

This receiver model will be available in different Combo variations - each unit is IPTV capable and can also receive one of the following standards: DVB-T/T2, DVB-S/S2 or DVB-C. "We're also preparing something very special: a Dongle that can be plugged in to a TV's HDMI jack. The Dongle is being de-



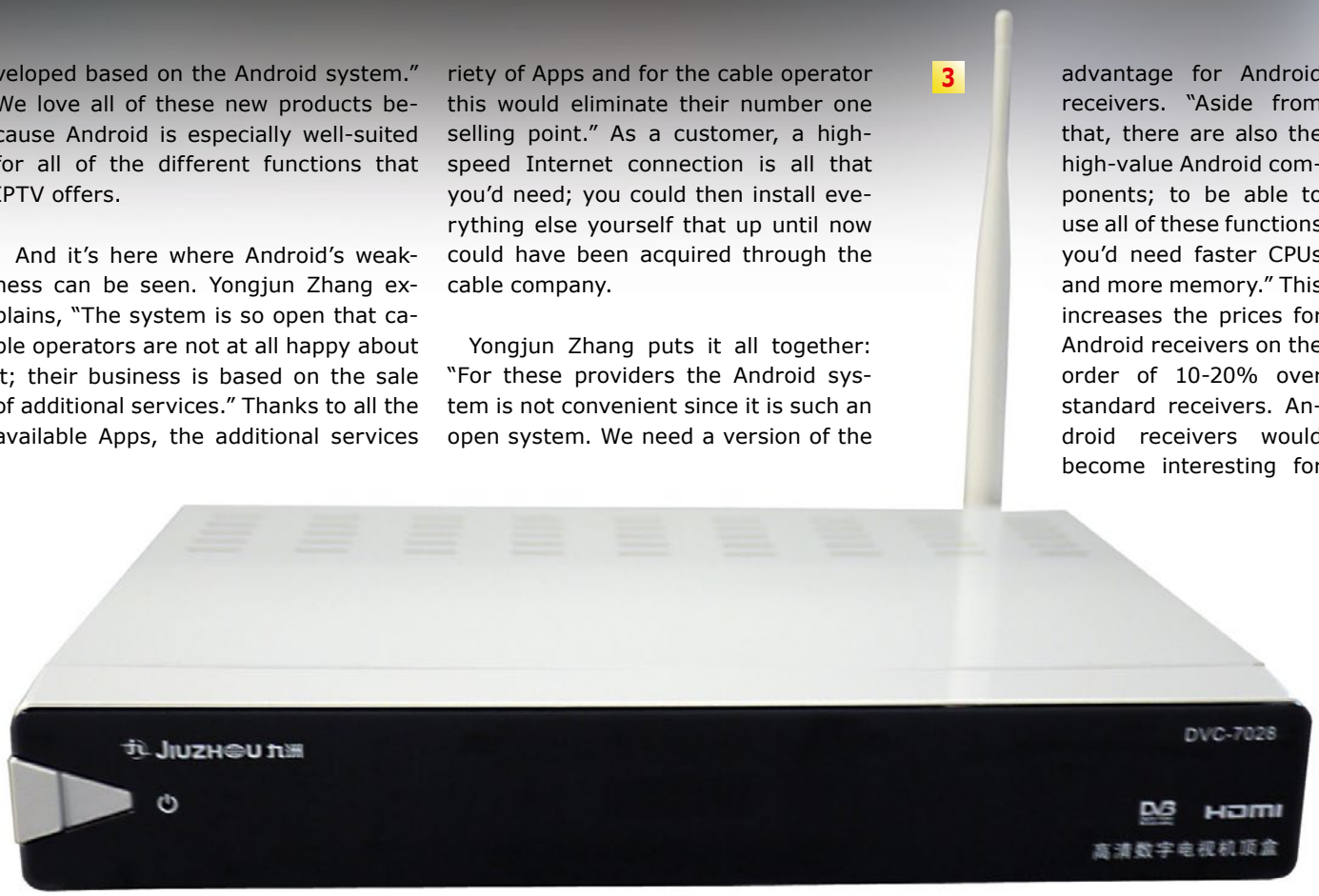
veloped based on the Android system." We love all of these new products because Android is especially well-suited for all of the different functions that IPTV offers.

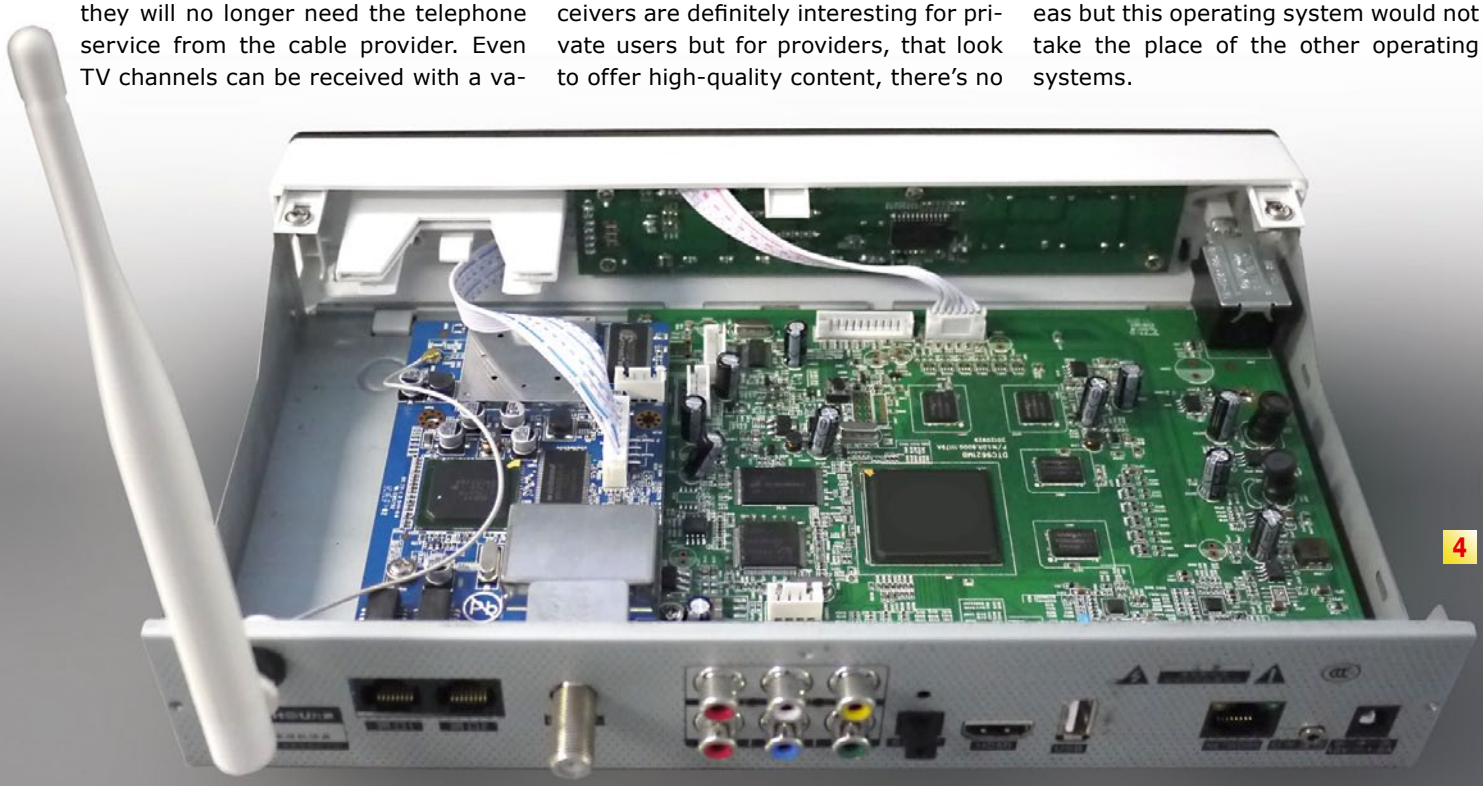
And it's here where Android's weakness can be seen. Yongjun Zhang explains, "The system is so open that cable operators are not at all happy about it; their business is based on the sale of additional services." Thanks to all the available Apps, the additional services from cable operators will no longer be needed. As a result, in the eyes of cable operators, Android won't be of any use to them. "Many of the cable operators want to offer their Triple Play service which includes TV, telephone and Internet", explains Yongjun Zhang, "but in the case of an Android box, if a user installs one of the free telephone Apps, they will no longer need the telephone service from the cable provider. Even TV channels can be received with a variety of Apps and for the cable operator this would eliminate their number one selling point." As a customer, a high-speed Internet connection is all that you'd need; you could then install everything else yourself that up until now could have been acquired through the cable company.

Yongjun Zhang puts it all together: "For these providers the Android system is not convenient since it is such an open system. We need a version of the operating system that is limited." As an example he mentions the Digital Rights Management: "If providers can no longer control the content, they won't have any desire to implement such a system."

The question of whether Android will be the operating system of the future can be answered like this: Android receivers are definitely interesting for private users but for providers, that look to offer high-quality content, there's no advantage for Android receivers. "Aside from that, there are also the high-value Android components; to be able to use all of these functions you'd need faster CPUs and more memory." This increases the prices for Android receivers on the order of 10-20% over standard receivers. Android receivers would become interesting for cable operators if they were to offer lots of elaborate features. And that's exactly what the Jiuzhou developers are working on: in particular for the local Chinese market they are developing Android cable receivers with sophisticated features and limited capabilities to install Apps. Receivers based on the Android system are ideal for certain areas but this operating system would not take the place of the other operating systems.

3



4

# WORLD

# of Digital TV Com

**A Listings of all Company Reports published by TELE-audiovision (aka TELE-satellite) International Mag**
**Note: some companies may be out of business due to the fast changes in digital tv trade. We suggest to**

## Manufacturers (including Software and Information Providers)

| | Company | Country | City | Main Personalities |
|---|---|---|---|---|
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| | ABCOM | Slovakia | Topolcany | Juraj Masaryk |
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| | ANTIFERENCE | UK | Lichfield | Trevor Paintain |
| | ABIPBOX | Slovakia | Topolcany | Juraj Masaryk |
| | APPLIED INSTR. | USA | Indianapolis | Tom Haywood, Scott Haywood |
| | ARION | Korea | Seoul | Jason Lee |
| | ARION | Korea | Seoul | Sam Chang |
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# npanies Reviews

azine in recent years.
cooperate with those companies marked „recommended“ in last column of list.

