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Company Report

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Company Report

JIUZHOU

Yongjun Zhang Reveals the Unknown Pros and Cons of Android-based Receivers



Test Report

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Paul Pickering Introduces an Incredibly Easy-to-Use Satellite Meter

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TENOW

James Liu Integrates Multimedia Into a PC Card Perfectly Suited for Satellite Enthusiasts



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TSINGHWA GT-278

DTMB Receiver with Excellent Software

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- 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
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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 media player
- Video Decoding: H.264(1080p/i HP@L4.1), MPEG1/2/4*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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**TELE-audiovision
International**
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Digital TV Trade Magazine

since 1981

Alexander Wiese
Publisher

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Dear Readers,

Today I want to tell you what my dream receiver would look like. Will it stay a dream or will my dream come true some day? Judge for yourself: my dream receiver would resemble a Phablet, that is an in-between a Smartphone and a Tablet. It would receive satellite signals wirelessly from a satellite dish using a wireless LNB. My dream receiver would receive terrestrial signals from an antenna that would also transfer the signals wirelessly.

I wouldn't need a cable connection and I would watch all my WebTV channels through Internet access that I would get from my dream receiver via a built-in 4G/LTE reception module.

And where will I watch all of these channels? When I'm traveling, it would be directly on my Phablet receiver; when I'm home or when I have access to a big-screen TV, then my dream receiver would send those signals via wireless HDMI. Of course, my dream receiver would also utilize wireless speakers.

As soon as my dream receiver is linked with a big-screen TV, the display on my tablet would become a remote control. And, naturally, my dream receiver would be able to stream the TV channels to my Smartphone. And when I'm away from home, I'll access my wirelessly connected satellite system and terrestrial antenna via the Internet and watch TV from home wherever I

happen to be in the world – it would be just like being at home.

Now you might be asking yourself, what exactly in my dream receiver is actually a dream? All of these technologies exist already. So what's the problem with finally manufacturing my dream receiver?

The answer to this question would be interesting to find out; I don't know the answer. End users simply don't want to lay cable anymore; this can clearly be seen in the success of Smartphones and Tablets and the recently launched Phablets. What's missing are the matching wireless components that would let you enjoy a complete selection of TV channels regardless of where you are.

Maybe I won't have to dream too much longer; maybe my dream receiver is already being developed. I can't wait!

Hoping my dreams come true,

Alexander Wiese

Editor-in-Chief TELE-audiovision International



TELE
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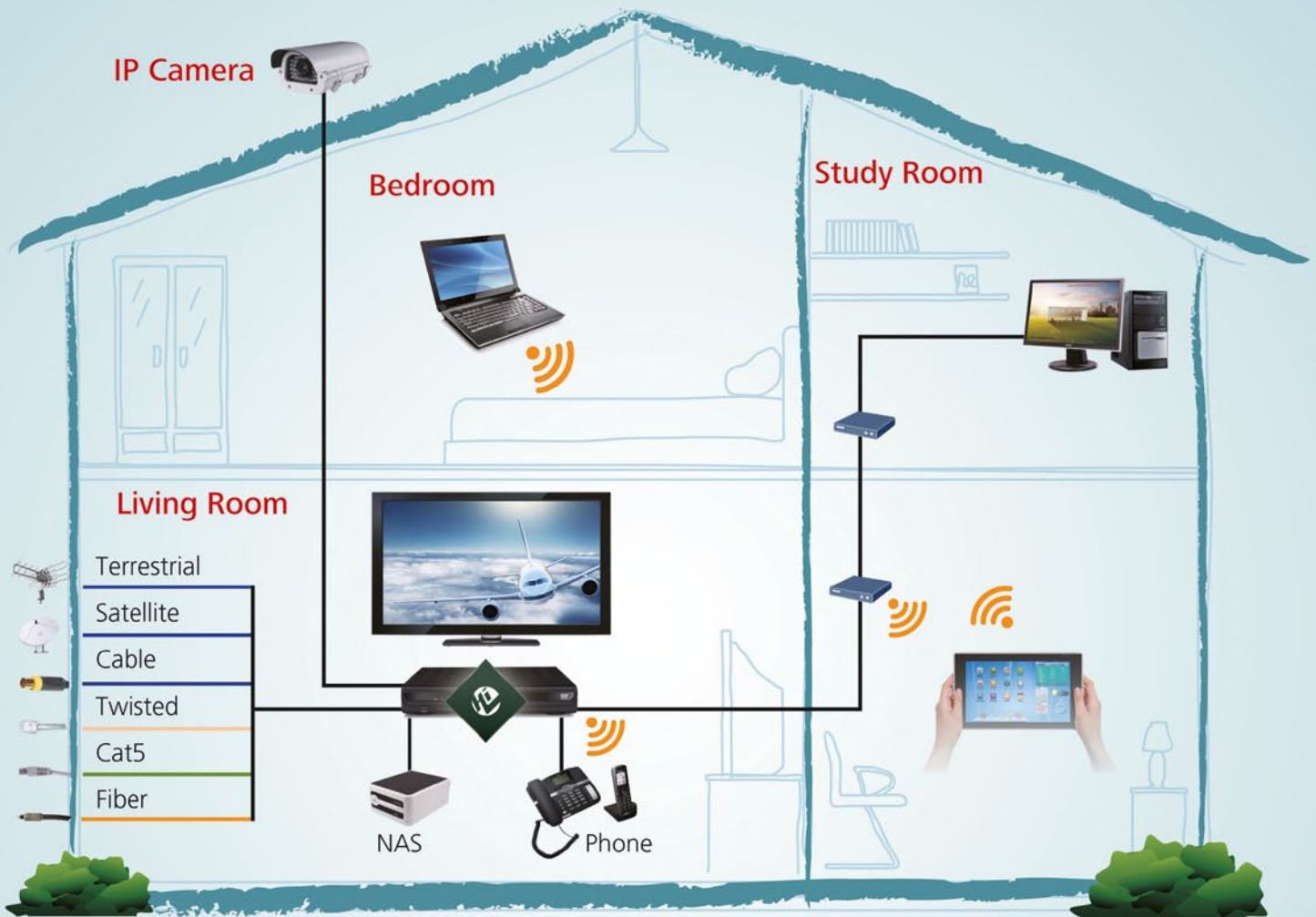
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Shenzhen, Guangdong, China

Test Report

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Test Reports are written by TELE-audiovision's engineering staff located at
different strategic reception points around the world



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 Mpeg2,Mpeg4(H.264) decoder ,fully DVBS&DVBS2 compliant
 Storage 8000 TV and Radio programs
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 Audio codec: MP3, AAC, OGG, MPEG, MPEG Audio, Dolby AC-3
 Container : MP4, AVI, MKV, FLV, MPEG TS
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Feature:

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OTT (Over the top)	Powerful Media
Android Market	OTA(over the air)
Web Browser	2.4G wireless interface
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HS1J

- Video decode: MPEG2 SD, MPEG2 HD, H.264/AVC SD, H.264/AVC HD,MP4
- Interface: Single Cplus, 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,Media 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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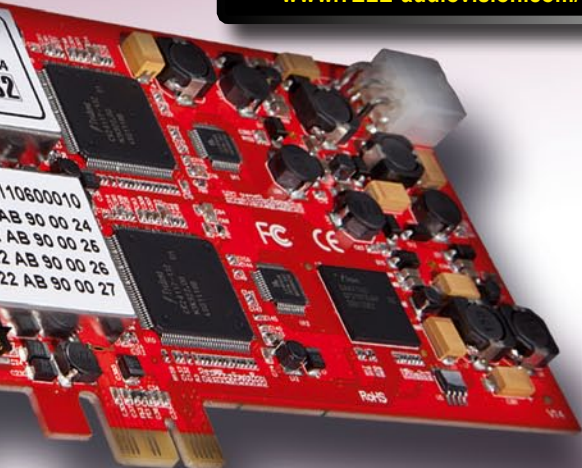
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JIUZHOU DTP2100
Cutting-edge receiver thanks to Android operating system

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Tsinghwa GT-278



- *very fast channel switching*
- *quick OSD build-up and reaction*
- *PVR functionality if storage medium is connected*
- *excellent multimedia capabilities*



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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KU 60



KU 60



KU 75



KU 75



KU 90



TQU11



TTU11



TSU11



T8U11



TQU13



TSU13



TQB11



TSB11

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GT-278

高清晰度國標地面數字電視機頂盒

Installation Guide

OSD Language English
Country/Region China
CH Search

退出 Multimedia OK Confirm Move

安装向导

菜单语言 简体中文
国家或地区 中国
频道搜索

退出 多媒体 OK 确定 移动

CH Search

482.0MHz/8MHz

001 SCTV 3 T
002 CCTV HD T
003 SCTV 1 T
004 SCTV 5 T

Progress

退出 EXIT

跳过 Skip

Program

Program	Program Edit
Picture	EPG
CH Search	Sort By LCN
Time	LCN Off
Option	
System	
Multimedia	

退出 Return OK Confirm Move

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

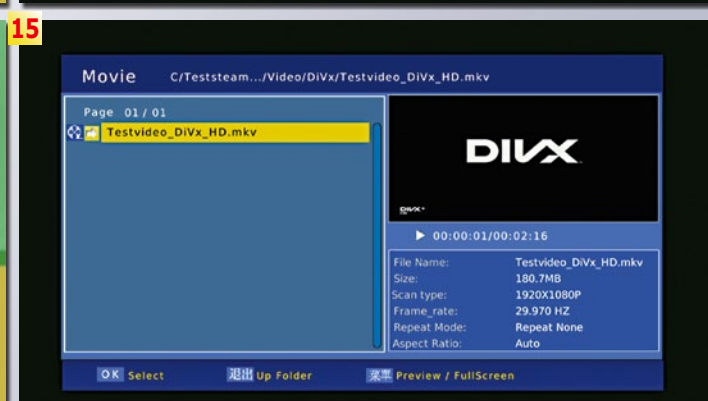
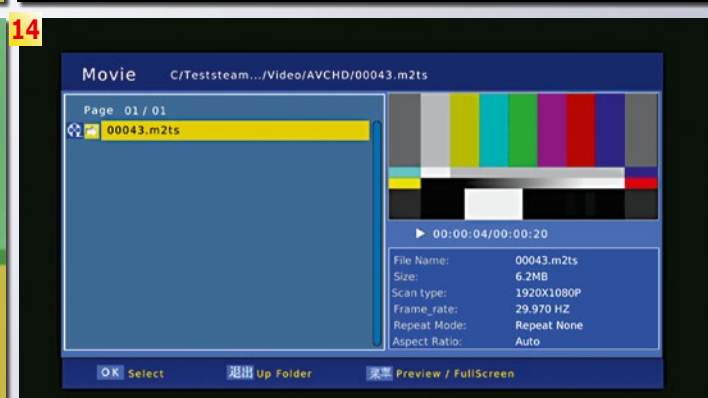
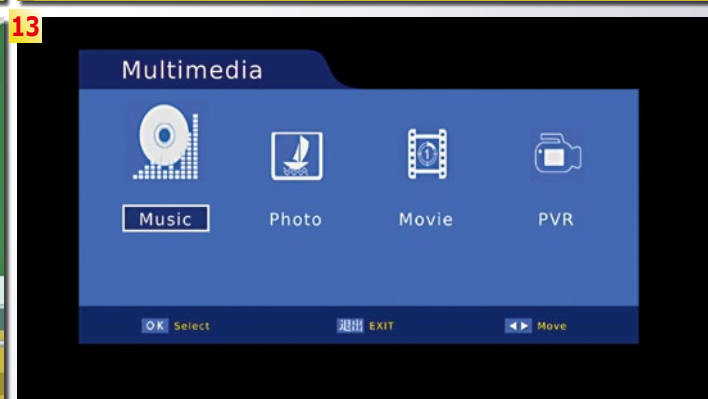
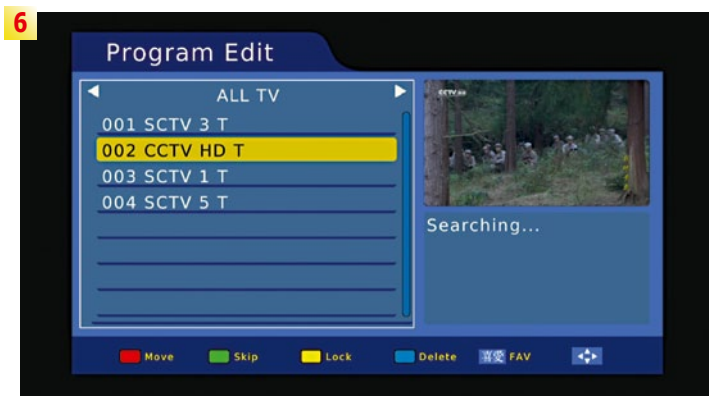
in our case took a little over two minutes to read all active frequencies. Once that job is completed the GT-278 switches to the first available channel.

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.

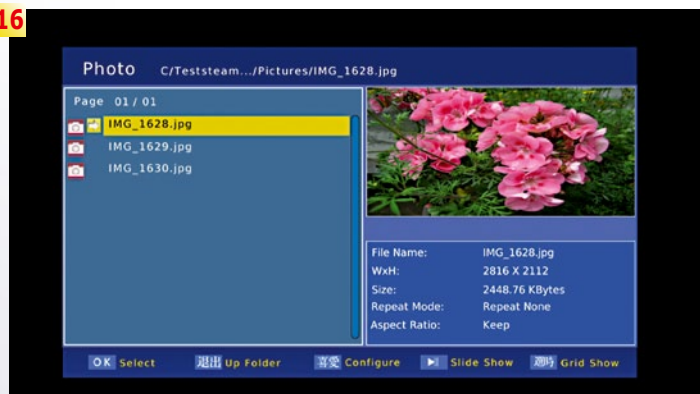
A total of seven entries are available: Program, Picture, Channel Search, Time, Options, System and Multimedia.

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

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



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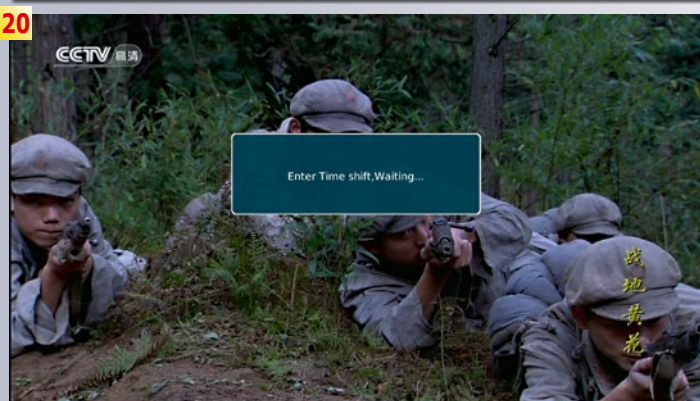
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asks you to specify is that it can automatically determine the correct local time from the time code that is transmitted via DTMB. Unfortunately, we found no way to set the time manually. It is, however, possible to change the time difference.

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.

Tsinghua 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 Tsinghua 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 zap-ping!