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| *TELE-audiovision Company Report* | |
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| | Company | Country | City | Main Personalities |
|---|---|---|---|---|
| TELE audiovision Recommended | **HORIZON** | **UK** | **Harlow** | **Paul Pickering** |
| TELE audiovision Recommended | **HORIZON** | **UK** | **Harlow** | **Paul Pickering, John McLoone** |
| TELE audiovision Recommended | **HORIZON** | **UK** | **Harlow** | **Paul Pickering** |
| | HUBER+SUHNER | Switzerland | Herisau | Patrick Zaina, Othmar Fuchs |
| | INFOSAT | Thailand | Bangkok | Jiraporn Tangpiroontham |
| | INFOSAT | Thailand | Bangkok | Niran Tangpiroontham |
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| | INPA | Turkey | Istanbul | Ugur and Nurullah Kaki |
| TELE audiovision Recommended | **INVACOM** | **UK** | **Stevenage** | **Ivan Horrocks** |
| | IPOINT | Hungary | Budapest | Andor Pasztor, Zoltan Korcsok |
| TELE audiovision Recommended | **JIUZHOU** | **China** | **Shenzhen** | **Huang Wei, Linda Lee** |
| TELE audiovision Recommended | **JIUZHOU** | **China** | **Shenzhen** | **York Xie** |
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| TELE audiovision Recommended | **JIUZHOU** | **China** | **Shenzhen** | **Huang Wei** |
| TELE audiovision Recommended | **JIUZHOU** | **China** | **Shenzhen** | **Jimmy Zhang** |
| TELE audiovision Recommended | **JIUZHOU** | **China** | **Shenzhen** | **Yongjun Zhang** |
| | KAIFA | China | Shenzhen | Jackie Yan |
| TELE audiovision Recommended | **MFC** | **USA** | **Syracuse** | **Carl Fahrenkrug, Sandy Nelepovitz** |
| | MOTECK | Taiwan | Taipei | Gary Wu, Gerald Ku |
| | MTI | Taiwan | Taipei | Eugene Wu |
| | NETUP | Russia | Moscow | Abylay Ospan, Evgeniy Makeev, Konstantin Emelyanov |
| TELE audiovision Recommended | **PANODIC MICO** | **China** | **Shenzhen** | **You Zhen Yu, Alan Yu** |
| | PREVAIL | China | Hangzhou | Xu Quanhai, Necy-xu |
| | PROMAX | Spain | Barcelona | José-Maria Clotet |
| TELE audiovision Recommended | **SATBEAMS** | **Belgium** | **Brussels** | **Alexander Derjugin** |
| TELE audiovision Recommended | **SATELLITEGUYS** | **USA** | **Hartford** | **Scott Greczkowski** |
| TELE audiovision Recommended | **SAT-LINK** | **China** | **Quanzhou** | **QingZhang Lin** |
| TELE audiovision Recommended | **SATSOUNDS** | **Belgium** | **Brussels** | **Stefaan Cornelis** |
| TELE audiovision Recommended | **SATSON** | **Belgium** | **Brussels** | **Stefaan Cornelis, Didier Debey** |
| | SEATEL | UK | Southampton | PeterBroadhurst |
| | SEATEL | USA | Concord | Lorna Brady Glover |
| TELE audiovision Recommended | **SKYWORTH** | **China** | **Shenzhen** | **Jack Jiang** |
| | SMART | Germany | St. Georgen | Peter Loble, Christoph Hoefler |
| | SMARTWI | Denmark | Krusa | Kurt Olesen |
| | SMARTWI | Denmark | Krusa | Kurt Olesen |
| | SMIT | China | Shenzhen | Xueliang Huang |
| | SONICVIEW | USA | Oceanside | Steve Falvey |
| TELE audiovision Recommended | **SOWELL** | **China** | **Shenzhen** | **Eagle Chain** |
| TELE audiovision Recommended | **SOWELL** | **China** | **Shenzhen** | **Eagle Chain** |
| TELE audiovision Recommended | **SPAUN** | **Germany** | **Singen** | **Kevin Spaun** |
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| Company | Country | City | Main Personalities |
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| SVEC | China | Chengdu | Wang Duo, Becky, Belinda |
| SVEC | China | Chengdu | Wang Duo, Becky, Belinda |
| TECSYS | Brasil | Sao Paulo | Jorge Alberto Ganuza, Jose Marcos Freire Martins, Adilson d |
| **TENOW** | **China** | **Shenzhen** | **Richard Zhang, Bob Liu, Eric Deng, James Liu** |
| TEVII | Taiwan | Taipei | Matthias Liu |
| TOPFIELD | Korea | Seoul | Dong Hoon Suk |
| TOPSIGNAL | China | Ninghai | Zongbao King, Chaofeng Ge, James You |
| TRIMAX | China | Shenzhen | Jerry Chu |
| TRIMAX | China | Shenzhen | Jerry Chu |
| **TSREADER** | **USA** | **Annapolis** | **Rod Hewitt** |
| VIEWTECH | USA | Oceanside | Jung Kwak, Rob Rhine |
| WADT | Brazil | Sao Paulo | Joao Alfredo Wadt Miranda |
| WS INTERNAT. | USA | Pacoima | Robby Dosetareh |
| YINHE | China | Zhangjiagang | Jianbiao Zhu |

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| COMINTOUCH | UAE | Dubai | Mohan Kumar |
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| COWMIX | USA | Phoenix | Jeremy Tieman |
| DOEBIS | Germany | Mundersbach | Rainer Werking |
| DOEBIS | Germany | Mundersbach | Rainer Werking |
| DVBSHOP | Germany | Munich | Axel Hundt |
| ECHOLINK | UAE | Dubai | Ali Abbas |
| EESHOP | Netherlands | Amsterdam | Antonio Gor-gievski |
| GLOBALSATELLITE | USA | Ft Lauderdale | Martin Fierstone |
| GTSAT | Luxembourg | Luxembourg | Guil Mediouni |
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| MAX COMMUNIC. | Germany | Hamburg | Dirk Wittenborg, Thomas Guhlich |
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| SAMMEG | South Africa | Johannesburg | Joel Dorfan |
| SATELLITE-AV | USA | Sacramento | Brian Gohl |
| SATMAN | Canada | Winnipeg | Jerry Fisher |
| SATSHOP24 | Germany | Trobitz | Rainer Schulze, Berndt Rosenberger |
| SEKISAT | Korea | Seoul | Oh Hwan Jung |
| SMARTINNOVATIONS | Netherlands | Amsterdam | Herbert Verheijden |
| SORTEC | Slovakia | Bratislava | Ladislav Šmárik, Pavol Macko |
| SQUARE PLAN | South Africa | Johannesburg | Bernard Ruberg |
| TURBOSAT | UK | Sittingbourne | Tomas Lo, Chris Ward |
| TVSAT REAL | Russia | Moscow | Sergey Kazimirovich |
| USATEL | Brazil | Sao Paulo | Jose Manuel Pereira, Allam Almughrabi |
| WORLDWIDE SATEL. | Netherlands | Purmerend | Dennis and Rob van Leeuwen |
| WORLDWIDE SATEL. | Canada | Toronto | Nick Aquino |

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**www.aluo-sat.com**

**Consulting**
**Distribution**

*Turnover*
**US$ 1-5mio**

*Employees*
**5-10**

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**www.TELE-audiovision.com/09/05/aluosat**

TELE audiovision Recommended QM Qualified

## Antiference UK

**www.antiference.co.uk**

**Manufacturer of TV**
**Antennas and Accessories**

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**US$ 10-25mio**

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## Azureshine Taiwan

**www.azureshine.com.tw**

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**of Professional Dishes**

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**www.TELE-audiovision.com/07/07/azureshine**

## Boiingsat China

**www.boiingsat.com**

**LNB Manufacturer**

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**100-250**

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## BSD Brazil

**www.portalbsd.com.br**

**Digital TV Information Website**

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## Deviser China

**www.devisertek.com**

**Manufacturer of Signal Analyzers and Broadcast Measurement Instruments**

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**US$ 25-30mio**

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## Dishpointer UK

www.dishpointer.com

**Information Website and Software Programming**

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**www.TELE-audiovision.com/08/03/dishpointer**

## DVBCN China

www.dvbcn.com

**Digital TV Forum Website and Software Programming**

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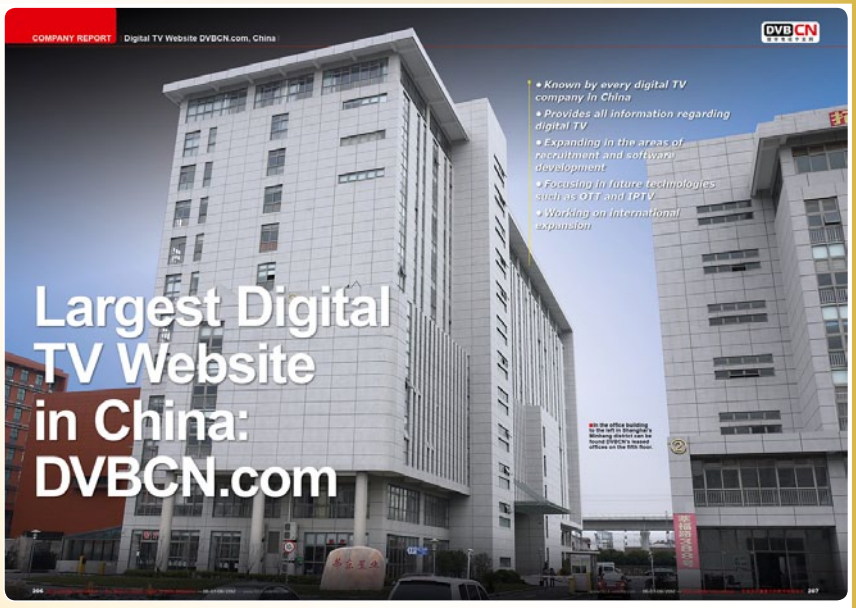


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## GlobalInvacom UK

www.globalinvacom.com

**Manufacturer of Fibre Optic Products**

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**US$ 5-10mio**

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## Golden Media Germany

www.cynextra.com

**Manufacturer of Digital TV Receiver**

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**US$ 1-5mio**

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## GOOSAT China

www.goosat.com

**High Quantity Manufacturer**

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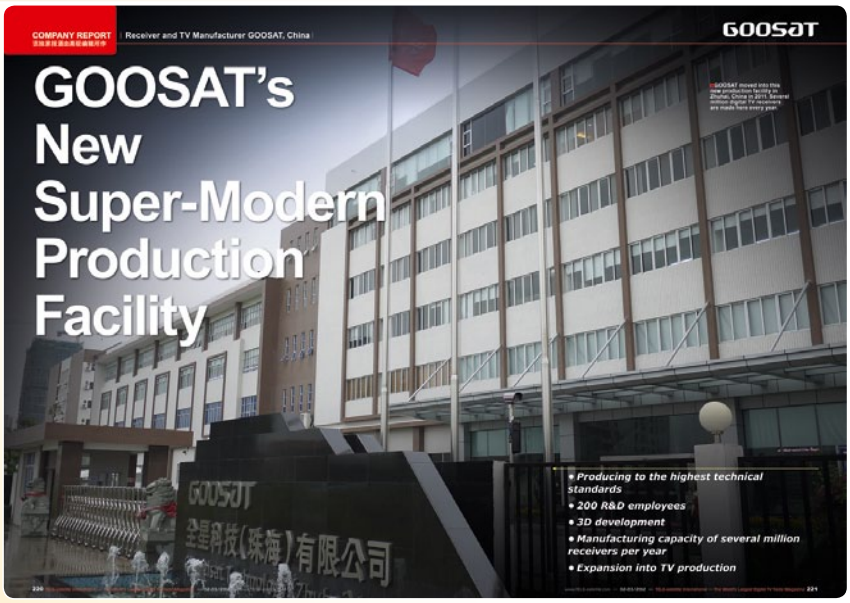
*Employees*
**500-1000**

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## Horizon UK

www.horizonhge.com

**Manufacturer of Signal Meters**

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## Jiuzhou China

www.jiuzhou.com.cn

**Manufacturer of STB, IPTV, LNB, Fibre Optics**

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**www.TELE-audiovision.com/11/03/jiuzhou**

## MFC USA

www.microwavefilter.com

**HF Filter Manufacturer**

*Turnover*
**US$2.5-5mio**

*Employees*
**50-100**

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**www.TELE-audiovision.com/09/03/mfc**

## Panodic China

www.panodic.com

**STB Manufacturer**

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**US$ 100-150mio**

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## Satbeams
## Belgium

**www.satbeams.com**

**Satellite Information Website and Software Programming**

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*Employees*
**2-5**


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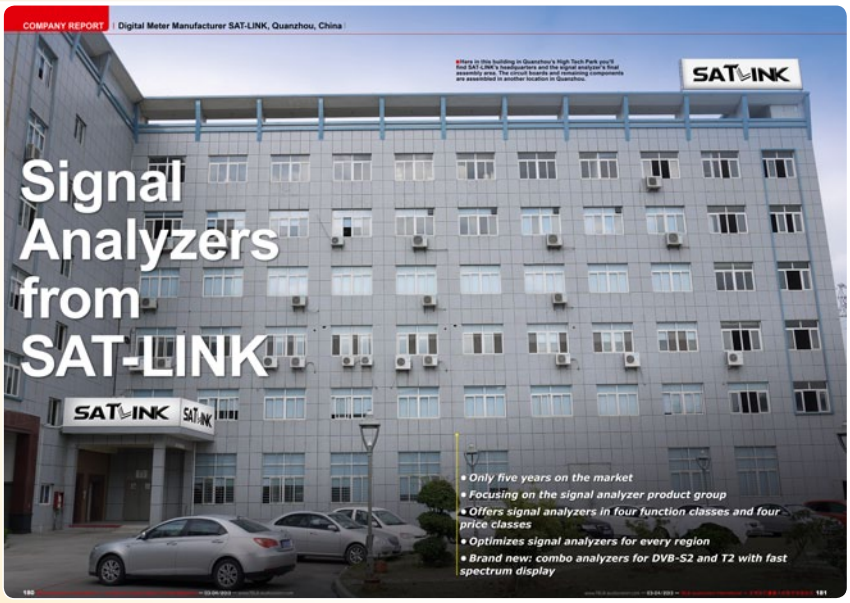
## Sat-Link
## China