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

SATLINK

Digital Satellite Meter

WS-6936

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 bandwidth: 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

SATLINK

SATLINK TECHNOLOGY CO., LIMITED

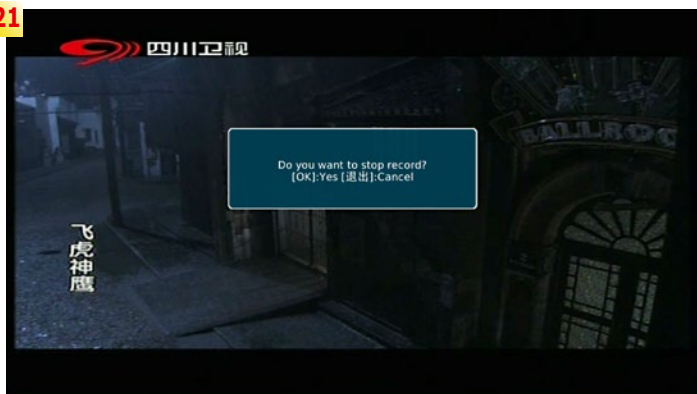
Add: Jiangnan High-Tech, Licheng District, Quanzhou, Fujian, China

Tel: +86-595-28106302 Fax: +86-595-28106253

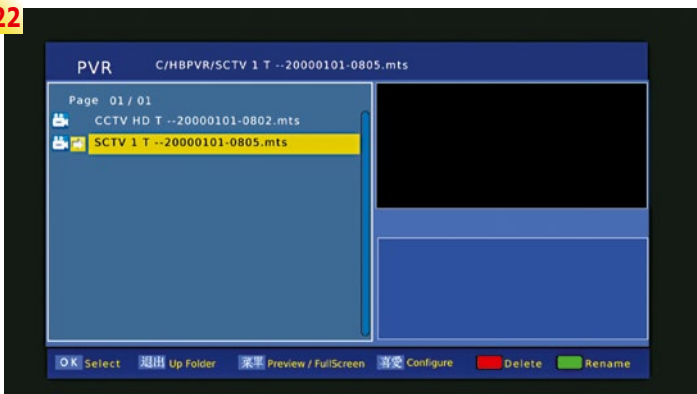
E-mail: dp02@baotong.cc

Website: <http://www.sat-link.com.cn> www.hktdc.com/em/fjbaotong

21



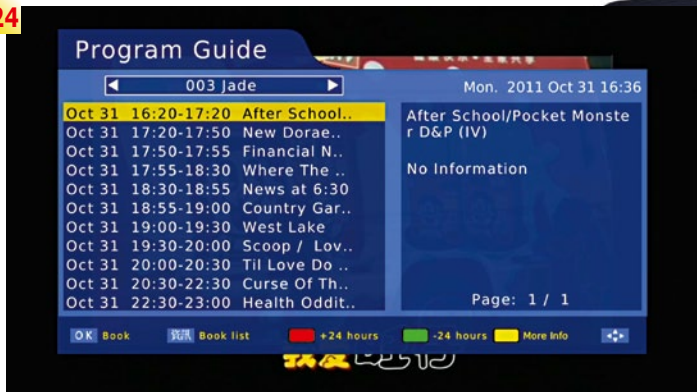
22



23



24



25



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: Tsing-hwa 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 Tsinghua 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 Tsinghua 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

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

clock cannot be set manually
MHEG (Hong Kong) cannot be processed



Luo Jun
TELE-satellite
Test Center
Shenzhen

TECHNICAL

DATA

Manufacturer	Tsinghua
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

Horizon Nano-S2

- *Doesn't require its own power supply*
- *Extremely easy to use*
- *Displays signal level and quality*
- *Optimized for the measurement of four satellite positions*
- *Very fast reaction time*

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

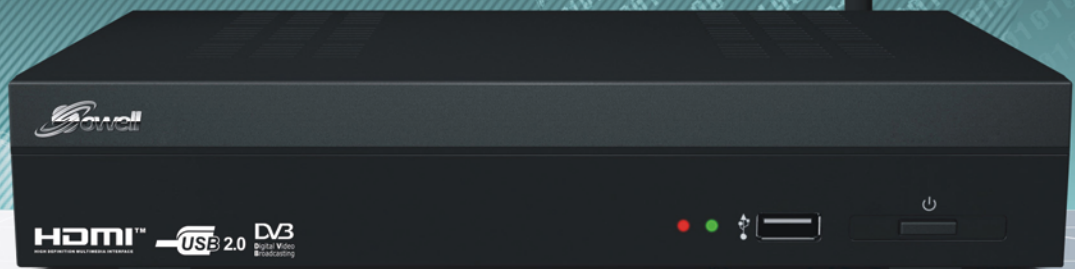
03-04/2013

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, Flickr 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



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

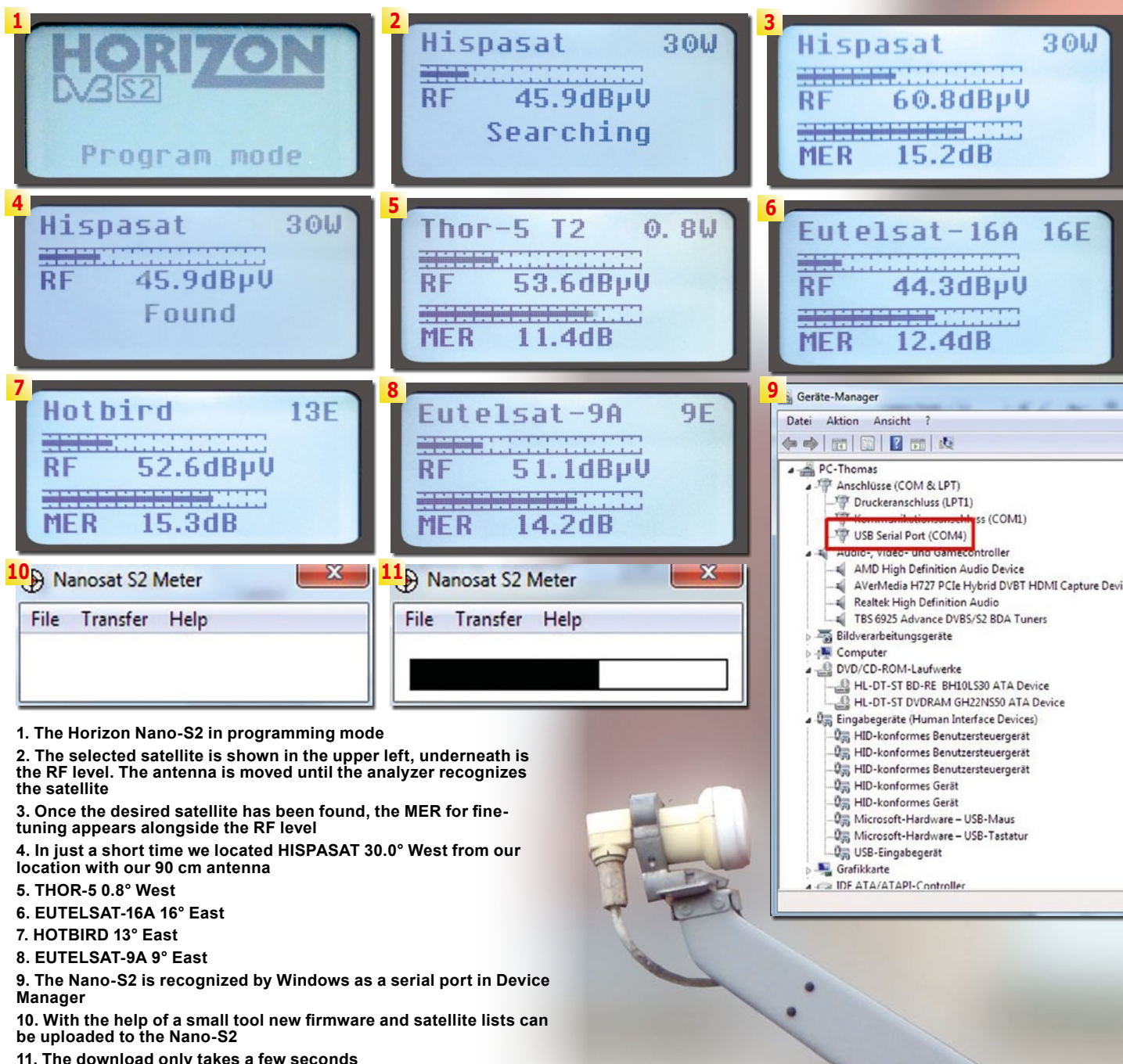
HD DVB-T



- 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)



You can meet us at the above shows in 2013.



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 sat-

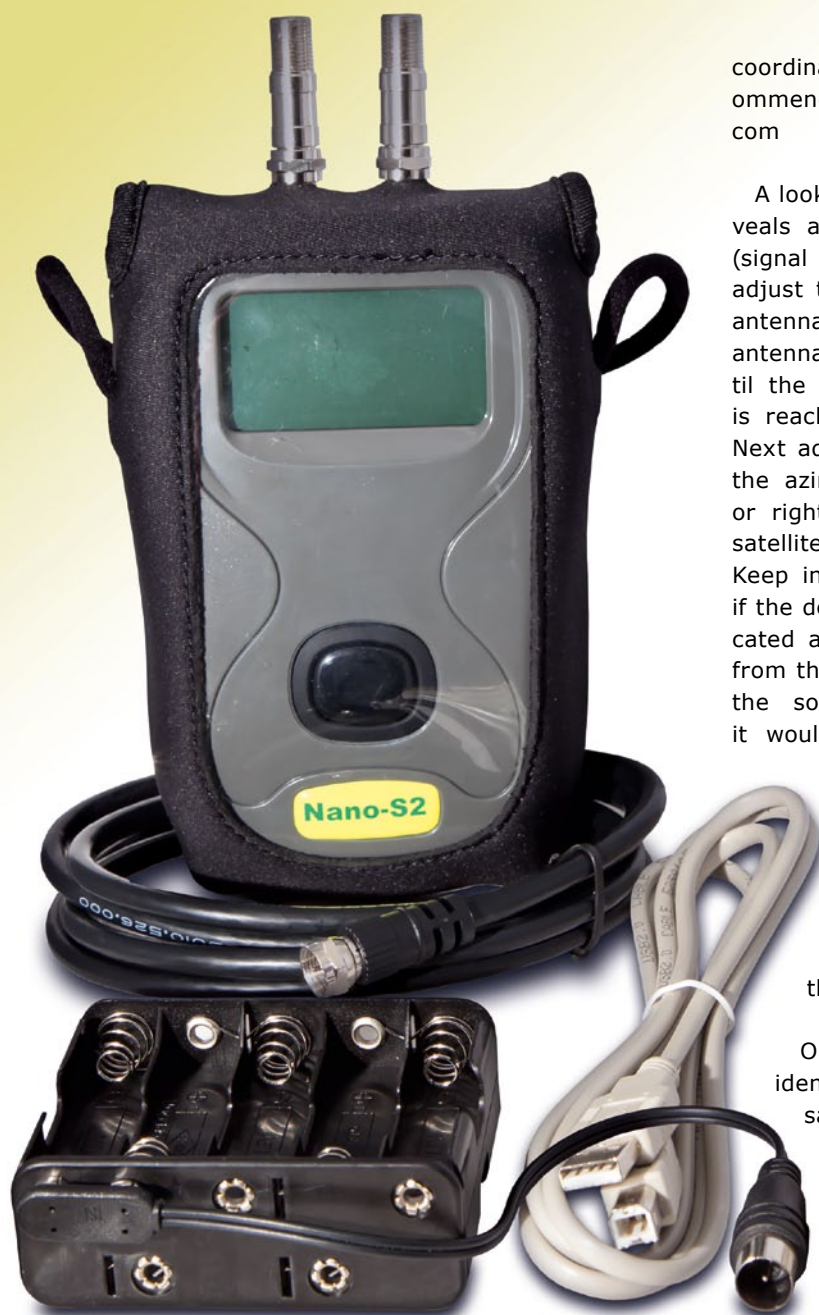
ellite list in our test Nano-S2 encompassed two positions for ASTRA 28.2° east (for ASTRA 1N and for ASTRA 2B), HOTBIRD 13° east as well as ASTRA 1 19.2° east. We connected the nano-S2 to our antenna on the roof and loosened the mounting screws.

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.

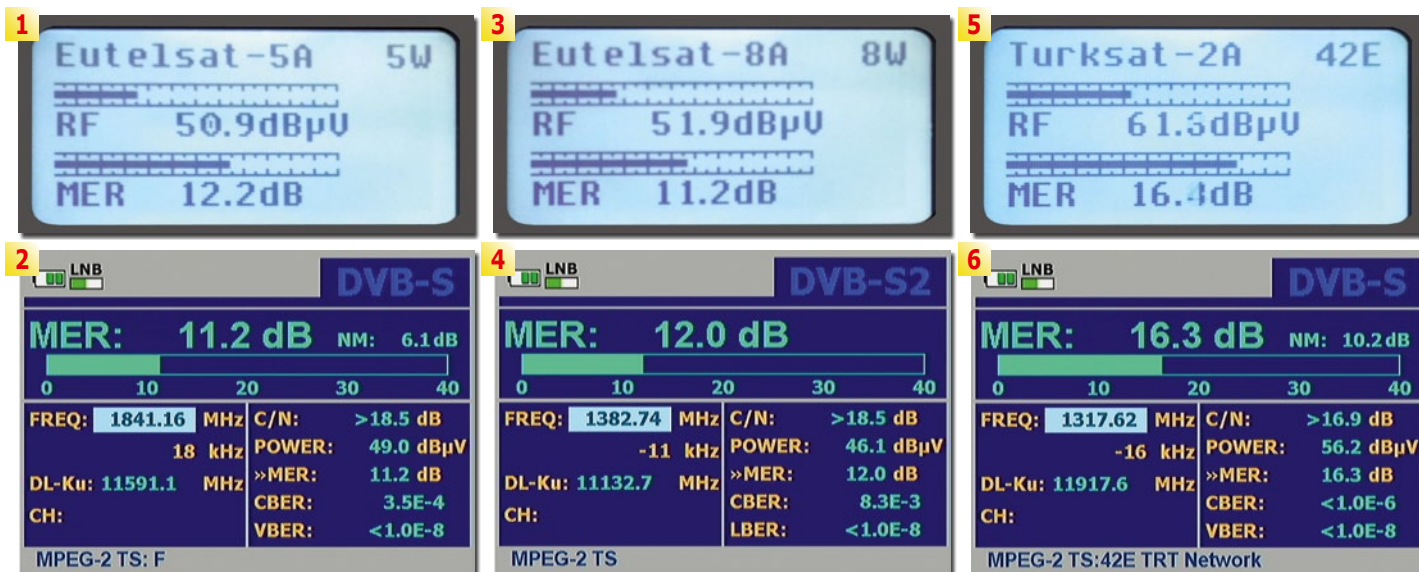
You'll see how much better the RF signal level will then be.