**www.sat-link.com.cn**

**Signal Analyzers for Digital TV**

*Turnover*
**US$ 5-10mio**

*Employees*
**250-500**

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## Satson
## Belgium

**www.satson.com**

**Special Product for HDMI Distribution**

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*Employees*
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## SatGuys USA

www.satelliteguys.com

**Satellite Information Website and Forum**

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*Employees*
**5-10**


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## Skyworth China

www.skyworthdigital.com

**High Quantity STB Manufacturer**

*Turnover*
**US$ 200-300mio**

*Employees*
**2000-3000**


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## SmartWi Denmark

www.smartwi.net

**Manufacturer of Wireless Card Reader**

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**5-10**


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## Sowell China

**www.sowell-tech.com**

**Digital TV STB Manufacturer**

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**US$ 50-100mio**

*Employees*
**50-100**


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## Spaun Germany

**www.spaun.com**

**High Quality Accessories Manufacturer**

*Turnover*
**US$ 10-25mio**

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**50-100**


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## Spaun Power Germany

**www.spaun.com**

**Manufacturer of Power Supplies**

*Turnover*
**US$ 2.5-5mio**

*Employees*
**25-50**


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## Topsignal China

**www.topsignalsat.com**

**Satellite Dish Mass Manufacturer**

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*Employees*
**250-500**


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## Tenow China

**www.tenower.com**

**PC Card Manufacturer**

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**US$ 2-5mio**

*Employees*
**10-25**


*Read Full Report* **www.TELE-audiovision.com/11/03/tenow**

## TSReader USA

**www.coolstf.com**

**Analyzer Software and Programming**

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# Веерный режим свободного вещания без использования кодировки сигнала

■Michael Kilgore lives and works in this single-family home in Denver, Colorado in the USA. He operates his two websites (www.ftalist.com and www.ftablog.com) from here; both of them deal with the reception of free satellite TV channels.

- Транслирует весь список FTA каналов в Северной Америке
- Станция контроля в общим количеством - 5 спутниковых тарелок
- С недавних пор активен в IPTV
- Предоставляет легкие для понимания подсказки о спутниковом приеме на своем веб сайте

# The North American Satellite List

Most of the TV channels that can be received in North America via satellite come from one of the large satellite PayTV providers. In other words, the only way to receive them is to subscribe to the service with which you also get the required receiver. The actual installation of the system is handled by contractors to the PayTV provider and, as you would expect, the antenna points to one or more of the satellites from the PayTV provider.

If you want to watch free TV, you first have to figure out what satellites carry FTA (free-to-air) channels. This is exactly the situation that faced Michael Kilgore back in 2003 when he erected his first satellite system. "I installed a small dish and pointed it to GALAXY 10R."

It didn't take him long to realize that other satellites also carried FTA channels so in 2004 he installed a second dish with a DiSEqC motor. "There were more channels up there than I thought and I began to wonder why there wasn't a more consolidated list of information available on the Internet."

This led to the birth of the website www.ftalist.com that Michael started in December

■Michael Kilgore erected this 1.2-meter antenna in his backyard. The LNB in the focal point is for the Ku-band but when Michael wants to update his TV list, he swaps out the Ku-band LNB for a C-band LNB. “I can receive 20 or 30 TV channels with this small antenna.”

of 2004. On this website he lists all the FTA channels receivable in North America. "The user can sort by language (English, Spanish and others) and will then be provided with a list of the currently active channels along with all the necessary technical data."

Since then the list has become the standard source of free TV reception via satellite in the USA. In May of 2006 he expanded has Internet presence with the website www.ftablog.com on which he comments on all the new things happening in the satellite scene. "Recently interest has moved more and more to Internet and IPTV", noticed Michael. He also provides detailed blogs on the two electronics trade shows CES and NAB that take place in Las Vegas every year.

Michael is so occupied with IPTV



**1. Michael uses a robust STAB motor to move his 1.2-meter dish.**

**2. Michael installed his very first dish beyond his backyard fence but still within his property lines. "The mast is set in a large flower pot that I buried in the ground." It's a smart way to avoid pouring cement directly into the ground.**

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that he even started his own TV channel on a test basis. "For several weeks now I've been offering a TV channel with copyright-free content via the company TVU Networks." This company (www.tvunetworks.com) provides an opportunity for everyone to start their own IPTV channel.

Michael is always busy trying out new possibilities and finding out if they are compatible with the future. "I'm waiting for my house to get connected to fiber optic cable so that my Internet speed is sufficiently fast

enough for interference-free IPTV reception.”

Maybe Michael will then start another website – this time covering IPTV.

**Michael uses an 80cm dish that is also motorized for experimental reception. He mounted this antenna on a wooden framework. “My wife simply doesn’t want me to install these dishes permanently in the ground.” Michael designed the framework in such a way that the mast feet fit perfectly on the two center beams. This improvised solution is clearly “wife-friendly”.**

■A DishNetwork antenna with three LNBs as well as a log periodic antenna round out Michael Kilgore's antenna farm.

# CHINA'S BEST FORUM on Digital Video Broadcast

HotTVNews
WiredNetwork DVB-S
DVB-C TV-operators
VoIP-IPTV TV-advertising
IntelligentTelevision
MobileTV
OnlineVideo FORUM
TV VideoEDA
Pay-TV BroadcastSecurity
DAB HDchannelsLaunchCoverage
DTMB Television CMMB-network
DVB-T Monitoring STB-Design
Internet
radio MDTV TV-Software
IPTV CPU Digital
CATV

DVB CN 数字电视中文网

www.dvbcn.com

*Read it in English:* **http://translate.google.com/translate?hl=en&sl=zh-CN&tl=en&u=http://www.dvbcn.com**


Ft@Tv
El foro de la TV libre

**Welcome to FT @ TV Forum, the forum free Argentine TV. In this forum we discuss FTA only. We do not support any brand of receivers. If the receiver only opens five channels at 61° W, it is normal because they are the only ones that are FTA on the satellite Amazonas.**

Hi guest, if you read this, it means you are not registered. Click here to Register, so you can enjoy all the features of our forum. Once registered we invite you to walk through our Presentations section to let you know in our community. A greeting from the staff of Ft @ TV ...
:: :: ..

**www.ftatv.com.ar**


1


2

**1. Michael Kilgore in his shack. He uses the monitor to the left to operate his websites while the monitor to the right is connected to his satellite receivers.**

**2. Michael Kilgore has been reading TELE-satellite for many years. He has saved the older issues and regularly reads the new issues in the Internet.**

# DishPointer AR

*See where to point your dish, live on the iPhone screen!*

The revolutionary DishPointer Augmented Reality app is now available on the app store. Just point your iPhone anywhere towards the sky and see all the satellites lined up on the live video screen.

**See the Video**

See DishPointer AR in action on YouTube!

This app uses the iPhones GPS, motion sensor and compass to calculate all the satellite positions and overlays them on the camera. At a glance you will see where to point the dish and any obstacles blocking the line of sight.


DishPointer is the world's No.1 satellite dish pointing site, offering custom built tools for mobile devices or websites to businesses. For more information, visit www.dishpointer.com.

References

CANAL DIGITAAL SATELLIET

TV VLAANDEREN DIGITAAL

ASTRA

INNOVATION SATELLITE AWARD 02-03/2009 DISHPOINTER Software Solution that, with the help of Google Maps and its real images as well as SatcoDX and its up-to-date channel data, provides highly accurate satellite reception information.

Available for the android

www.dishpointer.com
info@dishpointer.com

# The best source of information for TVRO fans in China


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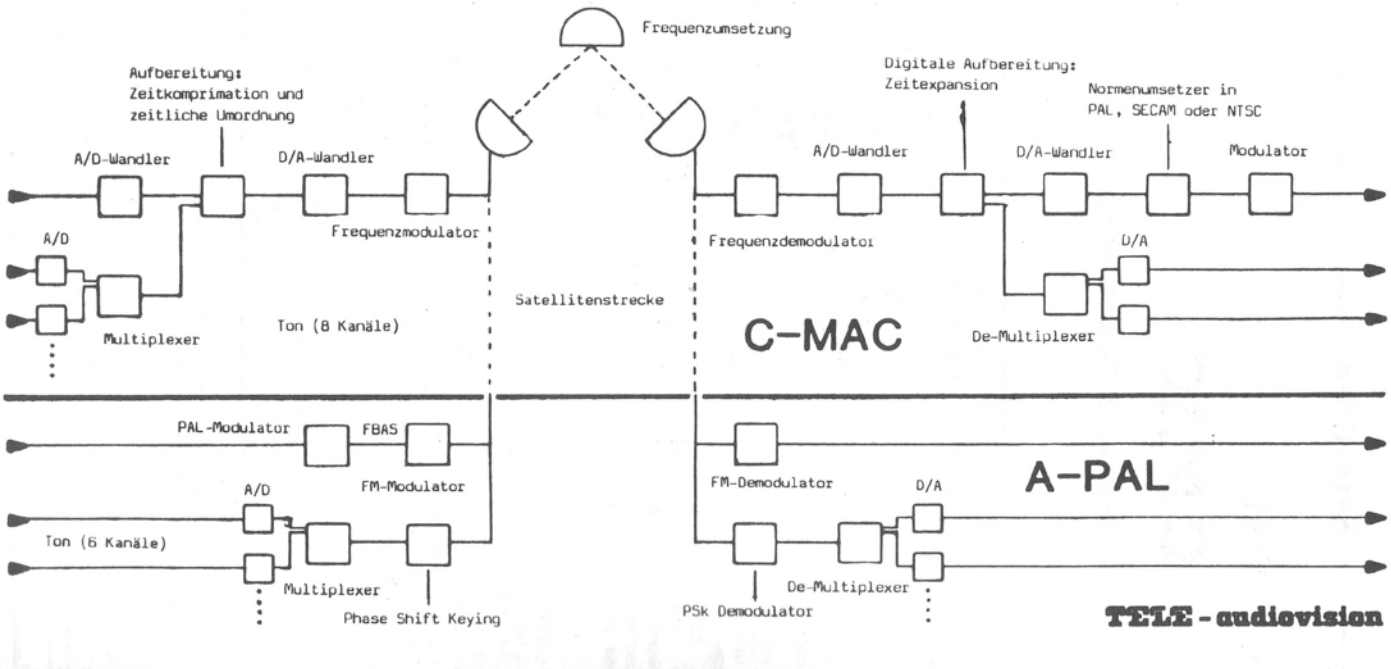
# 30 Years Ago

**New Satellite TV transmission technology 1983**

**The British government decided in favor of C-MAC. The BCC had suggested "Extended PAL" and the European organization favored "A-PAL", but C-MAC, developed by the IBA, won. It seems Biritsh cable operators pushed for C-MAC, which is a technology easier to encrypt.**

**To put it in simple words, with C-MAC the picture and color informations are no longer transmitted simultaneous, but sequentially: for each line first the color information and then the picture information is transmitted.**

**The drawback is that analog technology is not able to do this. This means first the analog films must first be digitalized, then put in the right order, and finally put back in analog and then transmitted. The full impact of C-MAC will only be achieved when the films themselves are available in digital form, or even recorded digitally, and when transmissions will be fully digital.**




GEGENÜBERSTELLUNG C-MAC GEGEN A-PAL

Das Blockschaltbild verdeutlicht den immensen Schaltungsaufwand der britischen C-MAC Norm gegenüber der von den europäischen Anstalten vorgeschlagenen A-PAL Norm.

Erläuterung:
Das TV-Signal liegt links in Form des Bild-, Farb- sowie digitalen Tonsignals vor (bei C-MAC 8 Tonkanäle, bei A-PAL 6). Die Bild- und Farb-Signale können der Bandbreite wegen nur analog übertragen werden. Bei A-PAL genügt dazu ein Frequenzmodulator (beim terrestrischen Sendernetz wird amplitudenmoduliert gesendet), bei C-MAC dagegen müssen die Signale zur Zeitkomprimation zuerst mit einem Analog/Digital-Wandler digitalisiert werden und gleich darauf analogisiert. Auf der rechten Empfängerseite wiederholt sich die Schaltung umgekehrt.
Der Ton wird bei C-MAC gleichzeitig in die digitale Zeitumordnung mit einbezogen, bei A-PAL wird der Ton getrennt phasenmoduliert zum Satelliten gesendet. Die verschiedenen Tonkanäle werden mit einer Zeitmultiplexschaltung auf einen einzigen Tonkanal vereinigt.

## Mehrere Satelliten mit einer Antenne empfangen

# SIMULSAT-ANTENNE

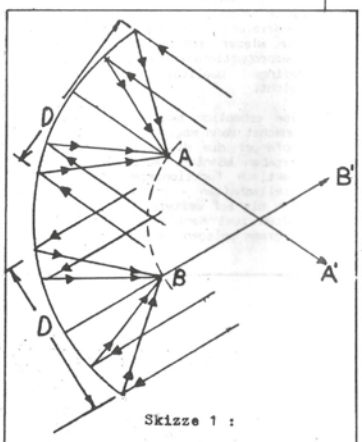
In den USA ist eine Art aufgeschnittene Parabolantenne entwickelt worden, die den gleichzeitigen Empfang einer Vielzahl von Satellitensendern ermöglicht. Über eine ähnliche Antenne für das europäische 12-GHz-Satellitenfernsehen ist uns bislang noch nichts bekannt.

Die große Zahl der 4-GHz-Satelliten-Programme in den USA hatte lange Zeit zur Folge, daß zum Empfang mehrerer Satelliten auch genauso viele Antennen ausgerichtet werden mußten.

Die (Platz- und Geld-) Not der Zuschauer machte erfinderisch, und eine neue Generation von Antennen wurde entwickelt. Sie lassen die bei den Kabelgesellschaften entstandenen "antenna farms" - für jeden Satelliten ein eigener Empfangsspiegel - drastisch reduzieren. Da die neuen Antennen die mathematische Parabol-Funktion nicht mehr erfüllen, werden sie auch "Quasi-Parabol-Antennen" genannt. Der Hersteller bezeichnet sie als Simulsat-Antenne (Simultaner Satellitenempfang).

Die Bauform der Antenne (siehe Foto) ermöglicht den Empfang von derzeit maximal 12 Fernseh- bzw Rundfunksatelliten bei fester Montage und einmaliger Ausrichtung. Die wird durch einen phantastischen Gesamtöffnungswinkel von über 60 Grad ermöglicht, der es zuläßt, in den USA die beiden in maximaler Entfernung voneinander "parkenden" Satelliten 'Satcom 4' (auf 83 Grad West) und 'Galaxy 1' (auf 135 Grad West) anzuzapfen.

Anstatt wie bisher Reflektor und Erreger im festen Brennpunkt (s.a. TAV-8/9) auf den Satelliten auszurichten, wird der Reflektor in Richtung der Winkelhalbierenden der flankierenden Satelliten montiert und pro Brennpunkt ein Erreger eingestellt (siehe Skizze 1).




**Skizze 1 :**

SPHERICAL BEAM SCANNING

**A = Brennpunkt**
**A'= Richtung des Satelliten A'**
**B = Brennpunkt des anderen Satelliten**
**B'= Richtung des anderen Satelliten B'**
**D = Wirksame Reflektorfläche**

Der Öffnungswinkel von 0.8 bis 1.5 Grad pro Strahlungskeule wird so erreicht, wobei davon ausgegangen

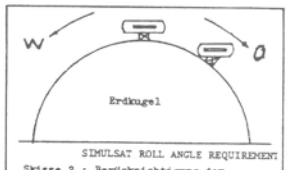




wird, daß alle Satelliten mindestens 3 Grad voneinander entfernt sind, um Überlagerungen zu vermeiden. Im Vergleich dazu sollen die europäischen 19 Grad-Satelliten (TAV-11) im 12 GHz-Bereich nur 6 Bogenminuten = 1/10 Grad voneinander entfernt sein, was sich in diesem Frequenzbereich auch leichter realisieren läßt.

Die noch sehr großen Ausmaße von 5 x 7 Meter garantieren im 4 GHz-Band einen Gewinn von 44 dBi. Die Polarisationsweiche schafft 25dB Entkopplung gegenüber der anderen Polarisationsrichtung, was bei der Menge der Kanäle auch als notwendiges Minimum angesehen wird.

Die Antenne ist jederzeit den Gegebenheiten anzupassen. Wird ein neuer Satellit in Betrieb genommen, so kann er durch Erweiterung um einen Erreger auf der Erregerschiene mühelos angezapft werden. Wechselt einer der Programmanbieter den Satelliten, so braucht auch nur der Platz des Erregers auf der Erregerschiene gewechselt werden.




SIMULSAT ROLL ANGLE REQUIREMENT

**Skizze 2 : Berücksichtigung der Erdkrümmung.**



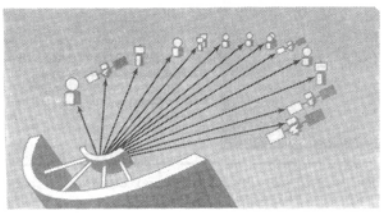
Je nach dem, wo die Antenne montiert wird, bekommt sie eine bestimmte Neigung, um die vom Satelliten vorgegebene Polarisationsebene zu erhalten (Skizze 2).

Da in Europa im 4 GHz-Band noch recht wenig empfangen werden darf, ist der Einsatz einer derartigen Antenne noch unrentabel. Interessante Transponder wären die von Spanien (34.5 Grad West), Portugal (24.5 Grad West), UdSSR (Gorizont-Serie) und einige nordafrikanische Staaten. Interessant wird eine derartige Antenne, wenn sie für den 12 GHz-Bereich ausgelegt ist: ein europaweiter Empfang von Satellitensendern wäre ohne komplizierte Antennensteuerungen möglich.

Im deutschsprachigen Raum wird die Simulsat-Antenne von der schweizer Firma Erivision AG, Rotkreuz, vertrieben.

RB

| Technische Daten der Simulsat-5-Antenne der Firma ATC, Las Vegas, USA | |
|---|---|
| Gewinn (4 GHz) | 44 dBi |
| Frequenzbereich | 3.7 bis 4.2 GHz |
| Strahlungsbreite (6 dB) | 1 Grad |
| Übersprechdämpf. b. gedreht. Polaris. | 25 dB |
| Gesamtöffnungswinkel des Refl. | 60 Grad |
| Reflektorgröße | 5 x 7 Meter |
| Gewicht | 1.5 Tonnen |
| max Windgeschwindigk. | 225 km/h |



## Sat-TV aktuell

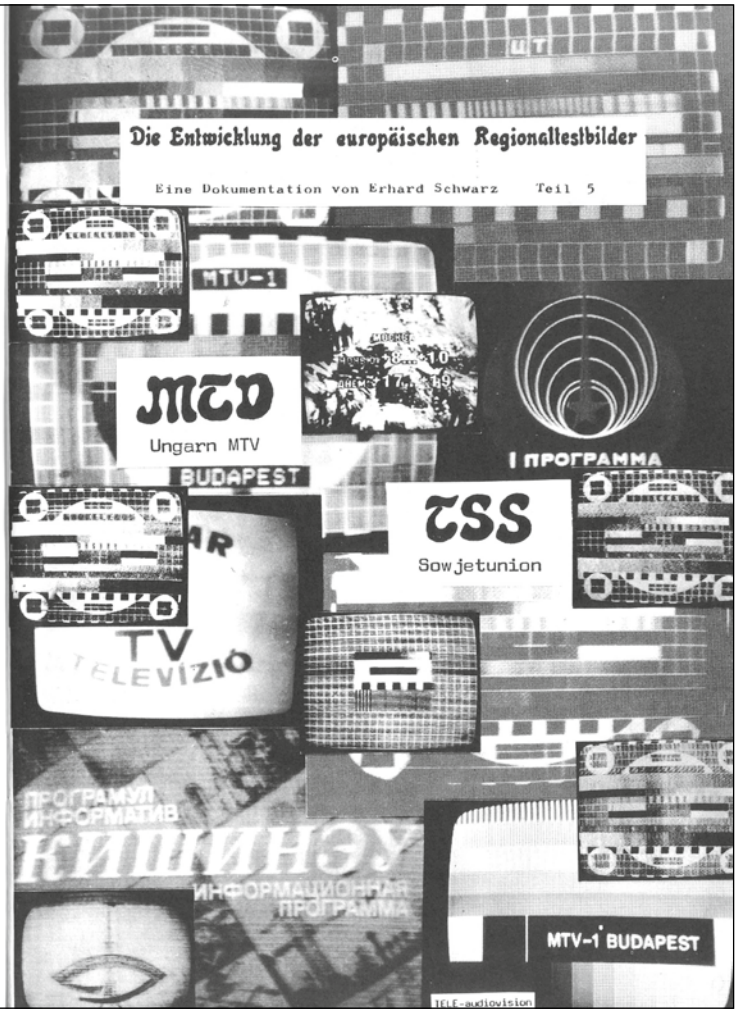
Das amerikanische Armeefernsehen AFTV ist neuerdings in Europa zu empfangen über einen Transponder des Intelsat, der bei 1 Grad West parkt. Über die notwendigen Ausmaße des Empfangsspiegels wird spekuliert; die Redaktion schätzt, daß unter 8 bis 10 Meter kein brauchbares Bild über die Mattscheibe flimmert.

Nach langwierigen Planungen sollte im April 83 der europäische ECS-Satellit gestartet werden. Der Termin wurde jetzt auf den 3. Juni verlegt.

Die Redaktion hat eine Quelle ausfindig gemacht, die für ca DM 100.- einen Parabolspiegel mit d = 90cm liefert. Anfragen sind an die Sat-Redaktion zu richten.

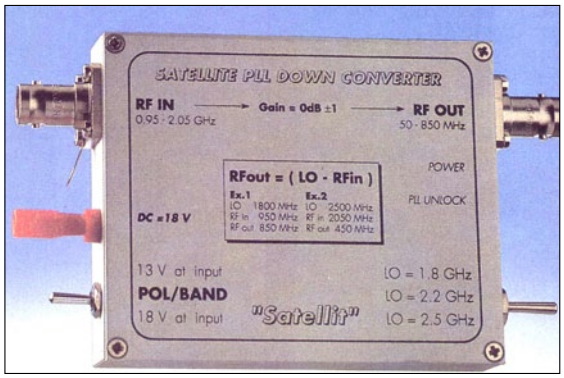
Vom 5. bis 7. Juli findet in London die "Satellite TV And Cable TV Show" statt, auf der der letzte Stand in der Satelliten-Empfangstechnik dargestellt werden soll (s.a. TAV-12).






# 20 Years Ago

**An innovative converter by Italian company PM: it converts first IF at 950-2050MHz down into the UHF range. That way you can use your UHF tv signal analyzer to check satellite signals.**





GERÄTE VORSTELLUNG

Receiver und Fernseher in einem

## ABCOM Sat-TV

Naja, ein ganz normaler 37 cm Farbfernseher, dachten die TELE-satellit-Tester, als von der Leipziger Firma ABCOM in einer großen Kiste dieses Standardgerät eintraf. Was ist daran schon Besonderes?

Die Geräterückseite gibt Aufschluß. Unscheinbar und ohne weitere Beschriftung lugt eine F-Buchse dicht neben dem IEC-Antennenanschluß aus dem Gehäuse. Da die F-Norm, jedenfalls in Europa, gleichbedeutend mit Satellitenempfang ist, war schon klar, daß dieser Farbfernseher nicht bei 850 MHz, der höchsten UHF-Frequenz, mit dem Empfang aufhören würde. Bei 950 MHz startet er wieder, schaltet auf FM-Bildemodulation um und der Bildschirm präsentiert die Satellitenprogramme.