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

new

MODULATOR HD DVB-T / TNT HD-MOD-001T

- ▶ Integration of HD Encoder and DVB-T Modulator in one box.
- ▶ Various video input include: HDMI, Component Video (YPbPr) and Composite Video (CVBS)
- ▶ Multiple video format compatibility including 1080i, 720p, 576i, 576p, 480i and 480p
- ▶ Multiple audio format compatibility including MPEG-1 Layer II
- ▶ Fully comply with DVB-T standard
- ▶ Frequency range : 50~860MHz
- ▶ Programmable video/audio/PCR PID
- ▶ Programmable channel name and logical channel number insertion
- ▶ User friendly setup and control,
Remote management through Telnet



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 alter-

native 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

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



Thomas Haring
TELE-satellite
Test Center
Austria

TECHNICAL DATA

Manufacturer	Horizon Global Electronics Ltd, First Floor Office Allen House, Edinburgh Way, Harlow, Essex 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

MILLIONS OF RECEIVERS AND HUNDREDS OF ENGINEERS FOR R&D & SERVICE



S1-44HD 3D Dual OS IPTV plus Set-Top-Box

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- Dual OS: Android 2.3 plus Linux OS in one
- Fantastic experience of web browsing
- Supports LAN, 3G wireless and USB wifi
- PVR ready enhanced by auto-Timeshift function
- Real PIP function supported (2 HD channels or 4 SD channels playing at the same time)
- DLNA supported
- HBBTV available for European market

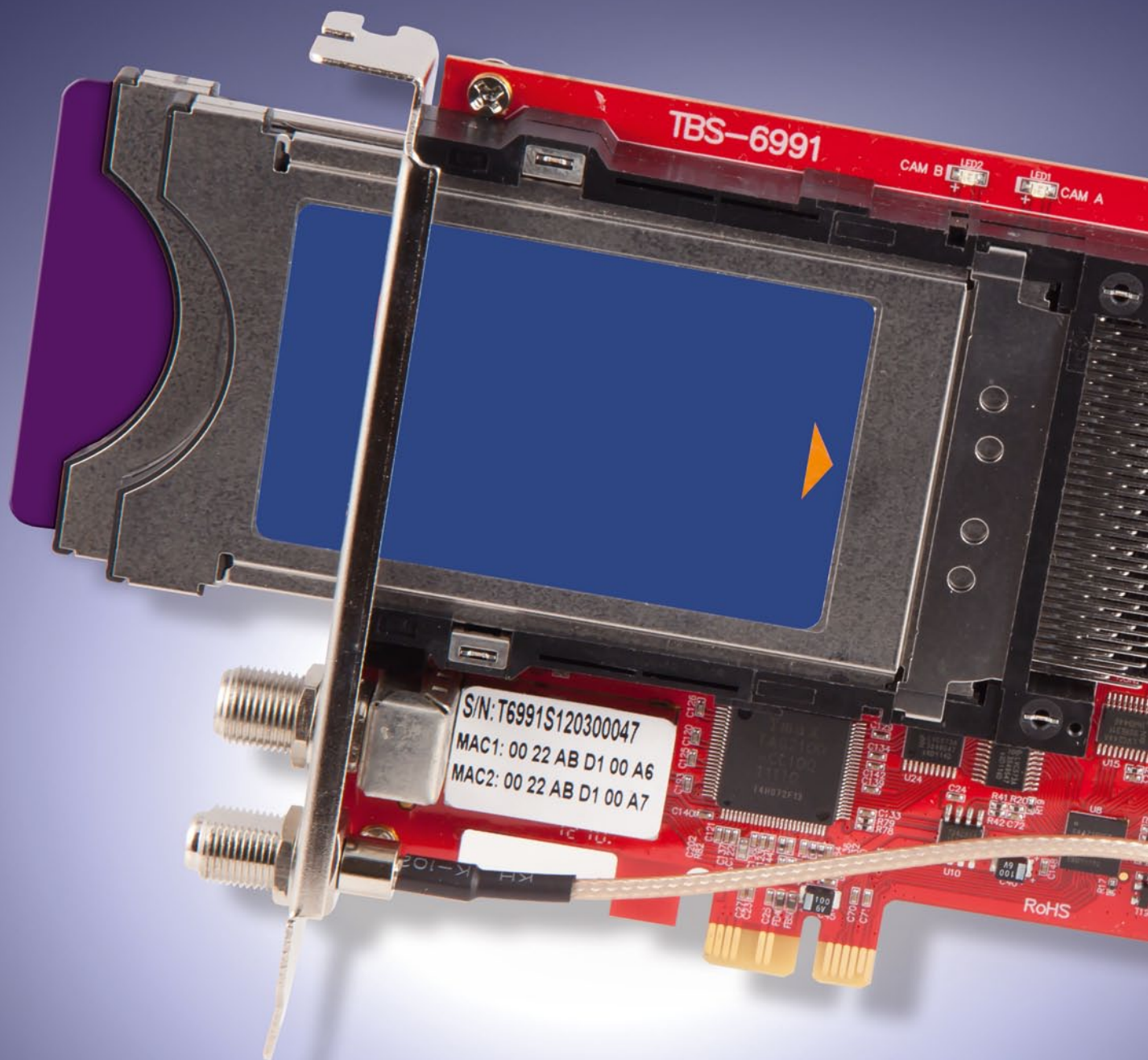
S5-55HD Enigma2 iBox plus eCOS

- DVB-S/S2 HD MPEG-4/H.264 Full HD Box
- Dual OS: Enigma 2 plus eCOS in one
- Supports LAN, 3G wireless and USB wifi
- Abundant Plug-ins available for users: DVD Player, Google Map, RSS Reader, Weather forecast, Webcam Viewer, YouTube Player and etc.
- Supports OSD/Skin DIY
- IPTV

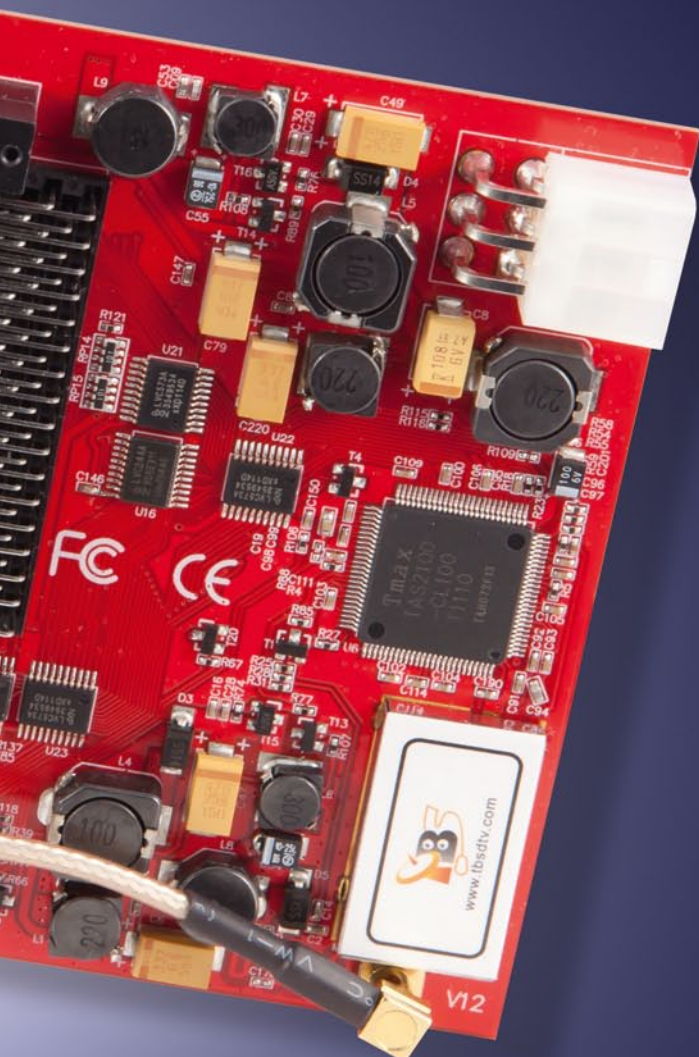


Digital Combo Signal Meter

- DVB-S2, DVB-T2/T and DVB-C signal meter in one
- High performance spectrum analyzer to display the signal strength of all transponders
- Pre-/ Post-BER and MER indicator, C/N in the dB and signal level in dB/μV
- 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



TBS 6991



- ***Perfect Integration in a PC and perfect functioning with all well-known TV applications***
- ***Independent operation of the two built-in tuners***
- ***Professional Blindscan possible together with CrazyScan***
- ***Can also control motors, polarizers and multiswitches***
- ***Features an integrated CI module for use with CAMs***



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 known 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 takes up one PCI-e slot, it will oper-

ate 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

guarantee that enough power is 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



TELE
audiovision
AWARD 03-04/2013

TBS 6991
Perfect TV card for watching TV;
ideal for DXers and satellite professionals

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

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

the additional power sources and everything worked fine with the exception of motor control. In a further test

IPTV Software + IPTV Hardware

Win-Win Model

Once Investment Forever Interest



ForceTech Cloud Live/VoD Streaming Media System, head-end IPTV/OTT
Solution for Streaming Distribution. Professional Video Streaming Transmission Scheme.

- Support Multiple Streaming Format
- Compatible with PC, Set-top box, Mobile Phone, Tablet PC Terminal
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- User Billing, Content Distribute, Operational Monitor Multidimensional Management
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- Smooth Playback, Unbuffered

Website: <http://www.forcetek.net/en/>

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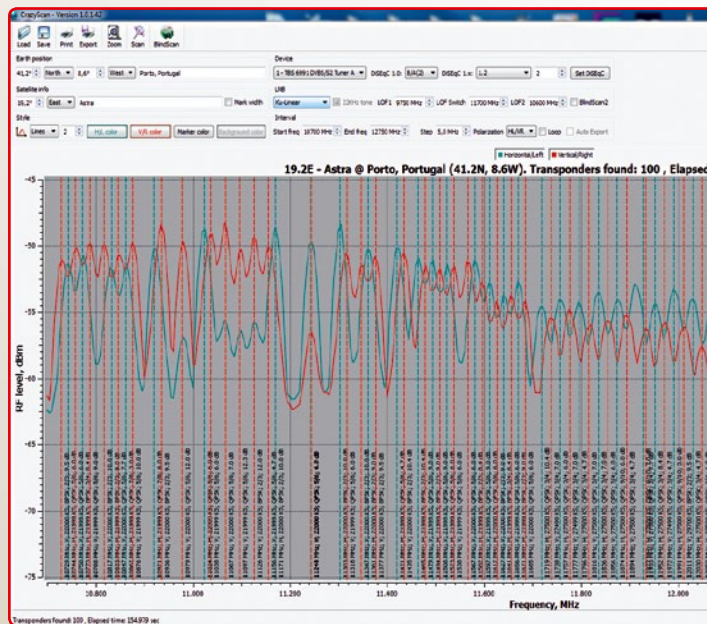
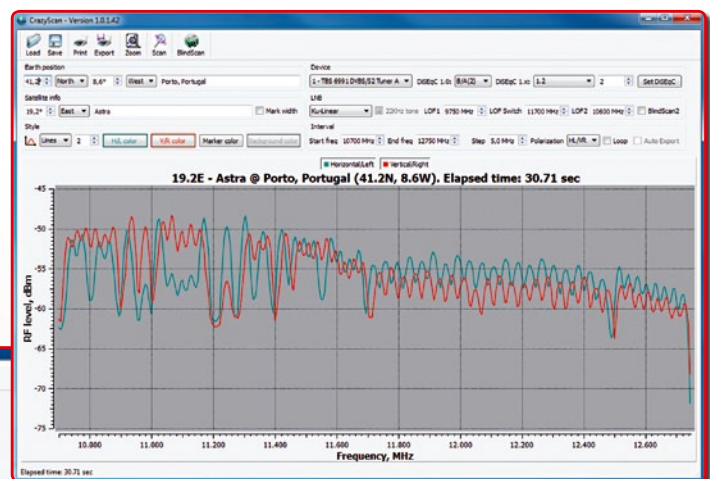


we connected only one of the Molex connectors to the adapter cable and discovered that we could now operate our motorized antenna without any problems. This antenna actually consisted of two motors, a DiSEqC switch and a Twin LNB. Clearly more power is needed for this set up than with a simple antenna.

Under Windows the TBS

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.

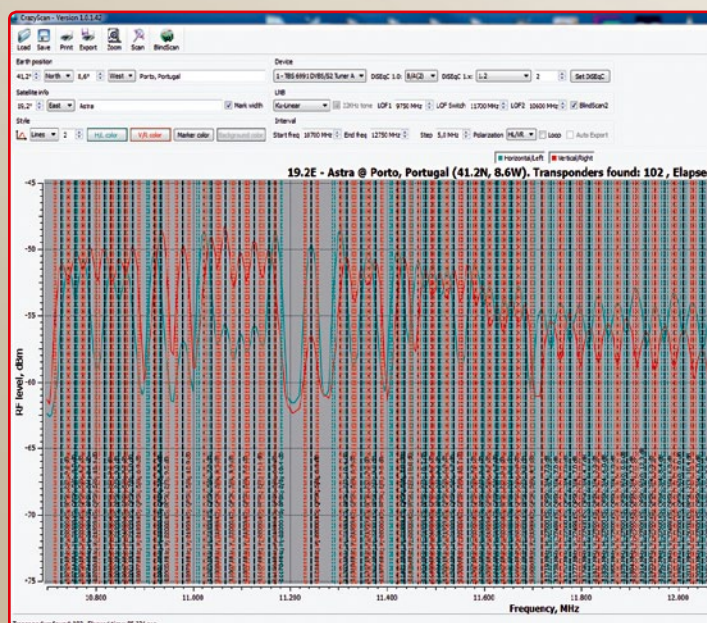
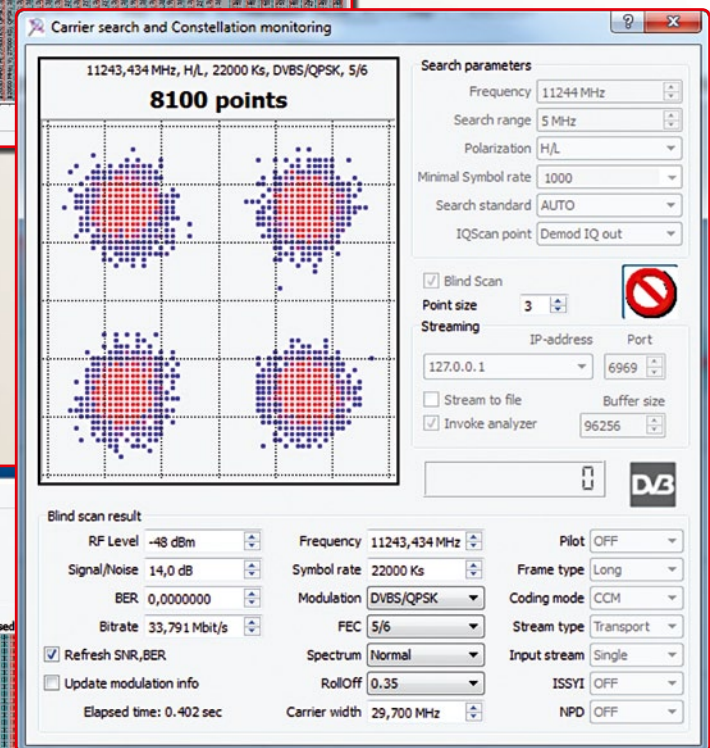
The TBS 6991 with CrazyScan



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!