**● Empfang**

Die 44 Programmspeicherplätzen des Fernsehers lassen sich beliebig für terrestrische (VHF oder UHF) oder Satellitensignale nutzen. Die Umschaltung zwischen der Erden- und der Himmelsnorm verursacht ein Druck auf die "AV"-Taste; entsprechend schöpft der Fernseher seine Bildsignale aus dem V/UHF-Antennenanschluß oder vom Sat-Anschluß der F-Buchse. Die Abspeicherung erfolgt nach Lust und Laune des Nutzers und nach dessen Prioritäten. Für ASTRA sind ab Werk schon mal die ersten Programmplätze für die deutschen Programme reserviert und einprogrammiert.

Wer eine andere Reihenfolge wünscht und eine Neuprogrammierung vornehmen will, darf sich hier an andere Bezeichnungen für H(orizontal) und V(ertikal) gewöhnen: U und V. Der Grund ist ganz einfach: für die Satellitenprogrammierung wird das bereits vorhandene Menü für die übliche VHF/UHF-Program-



*Man sieht's ihm nicht an: 37 cm Color Portable mit eingebautem Sat-Tuner von ABCOM. Die Sat-Einstellungen werden über die eingebaute Tastatur hinter der Sichtblende vorgenommen.*


# 10 Years Ago

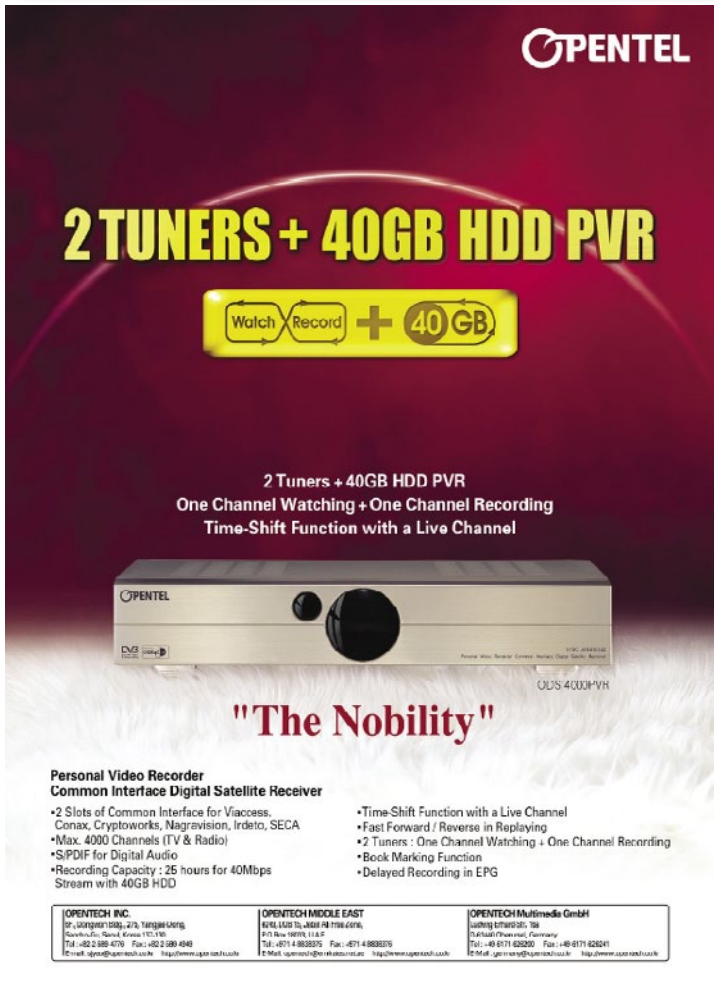
Out of Footprint

## TSI India Tracking Center

**The Indian city of Bangalore is an ideal location for a satellite monitoring station. At 943 meters (3113 feet) above sea level, the antennas have a clear view from HOTBIRD at 13° East all the way to AGILA-2 at 146° East. This station is operated by Vatsa, an experienced satellite communications specialist. Every satellite in range is monitored 24 hours a day.**

These satellites include AGILA-2, ICSAT-3, APSTAR-1, APSTAR-1A, ASIASAT-2, ASIASAT-3S, PALAPA-C2, ST-1, INSAT-2E, EXPRESS-6A, THAICOM-3, INSAT-3C, PAS-7/10, INTELSAT 704, 906, 904, 902, NSS703, INSAT-2DT, EUROPESTAR-1 and ARABSAT. Any channel updates that are found are immediately forwarded to SatCoDX's headquarters in Budapest, Hungary. Here this data is synchronized with data from other regions and then uploaded to the SatcoDX charts on a daily basis. These updates are then sent to subscribers via e-mail. Out-of-Footprint tests are much more involved. Here we try to determine what size dish is needed to receive signals not meant for that particular region. A typical example would be the reception of PALAPA C2 in C-band. A small side beam of this satellite is pointed in the direction of India but Bangalore lies just outside of its standard footprint. While about 32 dBW is available on the Bengali Gulf Coast, the EIRP falls off dramatically just a little further west. After several attempts, partial success was achieved with a four-meter dish. The analog channels (TV1R1, MTV, TV-5 etc.) were receivable as were the digital transponders. But this only seemed to work in the evening. Unfortunately, this is typical with out-of-footprint reception. Further tests are needed. Another project is the meter (13-foot) diameter dish, currently his largest antenna that he uses for the reception of linear and circularly polarized C-band signals, can expect to have a new neighbor in the near future. For the Ku-band he uses a 2.65-meter (8.7-foot) solid prime focus antenna. By using a C-band feedhorn together with a Ku-band LNB he was able to improve reception by about 15%. Why? At the moment we're not quite sure. He discovered this arrangement simply by playing around and experimenting. Perhaps after some extended comparison measurements an explanation for this phenomenon could be found. Naturally we would tell you all about it with a report in TELE-satellite. For regional Ku-band reception he uses a 1.2-meter (4-foot) offset dish.

The receivers currently in use are an Echostar LT-830 (with outstanding analog reception qualities) and an Echostar 707FTA for digital reception. The anten-



# MediaCom

## MFT-910 Plus


# Free-to-Air Satellite Reception

**In Europe, Asia and The Middle East there are hundreds of freely receivable satellite TV and radio programs. The number of FTA programs in the Americas is also steadily increasing. Why then should you spend extra money for a satellite receiver with CI slots for PayTV reception when this option might never be used?**

MediaCom`s Free-to-Air Receiver model MFT-910 Plus takes this into account and does not come with any CI slots or card readers. The simple silver-colored cabinet would fit into the environment of almost any home. The front panel is fitted with an easy-to-read display that shows one of the 3000 possible channels. Seven buttons placed next to the Standby button allow not only normal operation directly from the front panel but also its programming. This is always a good feature to have especially if the remote control was misplaced or its batteries died.

The rear panel comes with all of the standard connectors. The version that we tested came with six RCA jacks: two video outputs and two sets of analog stereo audio outputs. The European model comes with Scart connectors. The IF is looped through. The receiver is also equipped with a UHF modulator with an output that spans the channel 14 to 83 range. Four quick-clamp connectors supply the 0/12 volt programmable output as well as the necessary outputs for a servo polarizer. This is especially important if a corotor is used for both the C-band and Ku-band. The serial interface can be used to upload new software into the receiver but not for uploading of SatcoDX transponder data. A digital audio output is also not to be found here.

The small remote control comes with a few extra features. For example, zooming of the video is possible as is freezing the video. Brightness, contrast and color can be adjusted simply with the push of a button. Colored multifunction buttons provide easy access to specialized functions.

## Everyday Use

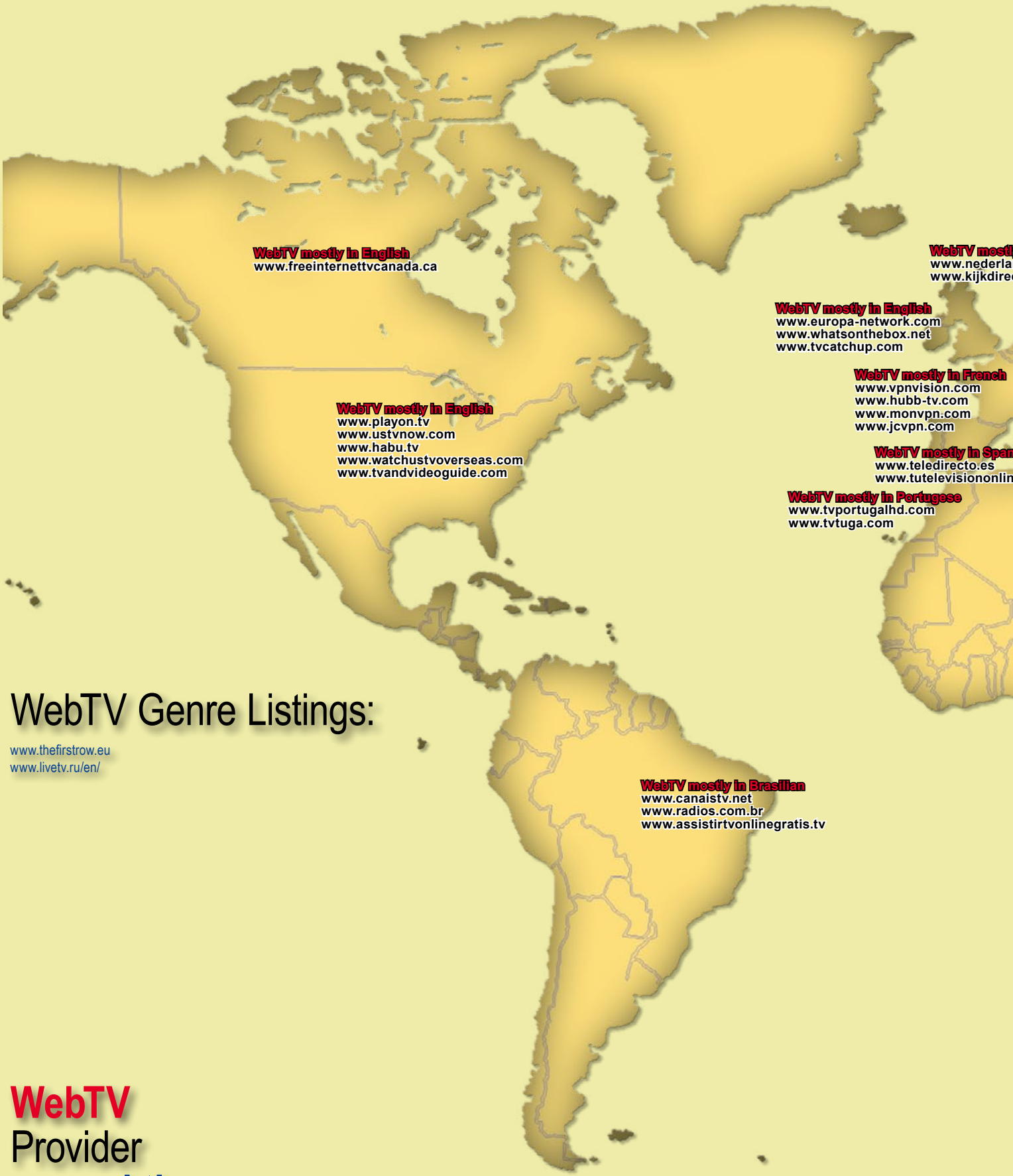
Eight different LNB types are set up in the installation menu to guarantee that this receiver can work with almost any set up. DiSEqC 1.0 and 1.2 allow use with up to four different LNB's and also with a DiSEqC motor. Up to 150 satellites can be activated, 53 of which come preprogrammed with up-to-date transponder data. The receiver comes with three scan functions: SMATV for a small community system, a manual scan with PID entry for the experts and, of course, a normal automatic scan. The scan can be further refined to look for ALL channels, FTA only or encoded channels. Our 80-transponder test satellite was scanned in just seven minutes. Signals with symbolrates starting at 2 Ms/sec were handled without any problems. If the same satellite is scanned again at a later time, only newly found channels would be written into memory. If used with a mechanical polarizer, the critical skew values can easily be set up. To make the installation and alignment of the antenna all the more easier, the signal strength plus the all-important signal quality are blended into the display as bar graphs.

In the subsequent editing mode where channels can be deleted, moved, renamed, etc., the video of the current channel is blended in as an insert. Popular channels can be moved into one of four different Favorites lists for easier recall at a later time. A Parental Lock feature is also provided so that kids can be blocked from seeing inappropriate programs.

Switching from one channel to another produces only a minimal delay. An Info bar is momentarily displayed showing channel details such as satellite, provider, signal strength/quality, date and time. PAL and NTSC signals are automatically recognized and properly displayed. The Electronic Program Guide (EPG) displays program information for up to seven days in advance assuming of course that the provider makes this information available. Teletext is accessed using the remote control from the TV.

## Conclusion

For the reception of FTA signals, the MFT-910 Plus from MediaCom is ideal. The installation and use of this receiver are greatly simplified through the well-written user manual and the informative menus. DiSEqC 1.0 and 1.2 permit use of this box with any antenna configuration. If used with both C and Ku-band configurations, the terminals for a servo polarizer should make those users happy. Particularly noteworthy is this receiver's excellent signal sensitivity. The tuner in the MFT-910 Plus in conjunction with a 75cm antenna worked very well (in good weather) on Telstar 12 where other receivers would have had difficulties. A nice little extra is the picture zoom function with the ability to select the picture segment to be zoomed.




# WebTV Genre Listings:

www.thefirstrow.eu
www.livetv.ru/en/

# WebTV Provider around the WORLD


# WebTV Channel Listings:

www.surfmusic.de/surftv.htm
www.glotzdirekt.de
www.wwitv.com
www.delicast.com
www.onlinetvi.com
www.free-internet-tv.cz
www.lookfortv.com
www.beelinetv.com
www.findinternettv.com
www.tvweb360.tv
www.webactu-webtv.com
www.webtv.pk
www.jumptv.com
www.arabic-media.com
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www.tv4web.net
www.squidtv.net
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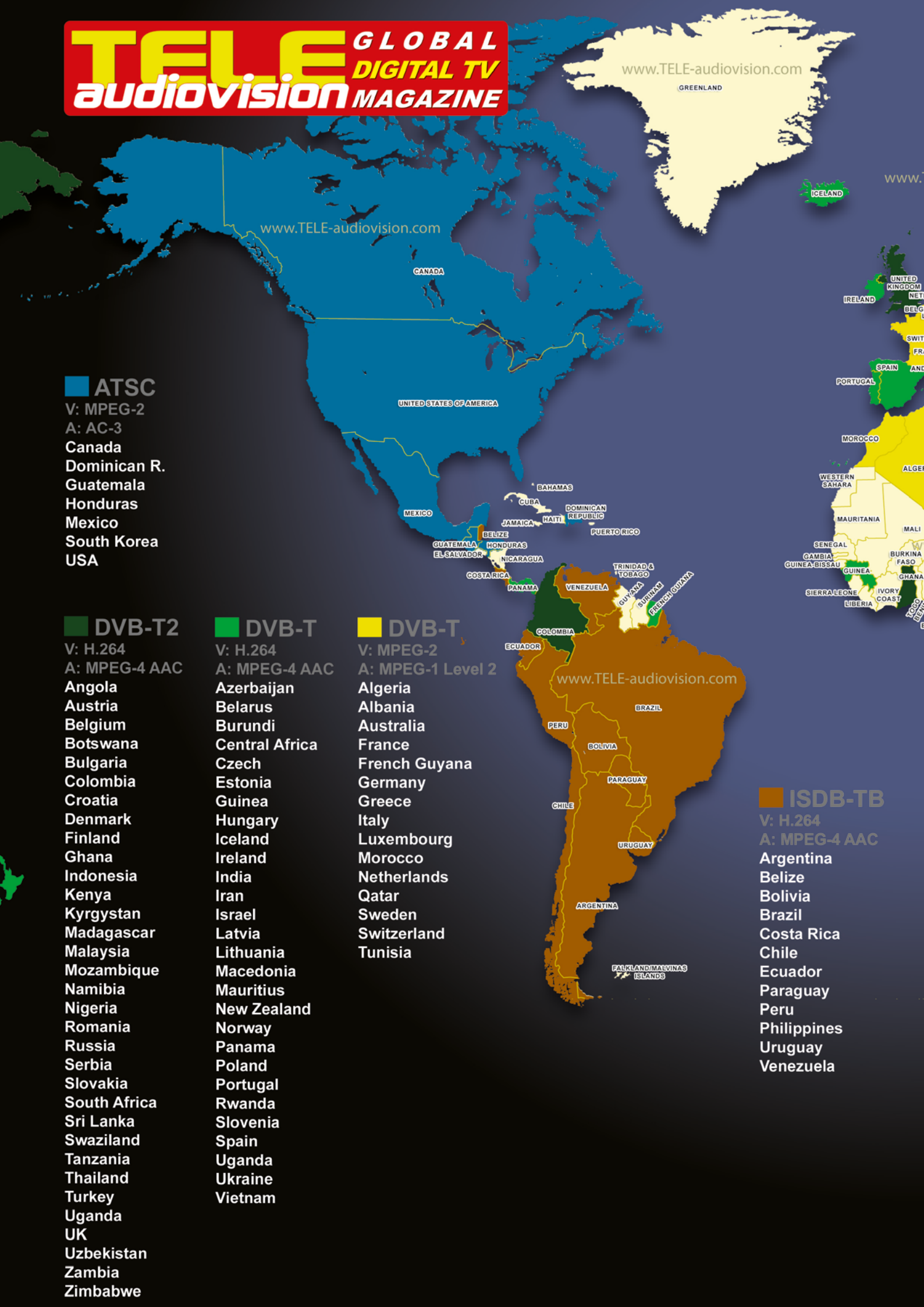
www.tv-tube.tv
www.tv4web.net
www.findinternettv.com




## ATSC
V: MPEG-2
A: AC-3
Canada
Dominican R.
Guatemala
Honduras
Mexico
South Korea
USA

## DVB-T2
V: H.264
A: MPEG-4 AAC
Angola
Austria
Belgium
Botswana
Bulgaria
Colombia
Croatia
Denmark
Finland
Ghana
Indonesia
Kenya
Kyrgystan
Madagascar
Malaysia
Mozambique
Namibia
Nigeria
Romania
Russia
Serbia
Slovakia
South Africa
Sri Lanka
Swaziland
Tanzania
Thailand
Turkey
Uganda
UK
Uzbekistan
Zambia
Zimbabwe

## DVB-T
V: H.264
A: MPEG-4 AAC
Azerbaijan
Belarus
Burundi
Central Africa
Czech
Estonia
Guinea
Hungary
Iceland
Ireland
India
Iran
Israel
Latvia
Lithuania
Macedonia
Mauritius
New Zealand
Norway
Panama
Poland
Portugal
Rwanda
Slovenia
Spain
Uganda
Ukraine
Vietnam

## DVB-T
V: MPEG-2
A: MPEG-1 Level 2
Algeria
Albania
Australia
France
French Guyana
Germany
Greece
Italy
Luxembourg
Morocco
Netherlands
Qatar
Sweden
Switzerland
Tunisia

## ISDB-TB
V: H.264
A: MPEG-4 AAC
Argentina
Belize
Bolivia
Brazil
Costa Rica
Chile
Ecuador
Paraguay
Peru
Philippines
Uruguay
Venezuela