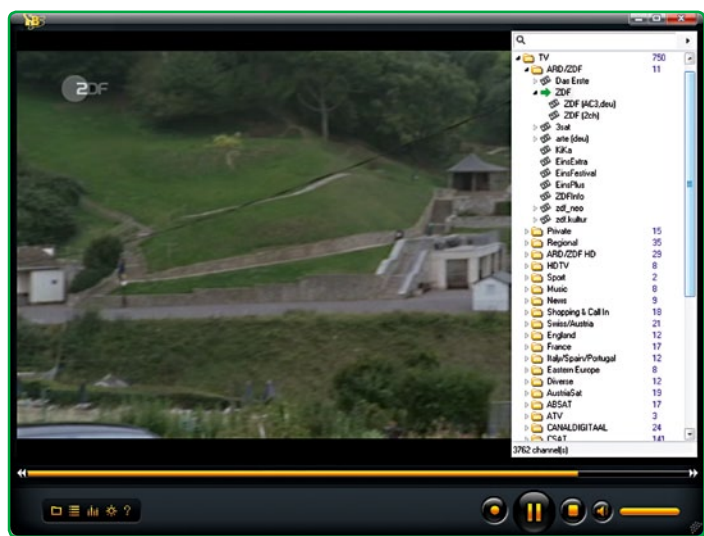
First we tried Windows Media Center (WMC) with the newly installed TBS 6991. This time the channel list could immediately be displayed and it once again became clear why there were so many problems with DVB-C cards: WMC does not perform a scan with auto-

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 func-

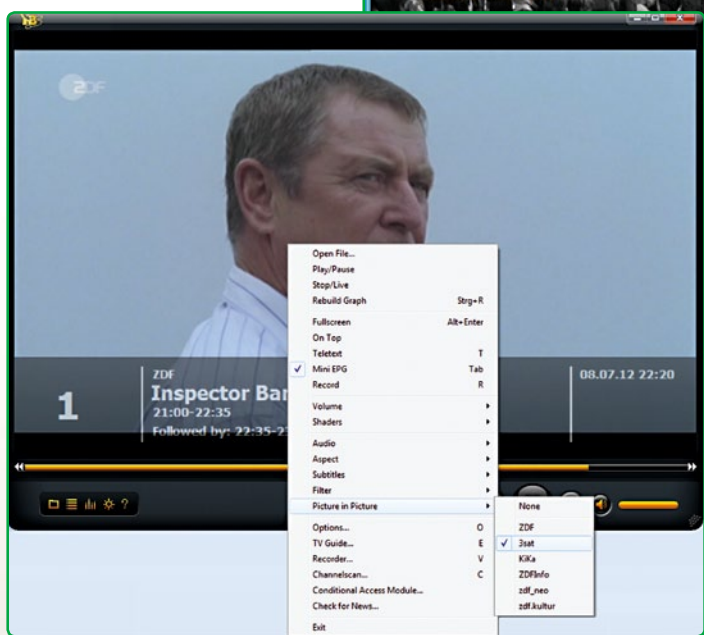


tioned settings for the various TV applications so that nearly all common programs are perfectly harmonized with the remote control without the need to do anything else. We liked this concept since we've already often experienced problems with the common LIRC.

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

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



tions 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.

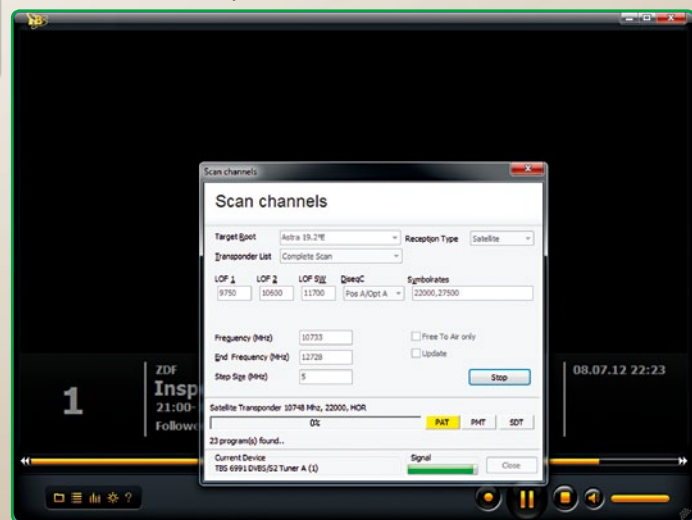
As we have come to expect from TBS, the included remote control is integrated with its own software that translates the remote into keyboard buttons. The TBSVHID tool contains precon-

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.

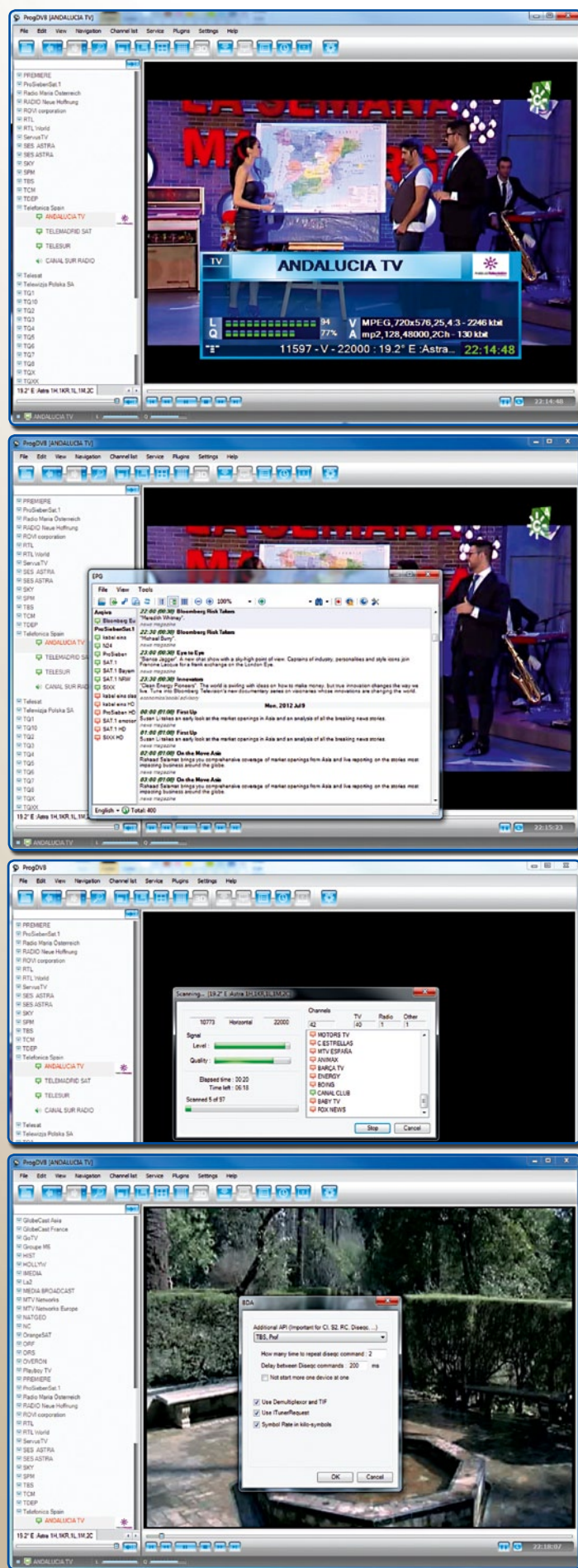
DVB Dream is installed as a Demo version. Compared to the full version, quite a few functions are missing in the Demo version so we decided not to look at it any further.

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 out, 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

HORIZON

For a reliable solution!

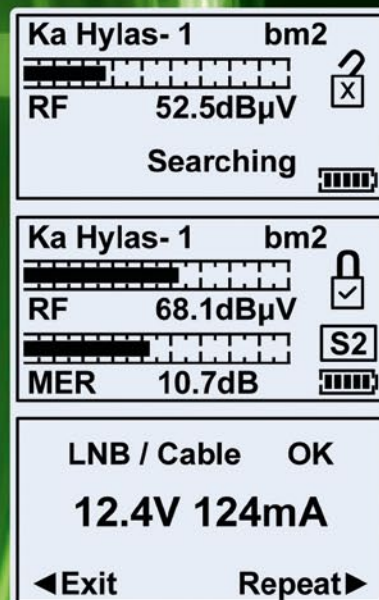
Winners of the Queen's award for international trade 2007, Horizon Global Electronics is a UK Company established in 2001 specialising in the design and manufacture of hand held test equipment for the digital satellite and TV sector. Our strength lies in being able to find innovative solutions to leading technology issues.

Introducing the new HD-S2A!



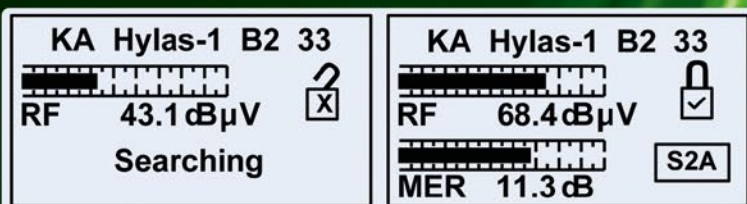
The HD-S2 satellite meter features all the functions you will need to perform DVB-S and DVB-S2 satellite installations.

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



The cost effective Nano S2A

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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.

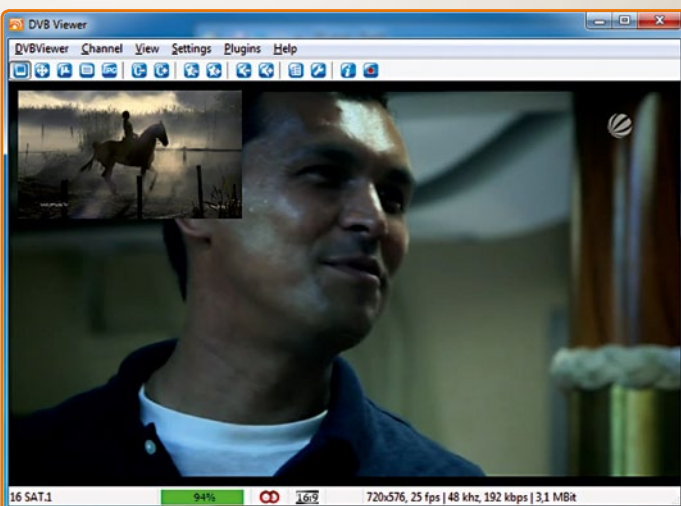
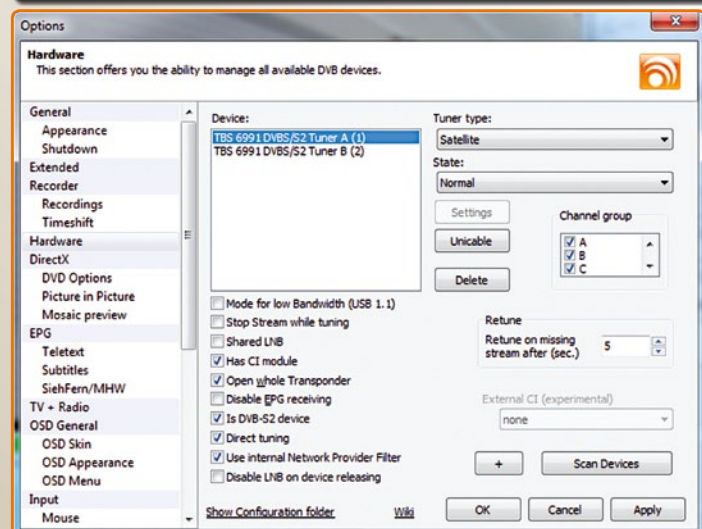
- **Interval:** Here in this group the user can enter in the start and end frequen-

cies 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 be 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 Blind-scan function can now be started. When the appropriate button is pushed, Crazy-

The TBS 6991 with DVB Viewer





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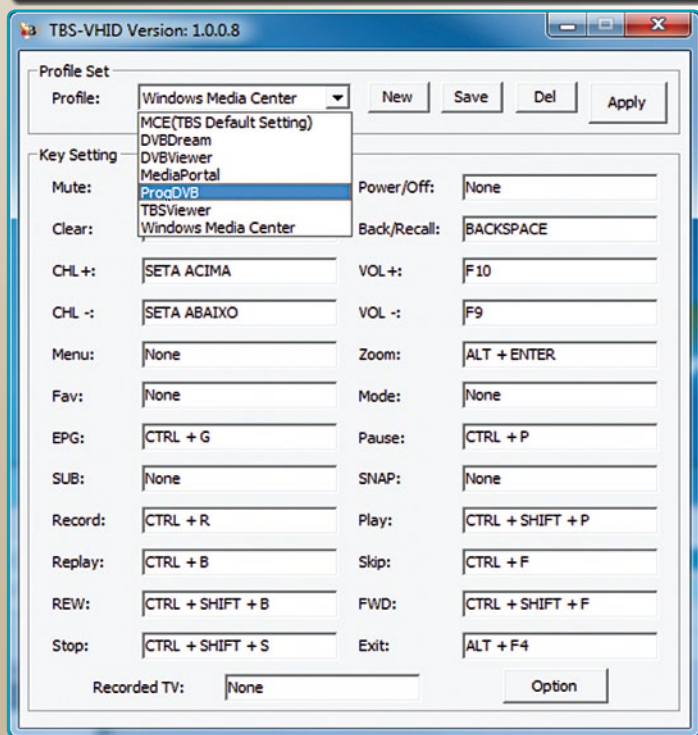
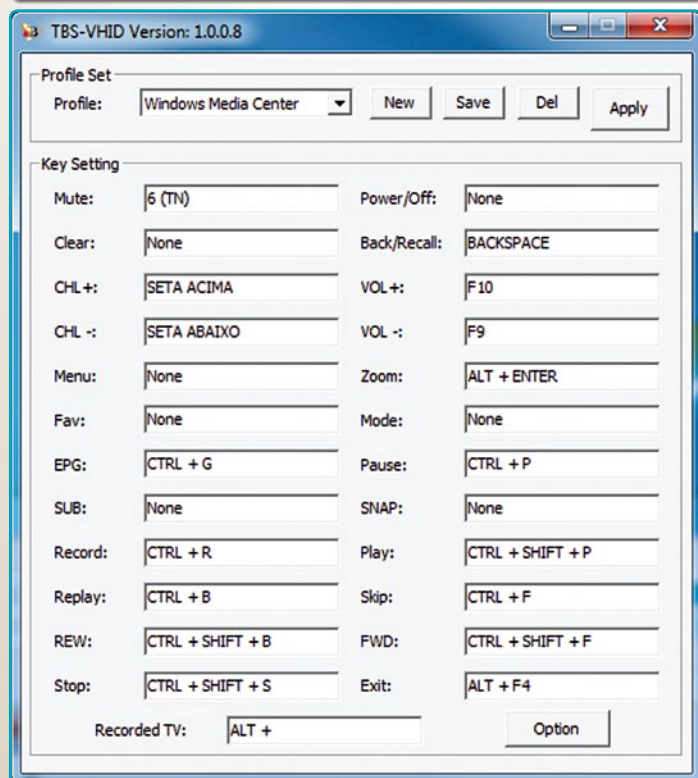
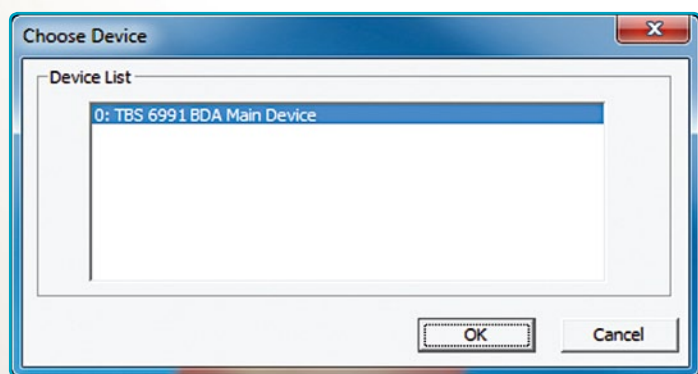
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The TBS with TBSVHID



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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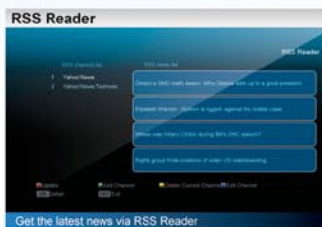


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MULTIMEDIA
PLAYBACK**

AVI

MKV

MPG

MP3

MP4

TS

audio and video codecs are subjects to availability**



2
years
warranty



Size DOES Matter!



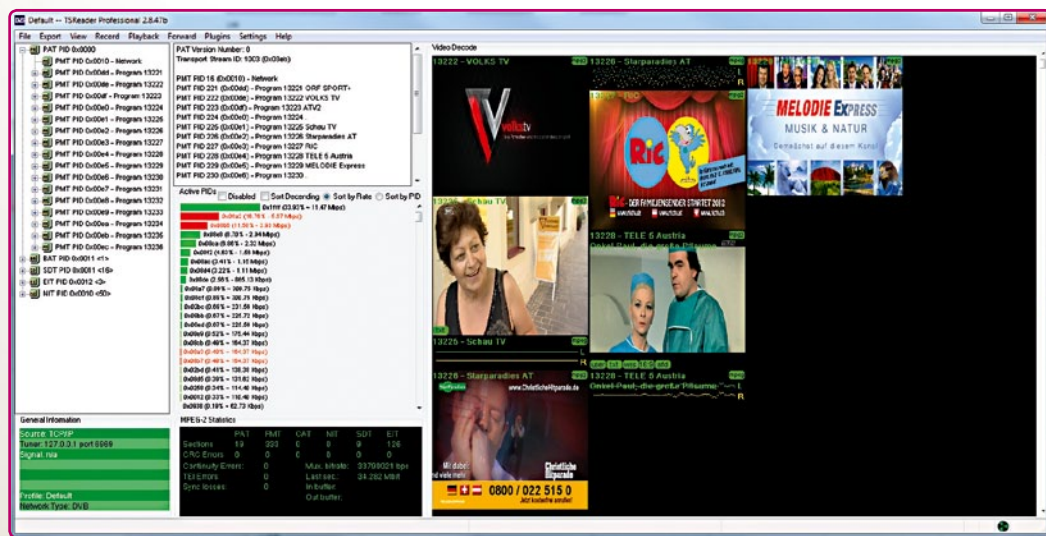
DC 12V

Full HD
1080

S2
SATELLITE

Ethernet or WiFi connection required *

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

**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**



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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.

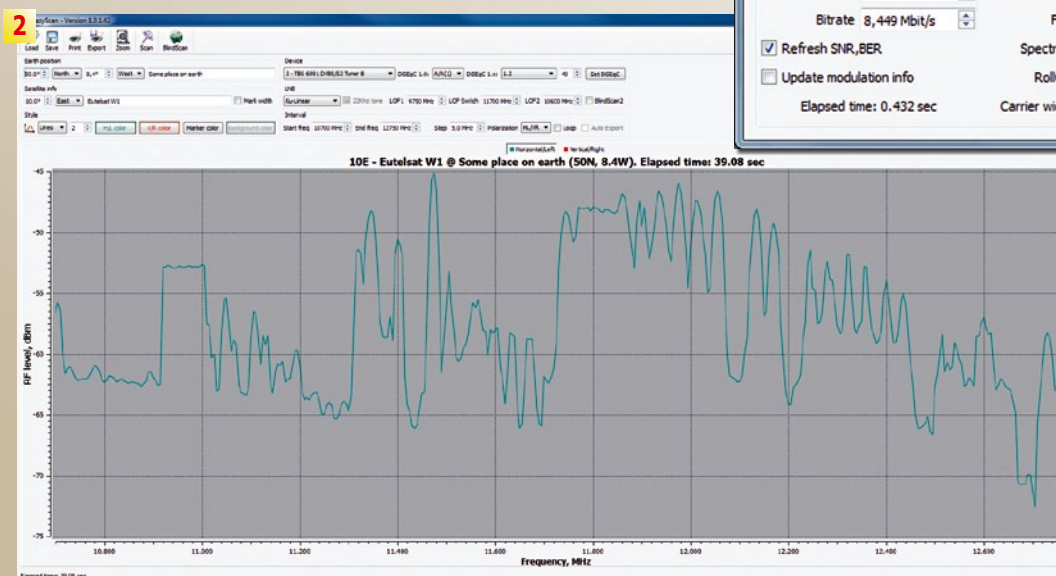
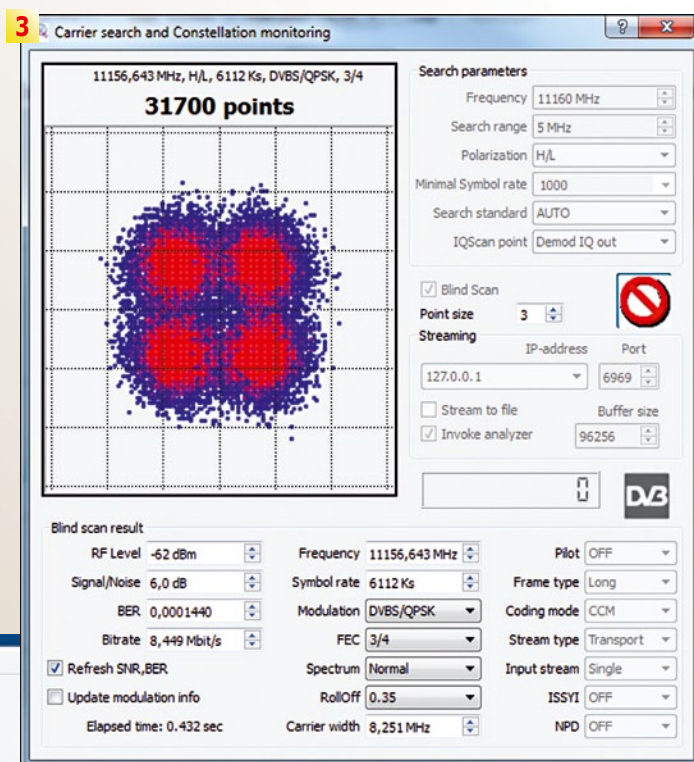
We start CrazyScan and enter in the data from Eutelsat 10.0E in the "Satellite Info" field. Only then will the documentation of our results

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 nor-

mally 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.

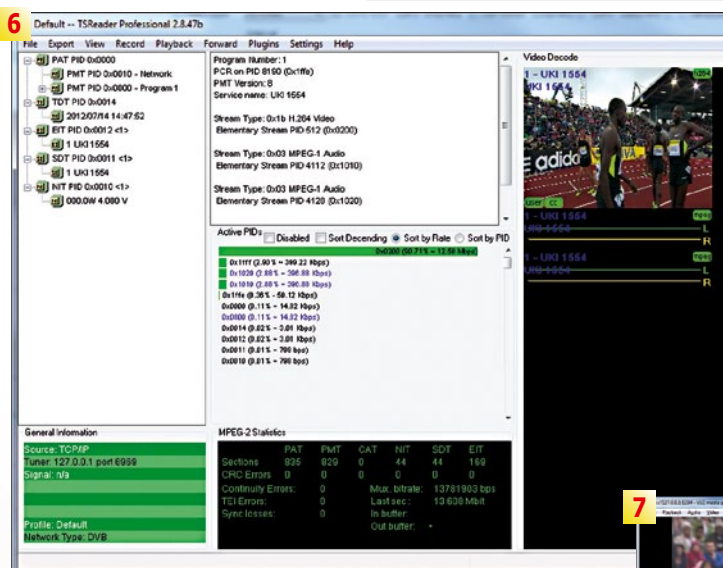
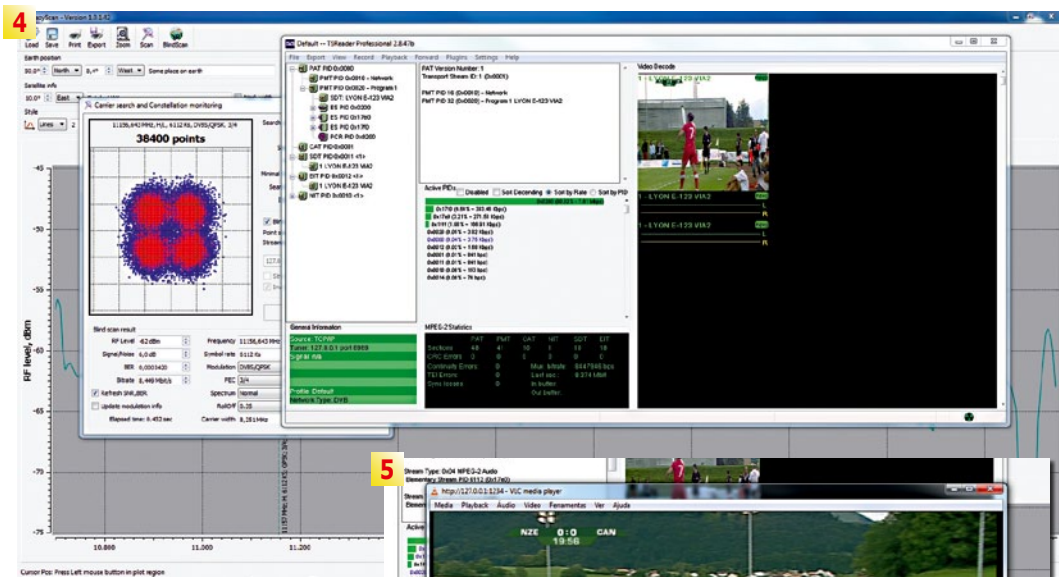
And look at that: TSReader has identified an audio/video stream and instantly shows a preview image. Double-clicking the preview image routes the channel to VLC (Video LAN Client) where it is then displayed: live soccer without any editing.

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 1920x1080 pixels.

Welcome to the world of the feedhunter!



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

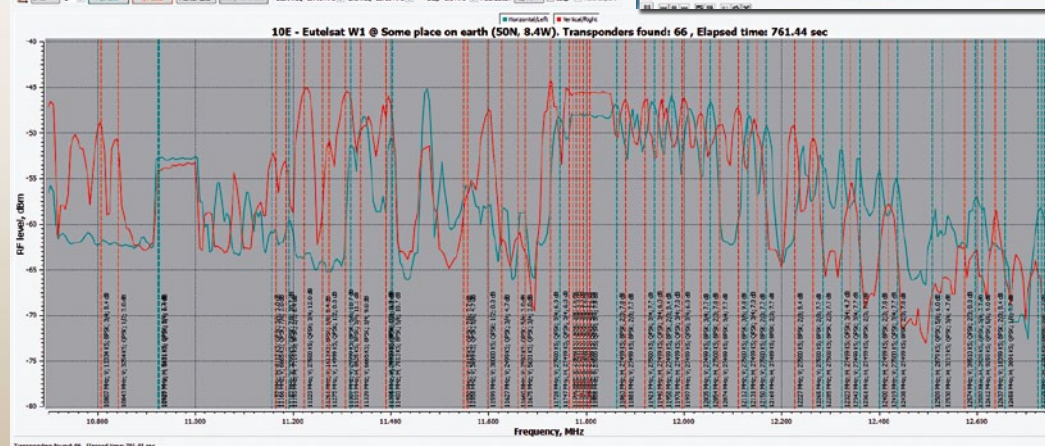
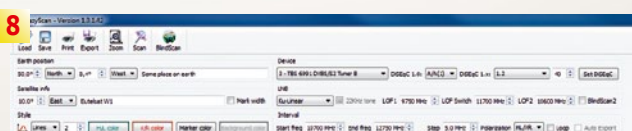
4. TSReader shows the content of the Transport Stream (TS) and even shows a preview-picture of the video PID's.

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 for the 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 of the 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.

Optical Splitters of Global Invacom





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- *gives even better terrestrial signal levels than by using standard equipment*
- *proves that a optical system is nearly noiseless*
- *splitting optic signal into 50+ outlets without noticeable loss*

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



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

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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 satel-

lite 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?

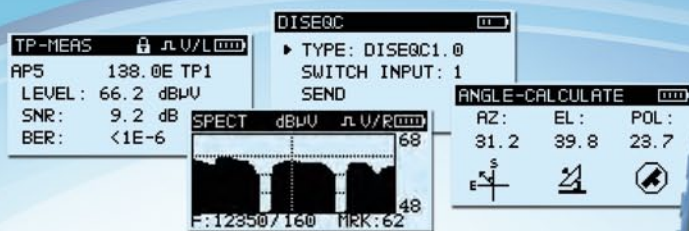
We had the opportunity to find an answer to this question. We got two models of multi-output optical splitters made by GlobalInvacom: GISplit16pro and GISplit32pro. As you can easily deduce, these are 16-way and

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



S30✓

Satellite Meter

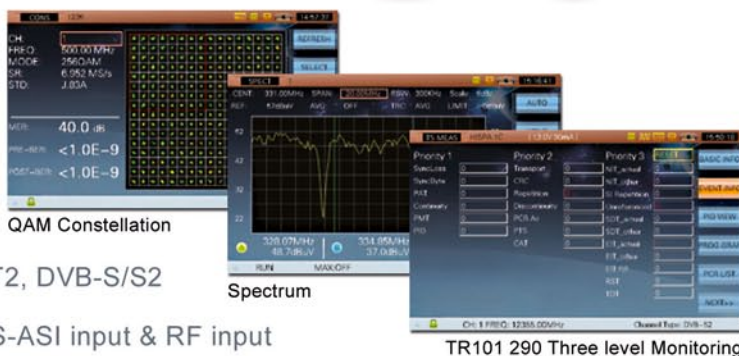
- Supports DVB-S/S2
- C, Ku, Ka or L band
- MER and BER
- Spectrum function
- Supports DiSeQC 1.0/1.1
- Signal level and quality display together
- 128x64 matrix LCD with back-lighted
- Large lithium battery capacity, over 4 hours working time
- Software upgrade and parameter set via USB interface



S7000✓

TV Analyzer

- 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
- W245xH194xL105, light weight
- Working time >5 hours (battery)

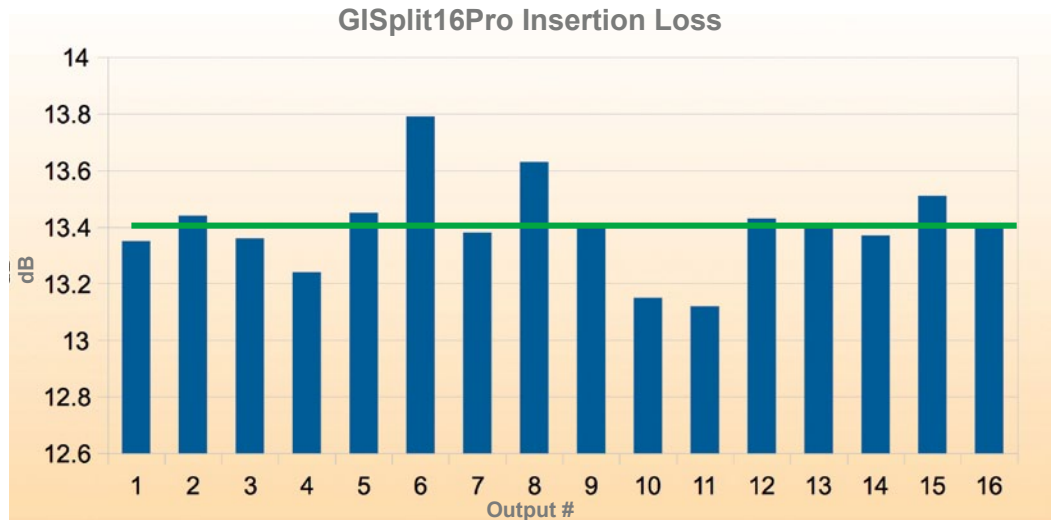


outputs each carrying 6.25% of the input light. That's because $100\% / 16 = 6.25\%$. Should we convert it to decibels, it would be -12 dB. Of course, real performance must be somewhat worse due to unavoidable coupling losses. And indeed, GlobalInvacom specify their GISplit-16pro as having a typical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



■ Graph 1.

manufacturer.

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.