# Digital Terrestrial Television of the World

**Dominant System per Country**

**DTMB**
V: H.264
A: MPEG-4 AAC
China*
HongKong

**ISDB**
V: MPEG-2
A: MPEG-2 AAC
Japan

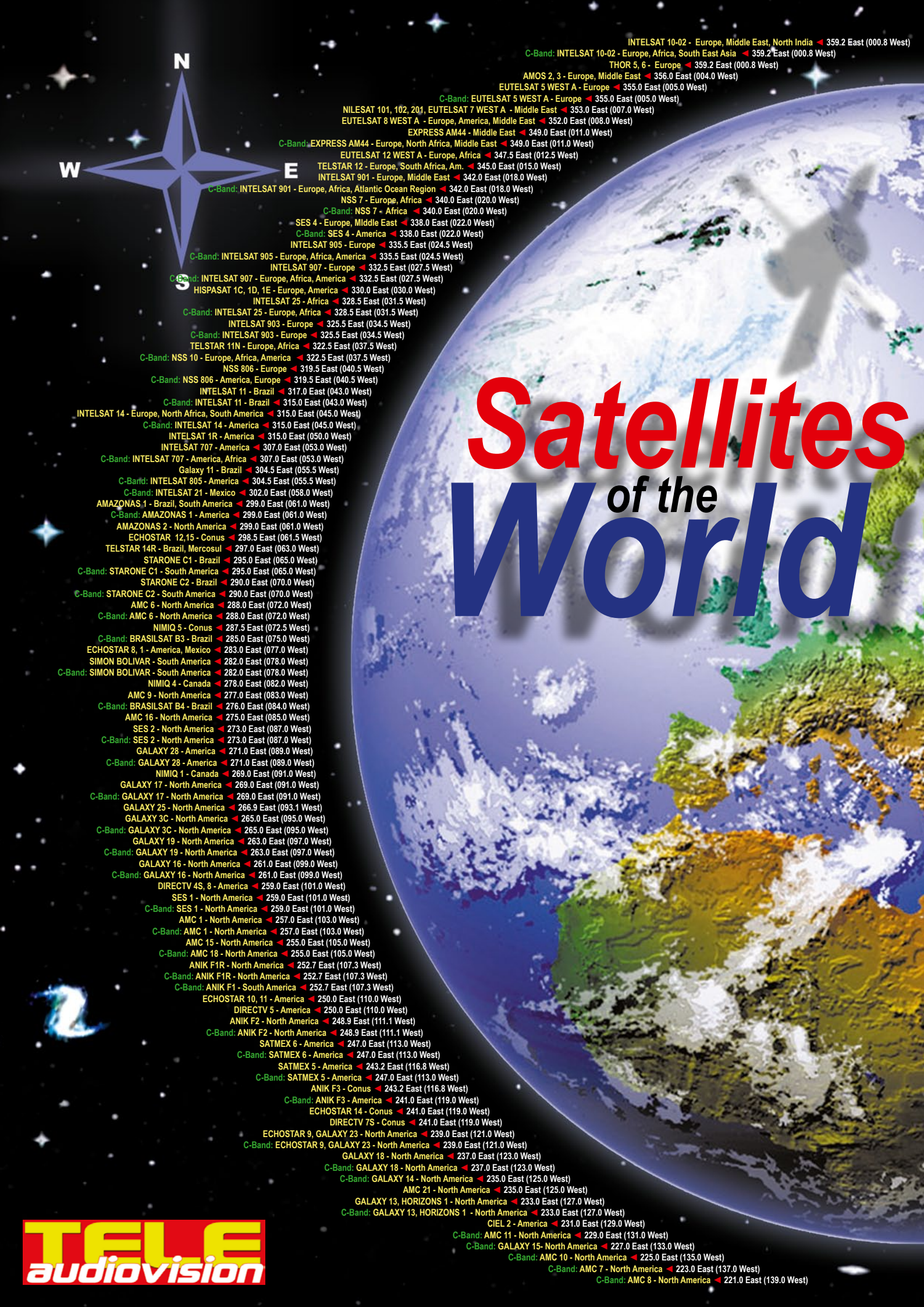
* some
V: MPEG2



## TELE-audiovision International

## The World's Largest Digital TV Trade Magazine

www.TELE-audiovision.com




INTELSAT 10-02 - Europe, Middle East, North India ◄ 359.2 East (000.8 West)
C-Band: INTELSAT 10-02 - Europe, Africa, South East Asia ◄ 359.2 East (000.8 West)
THOR 5, 6 - Europe ◄ 359.2 East (000.8 West)
AMOS 2, 3 - Europe, Middle East ◄ 356.0 East (004.0 West)
EUTELSAT 5 WEST A - Europe ◄ 355.0 East (005.0 West)
C-Band: EUTELSAT 5 WEST A - Europe ◄ 355.0 East (005.0 West)
NILESAT 101, 102, 201, EUTELSAT 7 WEST A - Middle East ◄ 353.0 East (007.0 West)
EUTELSAT 8 WEST A - Europe, America, Middle East ◄ 352.0 East (008.0 West)
EXPRESS AM44 - Middle East ◄ 349.0 East (011.0 West)
C-Band: EXPRESS AM44 - Europe, North Africa, Middle East ◄ 349.0 East (011.0 West)
EUTELSAT 12 WEST A - Europe, Africa ◄ 347.5 East (012.5 West)
TELSTAR 12 - Europe, South Africa, Am. ◄ 345.0 East (015.0 West)
INTELSAT 901 - Europe, Middle East ◄ 342.0 East (018.0 West)
C-Band: INTELSAT 901 - Europe, Africa, Atlantic Ocean Region ◄ 342.0 East (018.0 West)
NSS 7 - Europe, Africa ◄ 340.0 East (020.0 West)
C-Band: NSS 7 - Africa ◄ 340.0 East (020.0 West)
SES 4 - Europe, Middle East ◄ 338.0 East (022.0 West)
C-Band: SES 4 - America ◄ 338.0 East (022.0 West)
INTELSAT 905 - Europe ◄ 335.5 East (024.5 West)
C-Band: INTELSAT 905 - Europe, Africa, America ◄ 335.5 East (024.5 West)
INTELSAT 907 - Europe ◄ 332.5 East (027.5 West)
C-Band: INTELSAT 907 - Europe, Africa, America ◄ 332.5 East (027.5 West)
HISPASAT 1C, 1D, 1E - Europe, America ◄ 330.0 East (030.0 West)
INTELSAT 25 - Africa ◄ 328.5 East (031.5 West)
C-Band: INTELSAT 25 - Europe, Africa ◄ 328.5 East (031.5 West)
INTELSAT 903 - Europe ◄ 325.5 East (034.5 West)
C-Band: INTELSAT 903 - Europe ◄ 325.5 East (034.5 West)
TELSTAR 11N - Europe, Africa ◄ 322.5 East (037.5 West)
C-Band: NSS 10 - Europe, Africa, America ◄ 322.5 East (037.5 West)
NSS 806 - Europe ◄ 319.5 East (040.5 West)
C-Band: NSS 806 - America, Europe ◄ 319.5 East (040.5 West)
INTELSAT 11 - Brazil ◄ 317.0 East (043.0 West)
C-Band: INTELSAT 11 - Brazil ◄ 315.0 East (043.0 West)
INTELSAT 14 - Europe, North Africa, South America ◄ 315.0 East (045.0 West)
C-Band: INTELSAT 14 - America ◄ 315.0 East (045.0 West)
INTELSAT 1R - America ◄ 315.0 East (050.0 West)
INTELSAT 707 - America ◄ 307.0 East (053.0 West)
C-Band: INTELSAT 707 - America, Africa ◄ 307.0 East (053.0 West)
Galaxy 11 - Brazil ◄ 304.5 East (055.5 West)
C-Band: INTELSAT 805 - America ◄ 304.5 East (055.5 West)
C-Band: INTELSAT 21 - Mexico ◄ 302.0 East (058.0 West)
AMAZONAS 1 - Brazil, South America ◄ 299.0 East (061.0 West)
C-Band: AMAZONAS 1 - America ◄ 299.0 East (061.0 West)
AMAZONAS 2 - North America ◄ 299.0 East (061.0 West)
ECHOSTAR 12,15 - Conus ◄ 298.5 East (061.5 West)
TELSTAR 14R - Brazil, Mercosul ◄ 297.0 East (063.0 West)
STARONE C1 - Brazil ◄ 295.0 East (065.0 West)
C-Band: STARONE C1 - South America ◄ 295.0 East (065.0 West)
STARONE C2 - Brazil ◄ 290.0 East (070.0 West)
C-Band: STARONE C2 - South America ◄ 290.0 East (070.0 West)
AMC 6 - North America ◄ 288.0 East (072.0 West)
C-Band: AMC 6 - North America ◄ 288.0 East (072.0 West)
NIMIQ 5 - Conus ◄ 287.5 East (072.5 West)
C-Band: BRASILSAT B3 - Brazil ◄ 285.0 East (075.0 West)
ECHOSTAR 8, 1 - America, Mexico ◄ 283.0 East (077.0 West)
SIMON BOLIVAR - South America ◄ 282.0 East (078.0 West)
C-Band: SIMON BOLIVAR - South America ◄ 282.0 East (078.0 West)
NIMIQ 4 - Canada ◄ 278.0 East (082.0 West)
AMC 9 - North America ◄ 277.0 East (083.0 West)
C-Band: BRASILSAT B4 - Brazil ◄ 276.0 East (084.0 West)
AMC 16 - North America ◄ 275.0 East (085.0 West)
SES 2 - North America ◄ 273.0 East (087.0 West)
C-Band: SES 2 - North America ◄ 273.0 East (087.0 West)
GALAXY 28 - America ◄ 271.0 East (089.0 West)
C-Band: GALAXY 28 - America ◄ 271.0 East (089.0 West)
NIMIQ 1 - Canada ◄ 269.0 East (091.0 West)
GALAXY 17 - North America ◄ 269.0 East (091.0 West)
C-Band: GALAXY 17 - North America ◄ 269.0 East (091.0 West)
GALAXY 25 - North America ◄ 266.9 East (093.1 West)
GALAXY 3C - North America ◄ 265.0 East (095.0 West)
C-Band: GALAXY 3C - North America ◄ 265.0 East (095.0 West)
GALAXY 19 - North America ◄ 263.0 East (097.0 West)
C-Band: GALAXY 19 - North America ◄ 263.0 East (097.0 West)
GALAXY 16 - North America ◄ 261.0 East (099.0 West)
C-Band: GALAXY 16 - North America ◄ 261.0 East (099.0 West)
DIRECTV 4S, 8 - America ◄ 259.0 East (101.0 West)
SES 1 - North America ◄ 259.0 East (101.0 West)
C-Band: SES 1 - North America ◄ 259.0 East (101.0 West)
AMC 1 - North America ◄ 257.0 East (103.0 West)
C-Band: AMC 1 - North America ◄ 257.0 East (103.0 West)
AMC 15 - North America ◄ 255.0 East (105.0 West)
C-Band: AMC 18 - North America ◄ 255.0 East (105.0 West)
ANIK F1R - North America ◄ 252.7 East (107.3 West)
C-Band: ANIK F1R - North America ◄ 252.7 East (107.3 West)
C-Band: ANIK F1 - South America ◄ 252.7 East (107.3 West)
ECHOSTAR 10, 11 - America ◄ 250.0 East (110.0 West)
DIRECTV 5 - America ◄ 250.0 East (110.0 West)
ANIK F2 - North America ◄ 248.9 East (111.1 West)
C-Band: ANIK F2 - North America ◄ 248.9 East (111.1 West)
SATMEX 6 - America ◄ 247.0 East (113.0 West)
C-Band: SATMEX 6 - America ◄ 247.0 East (113.0 West)
SATMEX 5 - America ◄ 243.2 East (116.8 West)
C-Band: SATMEX 5 - America ◄ 247.0 East (113.0 West)
ANIK F3 - Conus ◄ 243.2 East (116.8 West)
C-Band: ANIK F3 - America ◄ 241.0 East (119.0 West)
ECHOSTAR 14 - Conus ◄ 241.0 East (119.0 West)
DIRECTV 7S - Conus ◄ 241.0 East (119.0 West)
ECHOSTAR 9, GALAXY 23 - North America ◄ 239.0 East (121.0 West)
C-Band: ECHOSTAR 9, GALAXY 23 - North America ◄ 239.0 East (121.0 West)
GALAXY 18 - North America ◄ 237.0 East (123.0 West)
C-Band: GALAXY 18 - North America ◄ 237.0 East (123.0 West)
C-Band: GALAXY 14 - North America ◄ 235.0 East (125.0 West)
AMC 21 - North America ◄ 235.0 East (125.0 West)
GALAXY 13, HORIZONS 1 - North America ◄ 233.0 East (127.0 West)
C-Band: GALAXY 13, HORIZONS 1 - North America ◄ 233.0 East (127.0 West)
CIEL 2 - America ◄ 231.0 East (129.0 West)
C-Band: AMC 11 - North America ◄ 229.0 East (131.0 West)
C-Band: GALAXY 15- North America ◄ 227.0 East (133.0 West)
C-Band: AMC 10 - North America ◄ 225.0 East (135.0 West)
C-Band: AMC 7 - North America ◄ 223.0 East (137.0 West)
C-Band: AMC 8 - North America ◄ 221.0 East (139.0 West)

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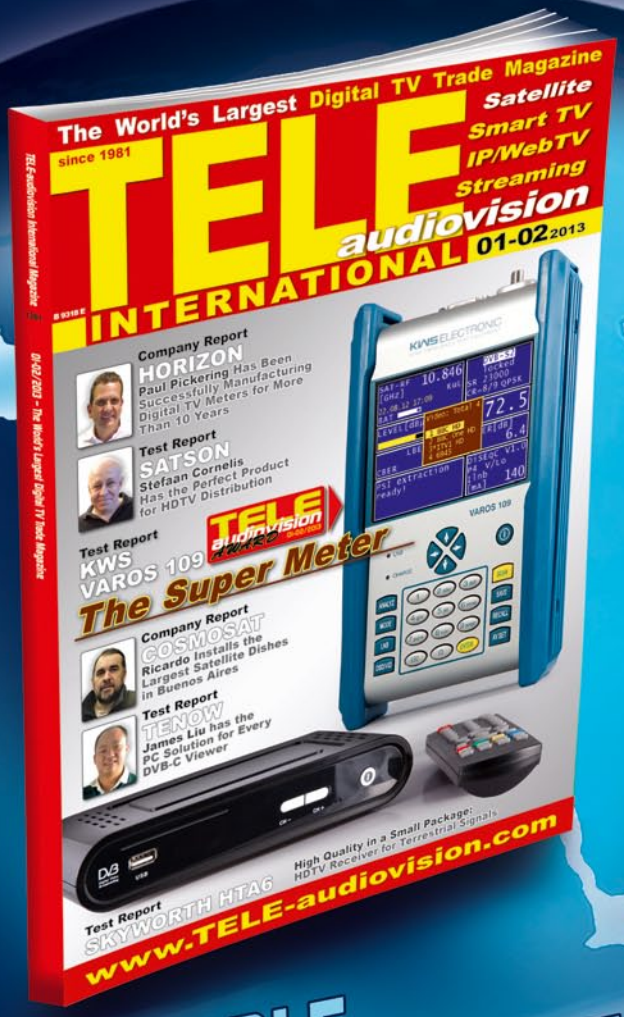


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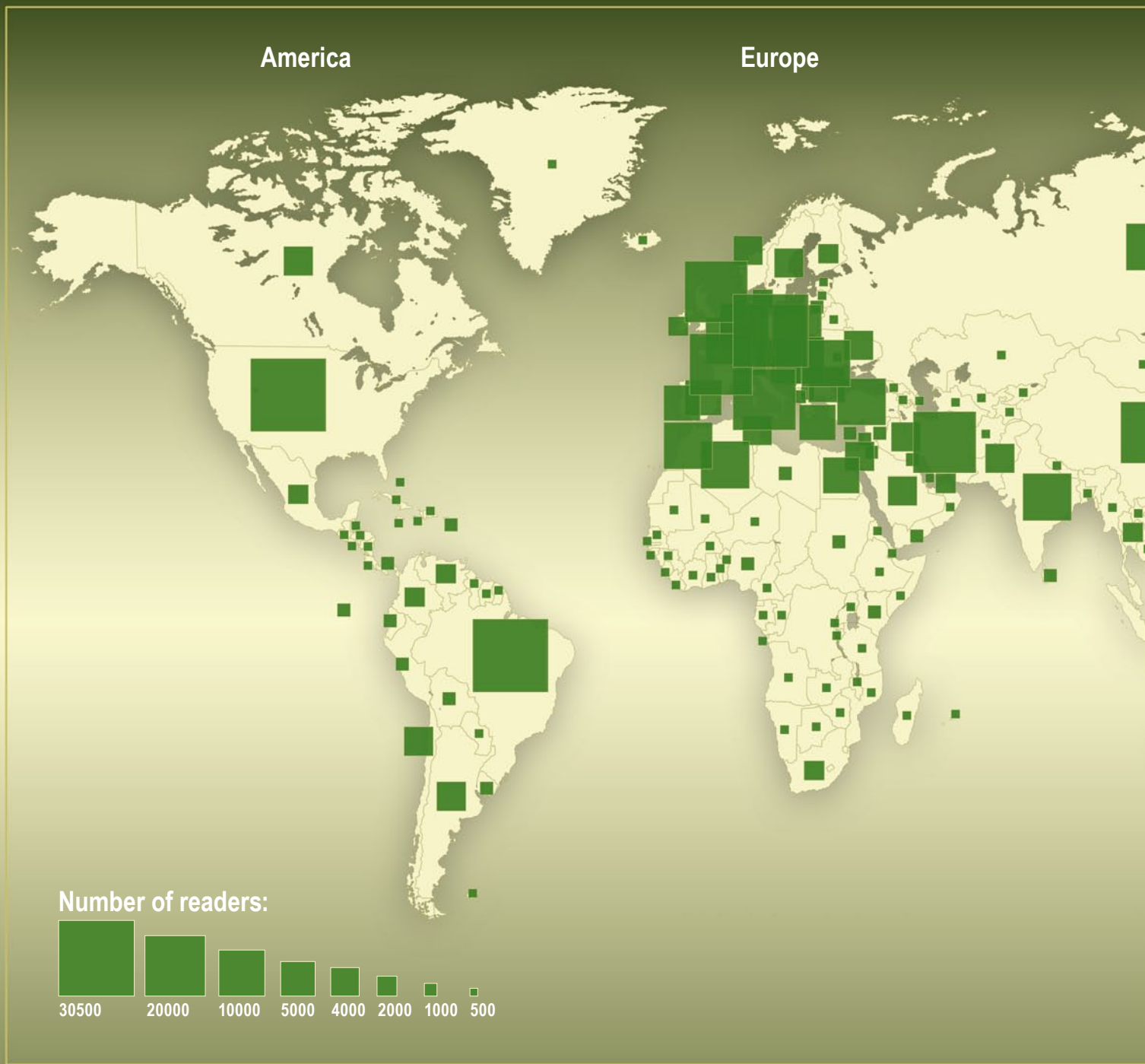
# Global Readership TELE-audiovision Ma




## Total Readership: >350 000 W

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# gazine

Asia

Worldwide

## Top 25 Countries > 4200 Readers

| COUNTRY | Readers # |
|---|---|
| Brazil | 30183 |
| Germany | 27479 |
| USA | 22609 |
| | 20000 |
| Italy | 13885 |
| UK | 12718 |
| Iran | 12489 |
| China | 11347 |
| France | 10528 |
| Indonesia | 10504 |
| | 10000 |
| Netherlands | 9730 |
| Turkey | 9613 |
| Algeria | 8837 |
| Romania | 8252 |
| Belgium | 5680 |
| Hungary | 5594 |
| Russia | 5535 |
| Morocco | 5529 |
| Poland | 5444 |
| India | 5063 |
| | 5000 |
| Spain | 4921 |
| Portugal | 4783 |
| Egypt | 4478 |
| Czech Republic | 4315 |
| Greece | 4302 |
| Bulgaria | 4230 |
| | 4200 |

## Readers' Breakdown

| | |
|---|---|
| Manufacturers | 4% |
| Distributors | 8% |
| Wholesaler | 18% |
| Dealers | 27% |
| Installers | 12% |
| Satellite Provider | 2% |
| Cable Provider | 8% |
| IPTV Provider | 5% |
| Program Provider | 6% |
| Governmental | 2% |
| Institutional | 2% |
| Private Enthusiasts | 6% |

## Top 25 to 105 Countries > 170 - 4200 Readers

| COUNTRY | Readers # |
|---|---|
| Canada | 3986 |
| Saudi Arabia | 3631 |
| Ukraine | 3506 |
| Slovakia | 3381 |
| Switzerland | 2980 |
| Chile | 2964 |
| Argentina | 2937 |
| Pakistan | 2832 |
| Tunisia | 2828 |
| Austria | 2753 |
| Croatia | 2722 |
| Malaysia | 2406 |
| Sweden | 2382 |
| Iraq | 2308 |
| Israel | 2105 |
| Australia | 2055 |
| Norway | 2054 |
| | 2000 |
| Serbia | 1922 |
| Venezuela | 1885 |
| UAE | 1586 |
| Ireland | 1585 |
| South Africa | 1556 |
| Denmark | 1395 |
| Colombia | 1375 |
| Thailand | 1314 |
| Mexico | 1277 |
| Finland | 1075 |
| Philippines | 1058 |
| | 1000 |
| Sri Lanka | 996 |
| Jordan | 879 |
| Nigeria | 879 |
| Lithuania | 844 |
| Slovenia | 842 |
| Libya | 825 |
| Lebanon | 822 |
| Yemen | 792 |
| South Korea | 782 |
| Peru | 779 |
| Bosnia and Herzegovina | 769 |
| Syria | 754 |
| Macedonia | 736 |
| Sudan | 688 |
| Japan | 630 |
| Kenya | 592 |
| Ecuador | 572 |
| Uruguay | 570 |
| Panama | 561 |
| Kuwait | 551 |
| Puerto Rico | 549 |
| Cyprus | 545 |
| Albania | 539 |
| Bolivia | 527 |
| | 500 |
| Qatar | 497 |
| Taiwan | 492 |
| Latvia | 491 |
| Hong Kong | 472 |
| Paraguay | 466 |
| Moldova | 447 |
| Luxembourg | 440 |
| Oman | 435 |
| New Zealand | 414 |
| Senegal | 392 |
| Georgia | 343 |
| Mauritius | 334 |
| Vietnam | 315 |
| Côte d'Ivoire | 308 |
| Belarus | 300 |
| Estonia | 299 |
| Bahrain | 296 |
| Ghana | 283 |
| Singapore | 253 |
| Kazakhstan | 223 |
| Dominican Republic | 214 |
| Aruba | 205 |
| Bangladesh | 201 |
| Iceland | 199 |
| Ethiopia | 194 |
| Uganda | 187 |
| Cameroon | 184 |
| Malta | 173 |
| | 170 |

## Top 106 to 180 Countries < 170 Readers

| COUNTRY | Readers # |
|---|---|
| Barbados | 152 |
| Palestinian Territories | 150 |
| Montenegro | 147 |
| Myanmar | 145 |
| Trinidad and Tobago | 136 |
| Costa Rica | 131 |
| Afghanistan | 127 |
| Netherlands Antilles | 127 |
| Mali | 127 |
| Zimbabwe | 124 |
| Tanzania | 122 |
| Azerbaijan | 115 |
| Brunei | 108 |
| Maldives | 108 |
| Suriname | 107 |
| Malawi | 105 |
| Armenia | 104 |
| Botswana | 102 |
| | 100 |
| Mauritania | 99 |
| Niger | 95 |
| New Caledonia | 92 |
| Namibia | 89 |
| Madagascar | 82 |
| Zambia | 79 |
| Rwanda | 71 |
| Guatemala | 68 |
| French Polynesia | 67 |
| Angola | 66 |
| Uzbekistan | 66 |
| Haiti | 64 |
| Burkina Faso | 61 |
| Martinique | 61 |
| Kyrgyzstan | 60 |
| Honduras | 58 |
| Gambia | 54 |
| Guyana | 54 |
| Jamaica | 53 |
| Congo | 52 |
| | 50 |
| Benin | 48 |
| Djibouti | 47 |
| French Guiana | 47 |
| Réunion | 47 |
| Mozambique | 46 |
| Guadeloupe | 44 |
| Cambodia | 44 |
| Nepal | 43 |
| Cape Verde | 41 |
| Seychelles | 40 |
| Tajikistan | 39 |
| Comoros | 35 |
| Macau | 35 |
| Togo | 35 |
| El Salvador | 33 |
| Nicaragua | 32 |
| Gabon | 30 |
| Greenland | 29 |
| Palau | 29 |
| Monaco | 28 |
| Bermuda | 26 |
| Dominica | 25 |
| Mongolia | 23 |
| Turkmenistan | 23 |
| Cuba | 21 |
| Bahamas | 20 |
| Burundi | 17 |
| Fiji | 16 |
| Somalia | 16 |
| Laos | 15 |
| Timor-Leste | 15 |
| Belize | 14 |
| Congo | 12 |
| Guernsey | 12 |
| Isle of Man | 10 |
| Jersey | 10 |
| | 10 |

Source:
Google Analytics
as of 11-12/2012

# TELE-audiovision Deadlines

| *Issue* | **TELE-audiovision 03-04/2013** | **TELE-audiovision 05-06/2013** | **TELE-audiovision 07-08/2013** | **TELE-audiovision 09-10/2013** |
|---|---|---|---|---|
| *#* | 1303 | 1305 | 1307 | 1309 |
| *Editorial Deadline* | 28 December 2012 | 1 March 2013 | 3 May 2013 | 28 June 2013 |
| **Advertisement Deadline** 广告截止日期 | **4 January 2013** | **8 March 2013** | **10 May 2013** | **5 July 2013** |
| *Hardcopies* | 15 February 2013 | 19 April 2013 | 21 June 2013 | 16 August 2013 |
| *Online* | 1 March 2013 | 3 May 2013 | 5 July 2013 | 30 August 2013 |

# Digital TV Exhibitions

**11 - 13 March 2013**
**DVB World**
Madrid, Spain

**12 - 14 March 2013**
**CABSAT 2013**
*Premier Broadcast & Satellite Platform in the ME & North Africa*
Dubai International Convention and Exhibition Centre, Dubai, UAE
Opening Hours:
12 - 13 March: 10:00am - 6:00pm
14 March: 10:00am - 5:00pm
**www.cabsat.com**

**19 - 21 March 2013**
**IPTV Forum**
London, UK

**21 - 23 March 2013**
**CCBN 2013**
*China Content Broadcasting Network Exhibition - largest broadcasting technology and equipment expo in the Asia-Pacific region*
Beijing International Exhibition Center, Beijing, China
Opening Hours:
21 - 22 March: 9:00am - 5:00pm
23 March: 9:00am - 4:30pm
**www.ccbn.tv**

**13 - 16 April 2013**
**HKTDC Spring**
Hongkong, China

**8 - 11 April 2013**
**NAB Show 2013**
*For broader-casting® professionals*
Las Vegas Convention Center, USA
Opening Hours:
8 - 10 April: 9:00am - 6:00pm
11 April: 9:00am - 2:00pm
**www.nabshow.com**

**4 - 6 June 2013**
**ANGA 2013**
Cologne, Germany

**18 - 21 June 2013**
**CommunicAsia 2013**
**BroadcastAsia 2013**
*A comprehensive range of the latest products, technologies and solutions.*
Basement 2, Levels 1, 4 & 5
Marina Bay Sands, Singapore
Opening Hours:
18 - 20 June: 10:30am - 6:00pm
21 June: 10:30am - 4:00pm
**www.communicasia.com**

**2 - 3 July 2013**
**VSAT Latin America**
São Paulo, Brasil

**6 - 9 August 2013**
**ABTA 2013**
São Paulo, Brasil

**3 September 2013**
**AndinaLink 2013**
San Pedro Sula, Honduras

**6 - 11 September 2013**
**IFA 2013**
Berlin, Germany

**13 - 17 September 2013**
**IBC 2013**
RAI Convention Centre, Amsterdam
The Netherlands
*Annual event for professionals engaged in the creation, management and delivery of entertainment and news content*
Opening Hours:
13 September: 10:30am - 6:00pm
14 - 16 Sept.: 9:30am - 6:00pm
17 September: 10:30am - 4:00pm
**www.ibc.org**

**18 - 20 September 2013**
**VSAT 2013**
Grand Hotel Krasnapolsky,
Amsterdam, The Netherlands
**www.vsatevent.com**

**13 - 16 October 2013**
**HKTDC Autumn**
Hongkong, China

**24 - 27 October 2013**
**CeBIT Bilisim Eurasia**
Istanbul, Turkey

**25 - 27 October 2013**
**SCaT India 2013**
*South Asia's Largest Tradeshow of the Indian Cable & Satellite Television Industry*
World Trade Centre, Cuffe Parade,
Mumbai, India
**www.scatmag.com/scatindia/**

**3 - 4 December 2013**
**Satellite Mobility 2013**
London, UK

**7 - 10 January 2014**
**2014 International CES**

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