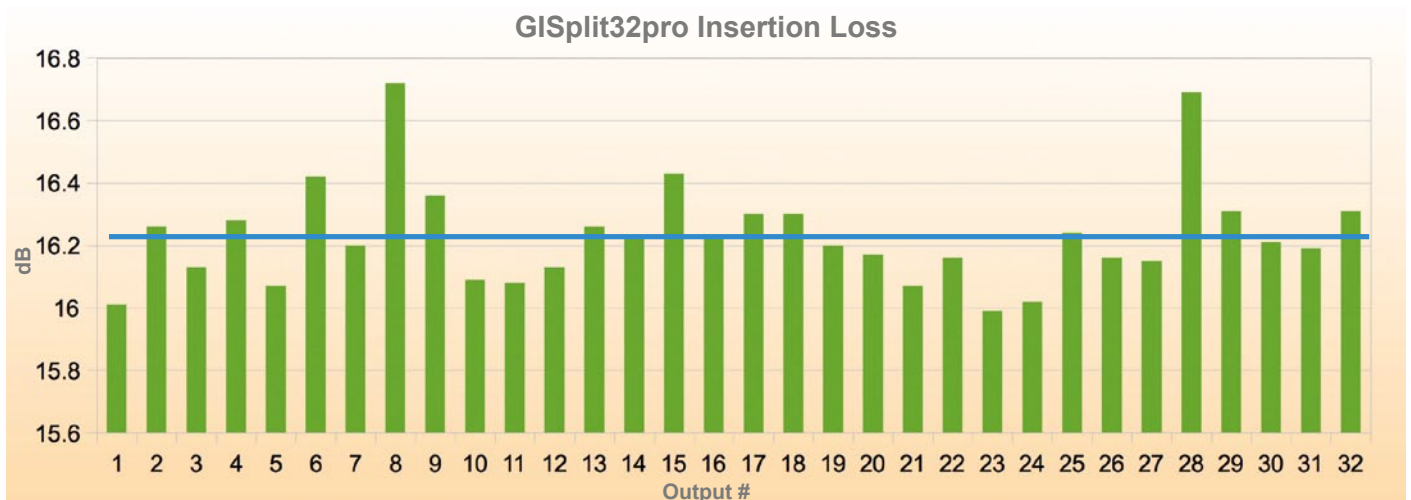
We used transponder 10720 V from HOTBIRD on 13° East as our test signal. Please note that we measured the RF signal directly at the LNB output without any RF splitters or multiswitches. Despite the fact that the optical signal was split to 16 or 32 outputs, the results were only slightly inferior to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

Panodic HDT-275C DVB-T2



PANODIC

Digital World, Simple Life

- ***perfect presentation of HDTV in DVB-T2***
- ***extremely fast channel switching***
- ***energy consumption in standby mode too low to measure***
- ***PVR function can be controlled via EPG***
- ***pay TV reception thanks to 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 and 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

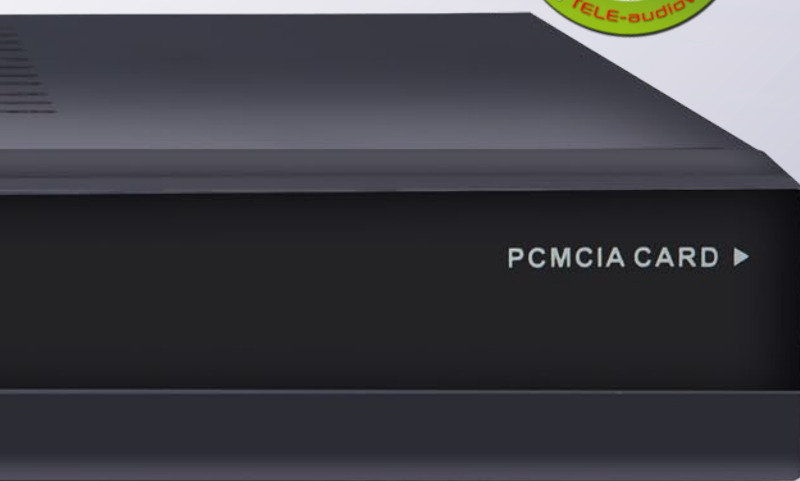
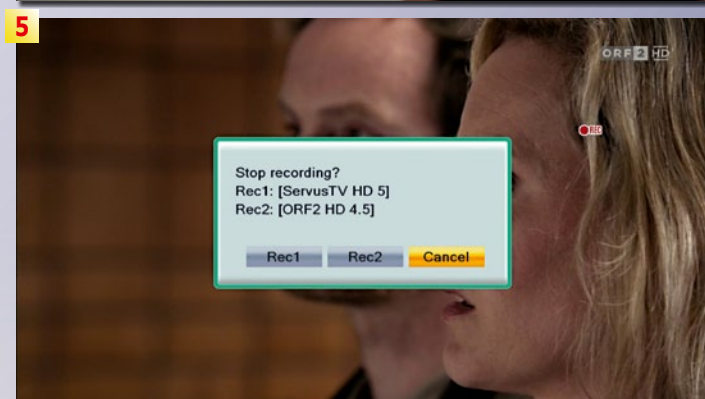
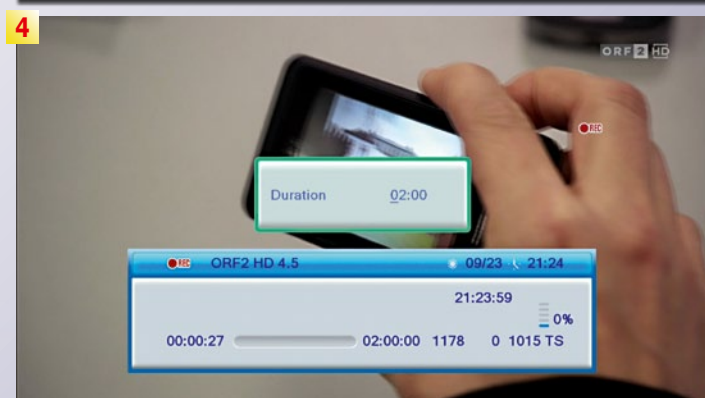
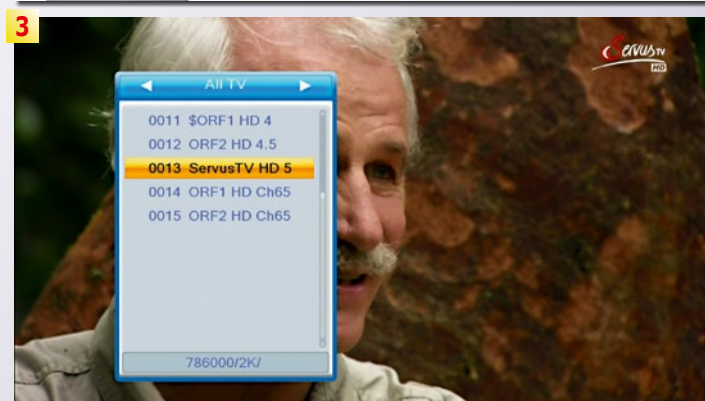
1. Installation wizard of the HDT-275C

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



6



7



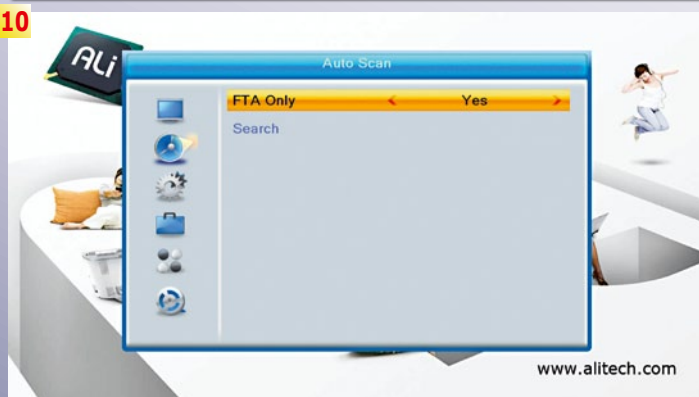
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9



10



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 ap-

pears 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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S035W-3



S060L-2



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S045W-1



S060W-1



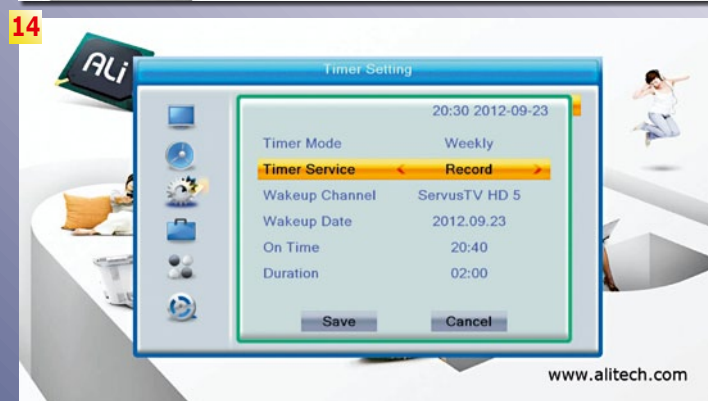
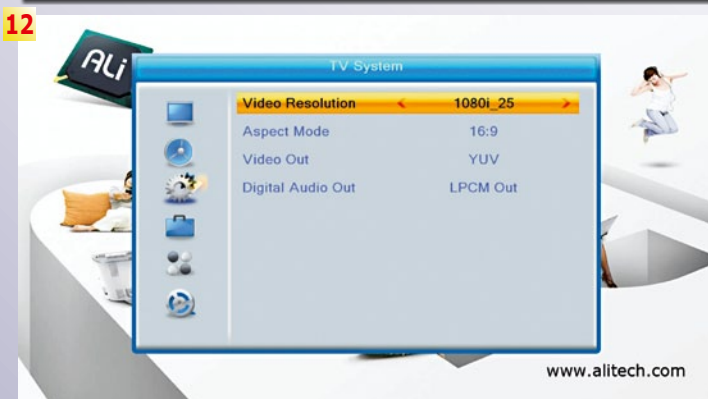
Accessories

Excellent products of C band
antennas at 1.4m, 1.45m, 1.5m, 1.8m,
offset satellite receiver antennas of band KU
at 0.45m, 0.6m 0.75m 0.9m,1.2m.

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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 sub-menus 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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16



21



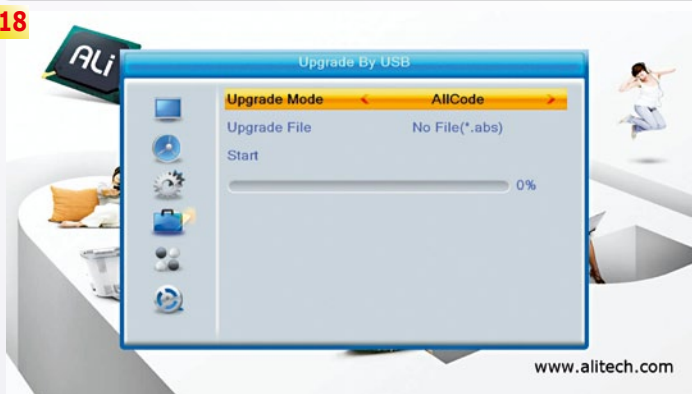
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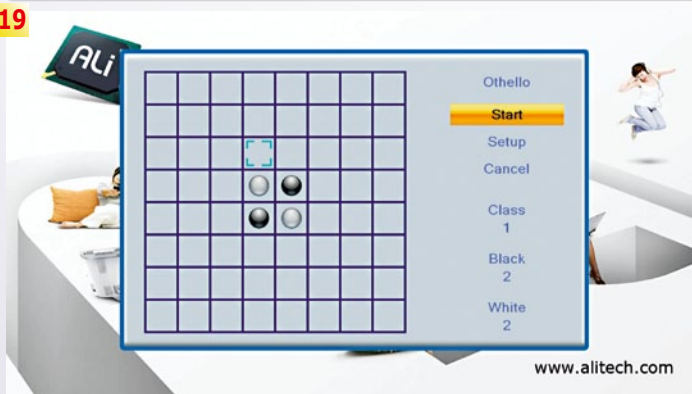
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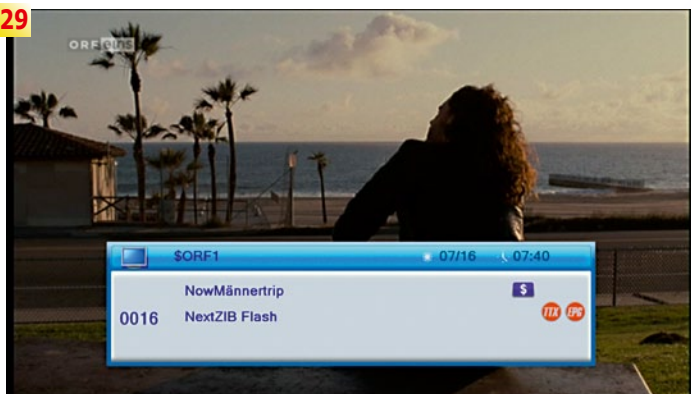
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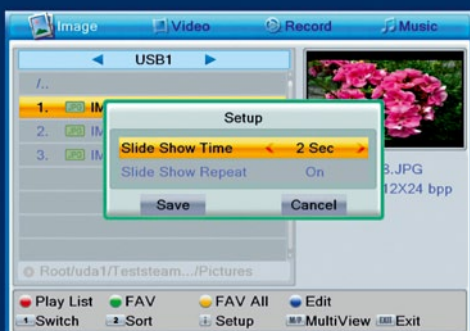
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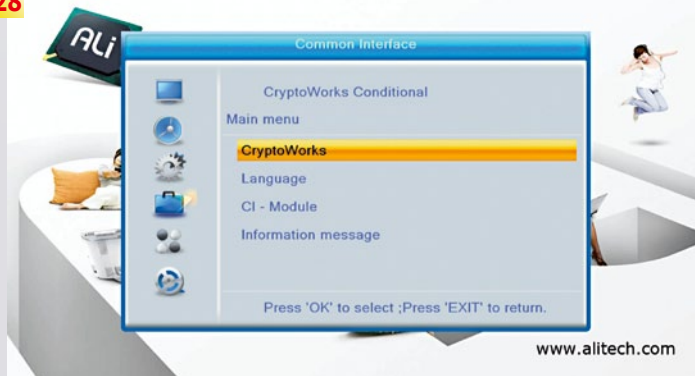
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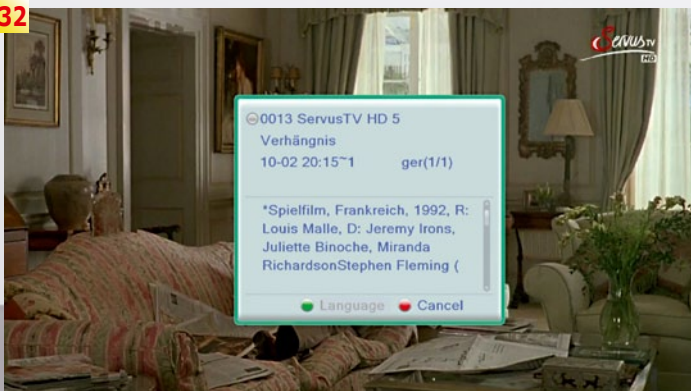
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32



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'

- 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

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.

Expert Opinion

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.



Thomas Haring
TELE-audiovision
Test Center
Austria

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.



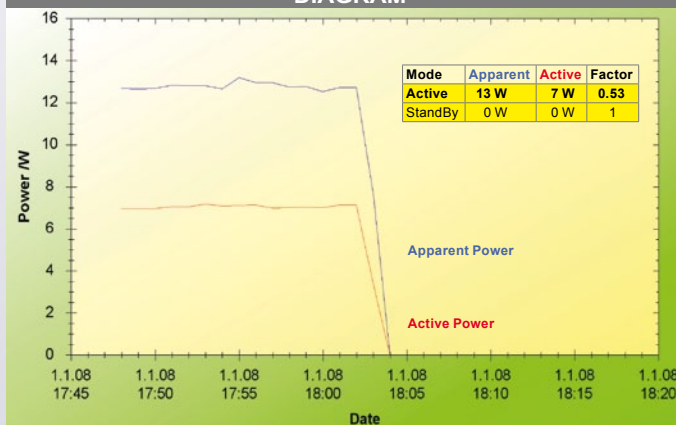
TECHNICAL

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
Supported languages/regions	English, French, German, Spanish, Italian, Greek, Portuguese, Russian, Polish, Croatian, Slovenian, Czech, Hungarian, Danish, Rumanian
Dimensions	27 x 16.5 x 4 cm
Weight	0,76 kg

ENERGY

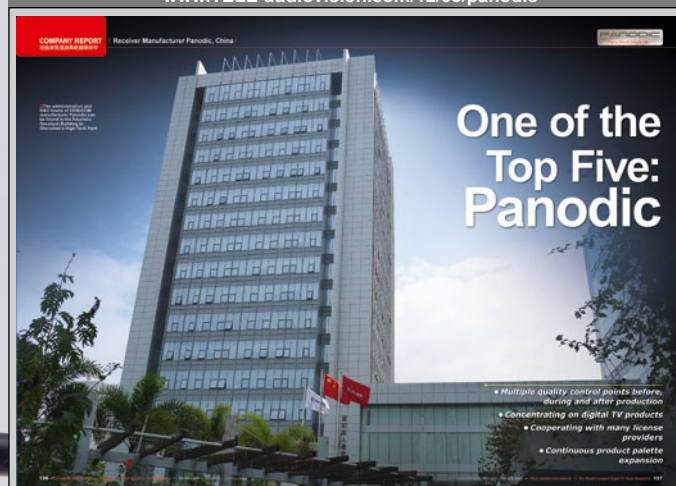
DIAGRAM



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

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■ KCC110AF Channel Converter Processor and KLA110AF Launch Amplifier Power Supply

Antiference by Kingray

-
- *receives only the desired channels and filters out any interferences*
 - *ideally suited to be save against LTE signals*
 - *can be controlled remotedly via Internet*
 - *capable of adjacent channels*
 - *its quality is so good you could use it as a source for a transmitter*

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.



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Professional handling
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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.

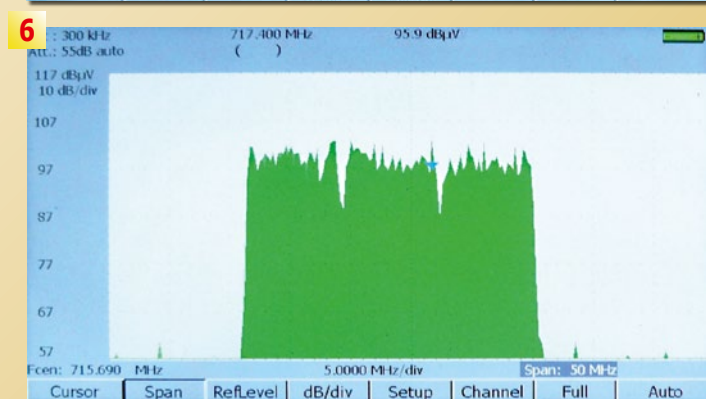
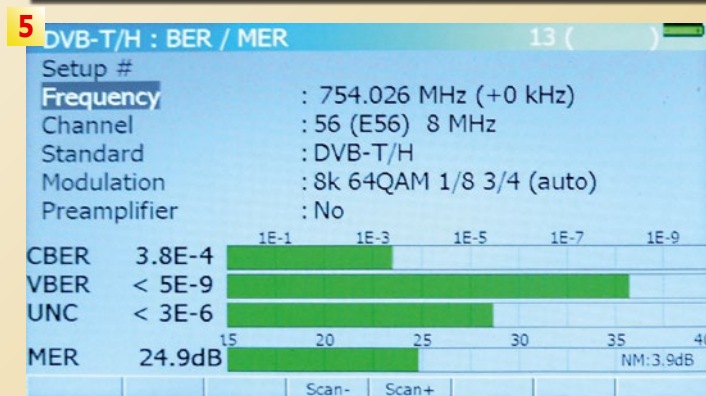
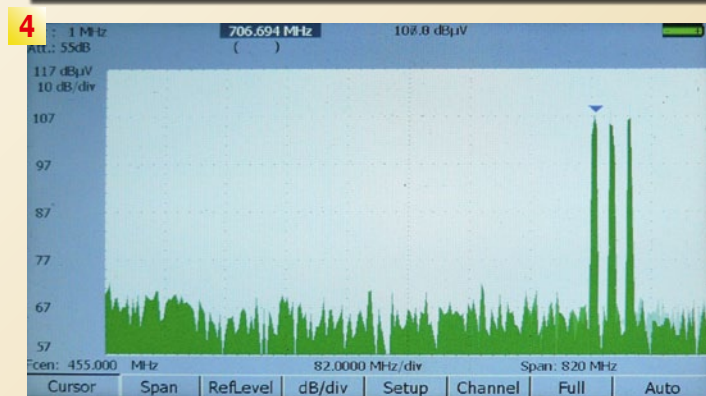
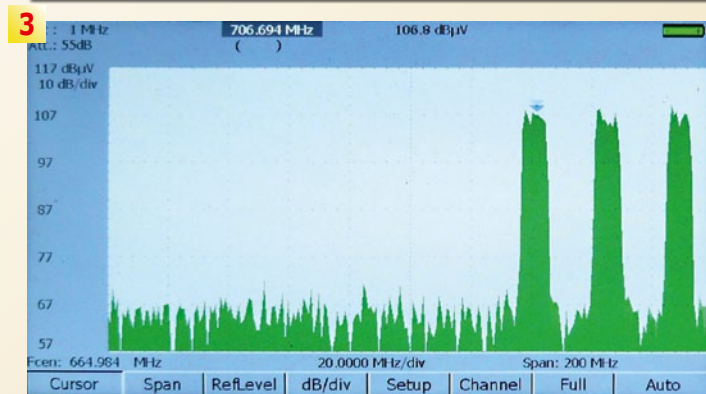
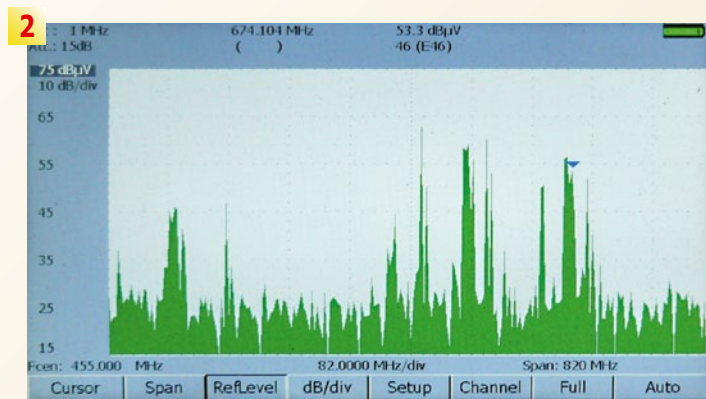
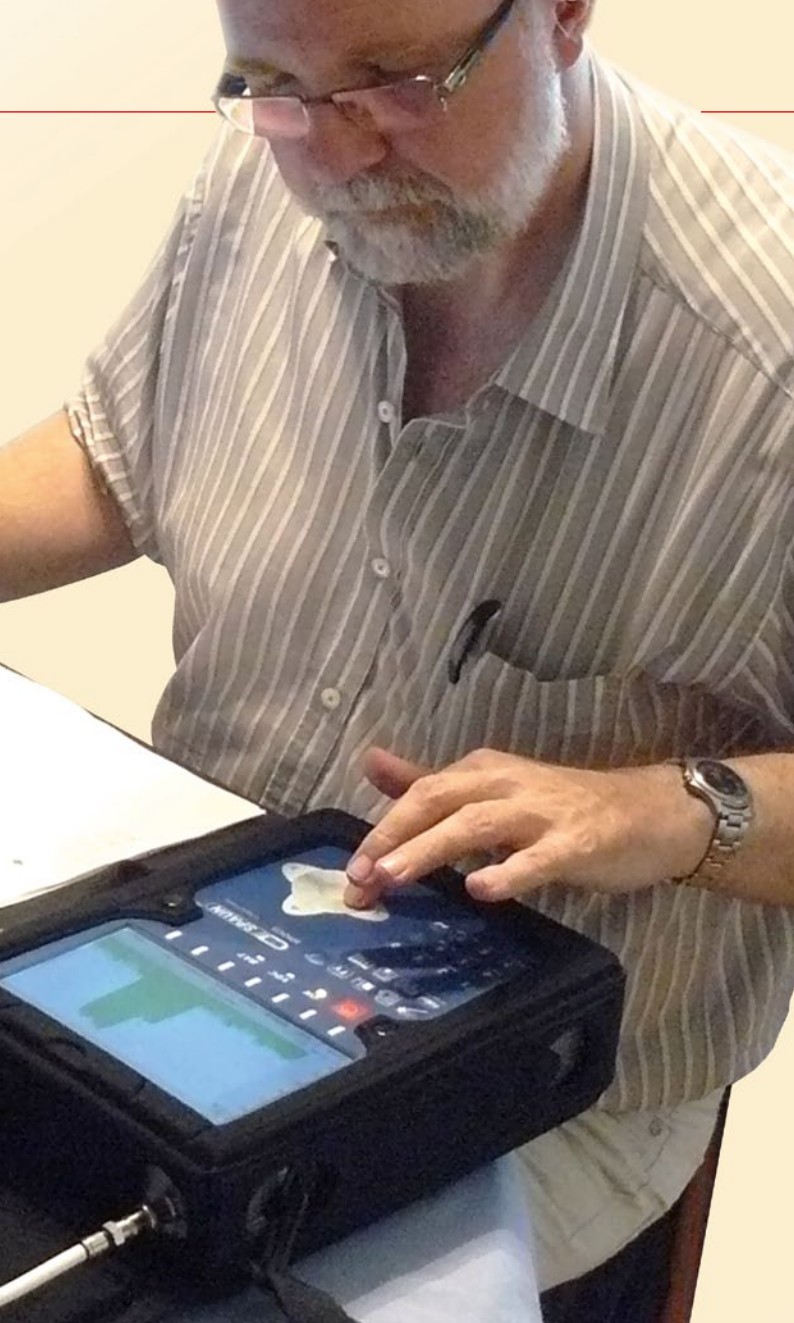
No matter if this is the old analog technology or the modern contemporary digital communication, the solution is always the same: block unwanted interference signals and only then process what is left – your desired signal. And such anti-interference function is the main feature of the new headend offered 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 Converter/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.

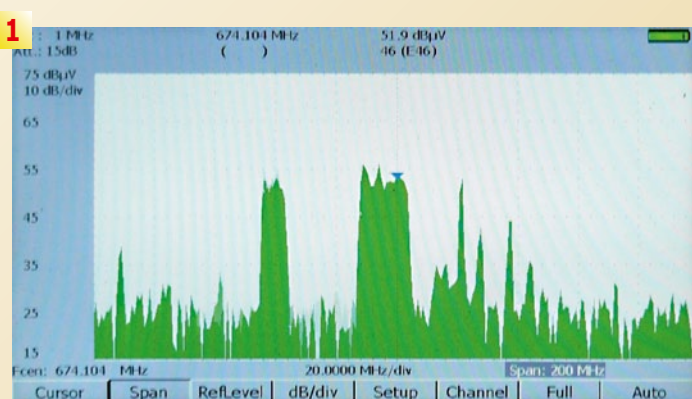
2. Full spectrum of the input signal. Except for the three channels of interest, many other analog and digital channels are present.

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 frequencies 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.

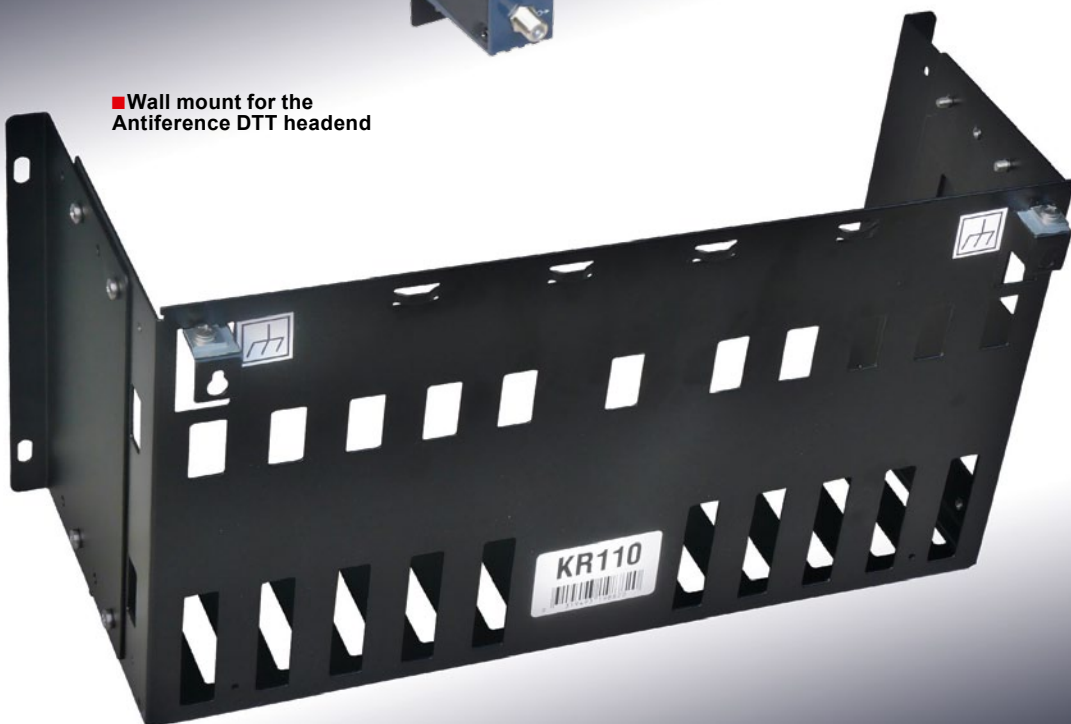
5. This show the very good signal quality of channel 56 at the output.

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.





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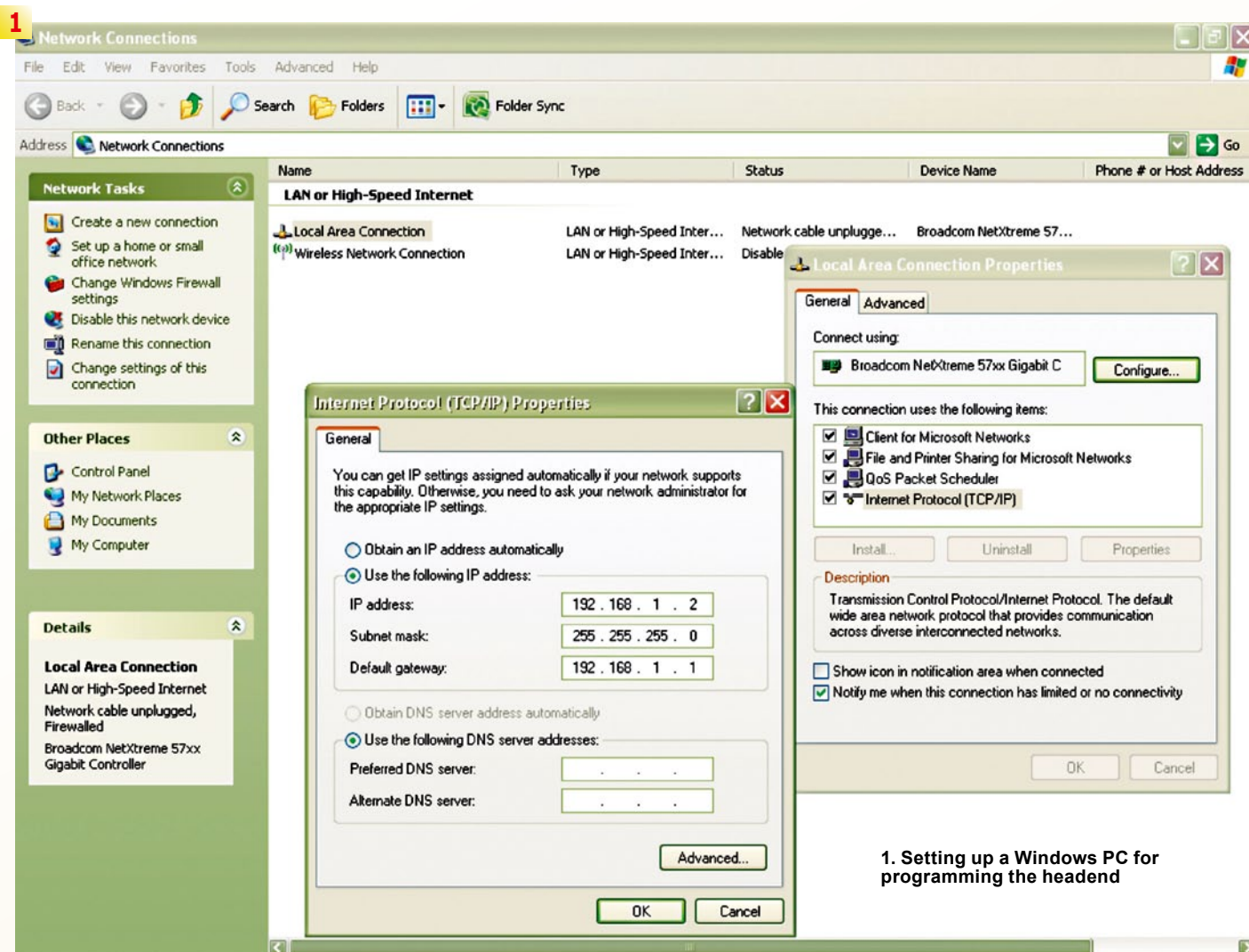
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1. Setting up a Windows PC for programming the headend

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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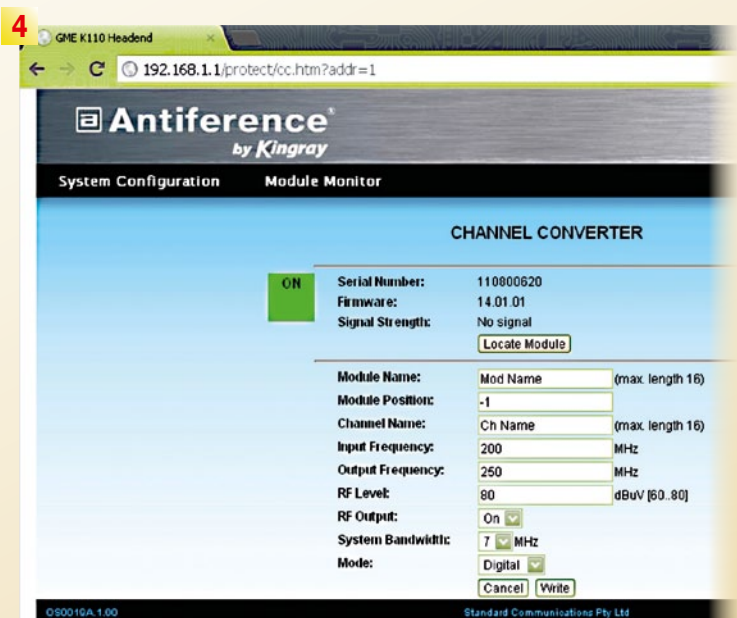
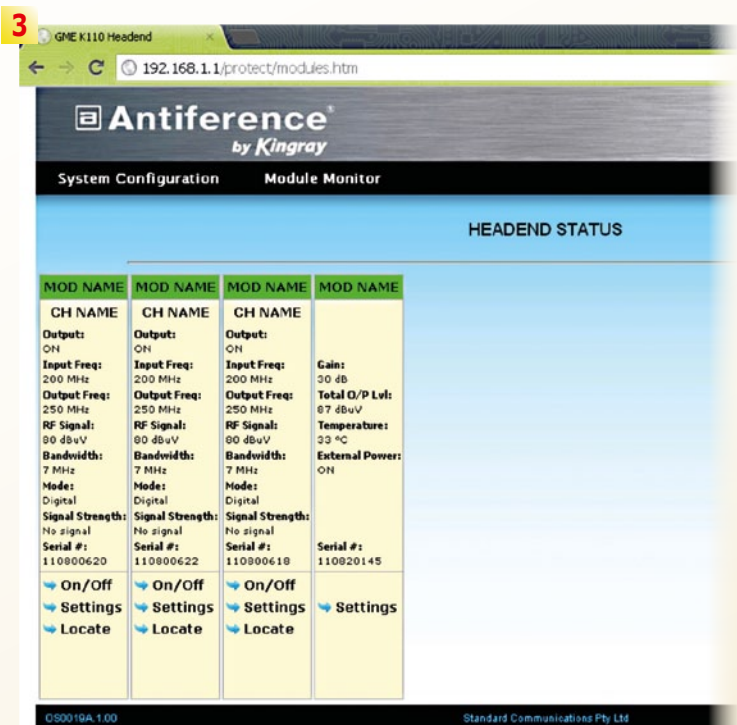
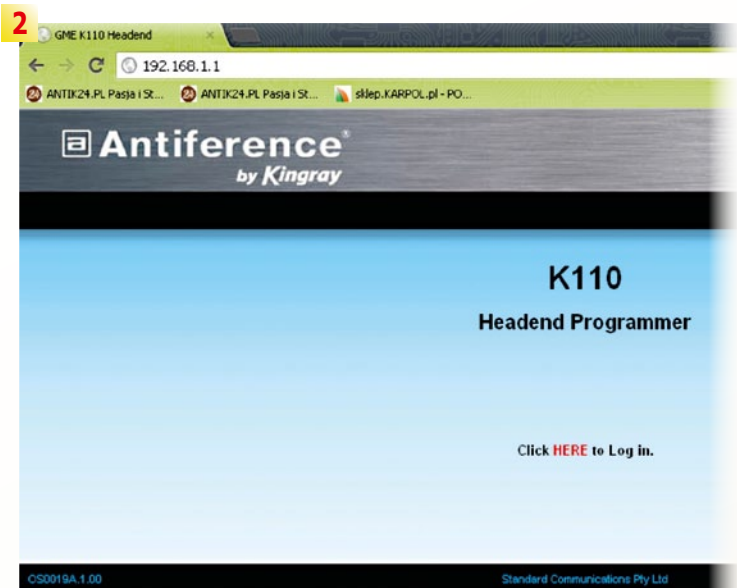
DVB - S TEST
DVB -- S 2 TEST
WATCH HD TV
LBER TEST
UNICABLE
CAMERA TEST
22KHZ TEST
VOLTAGE TEST
NIT ID FUNCTION
USALS
ASD

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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 maintenance 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

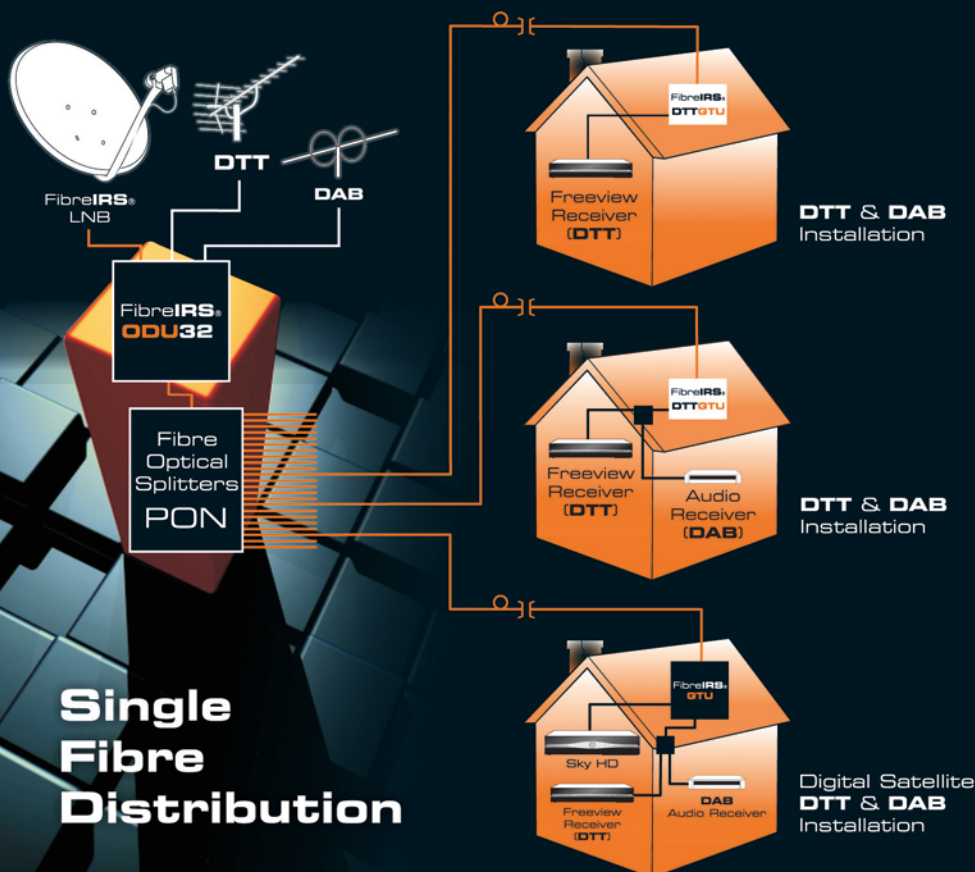
3. After logging in, the headend has the default factory settings. By pressing "Settings", you enter a page in which you can configure either the KLA-110 Launch Amplifier or one of the KCC-110 Channel Converter

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



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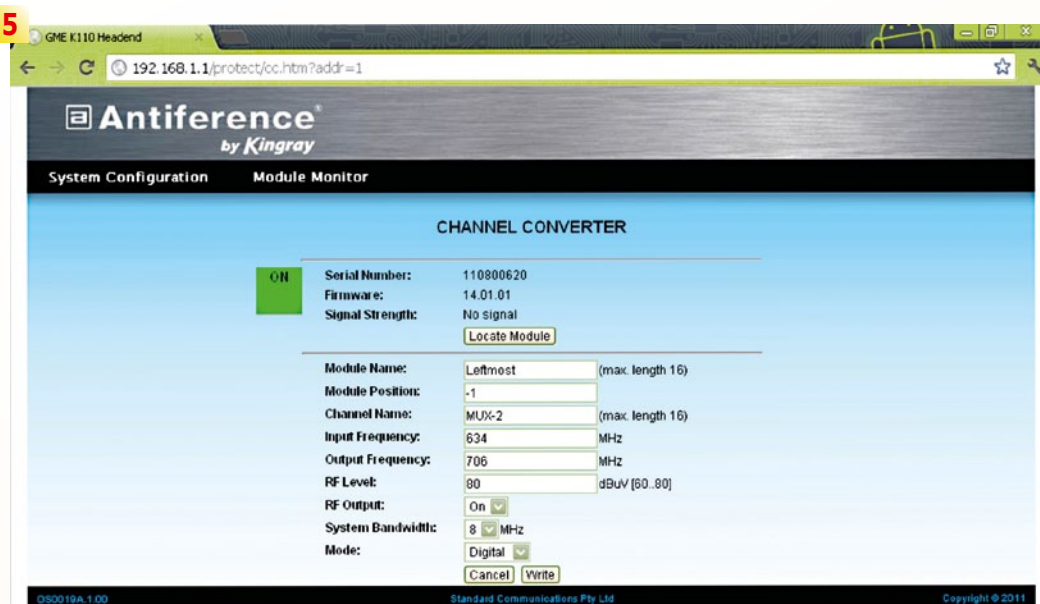
*Compared with existing Fibre Systems

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.

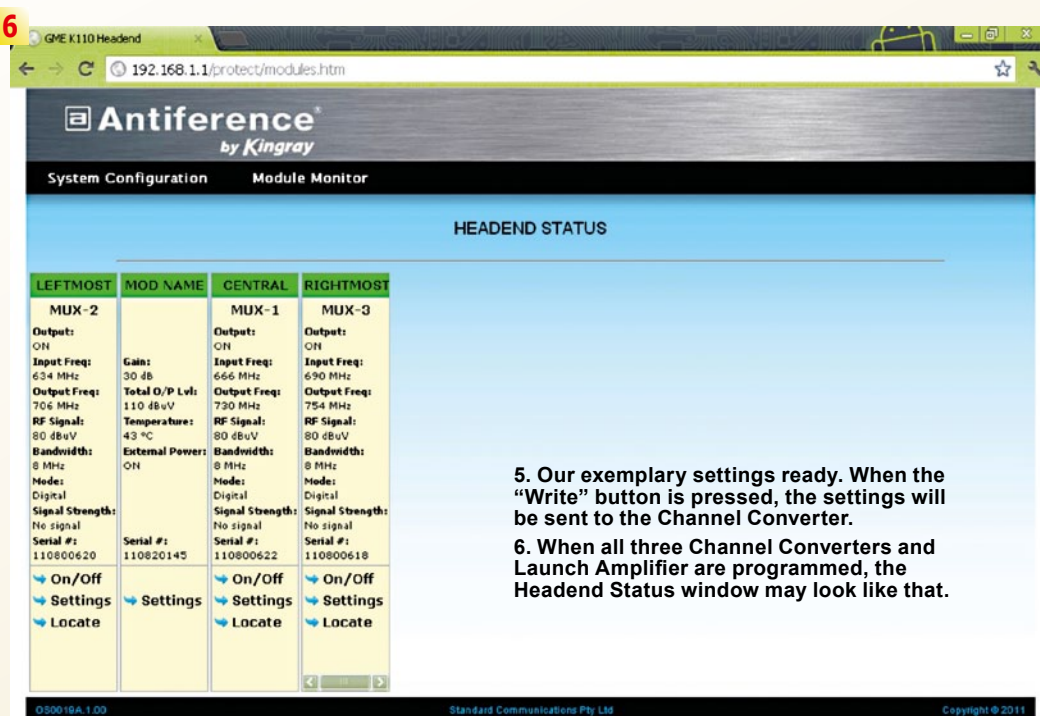
Then we experimented with the signal gain settings to see if it had any impact on signal quality. No matter if the output signal was high or low, signal quality remained practically the same. During these tests we also confirmed that the headend gain settings were very well calibrated. For example, when 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 Converter 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

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.

choose, you will exactly get these at the output. The Kingray KLA-110 by Antiference blocks all unwanted signals and provides your cable system with a very clean signal for each chan-

Expert Opinion

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 Converter/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

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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.

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

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	-	-	-

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.

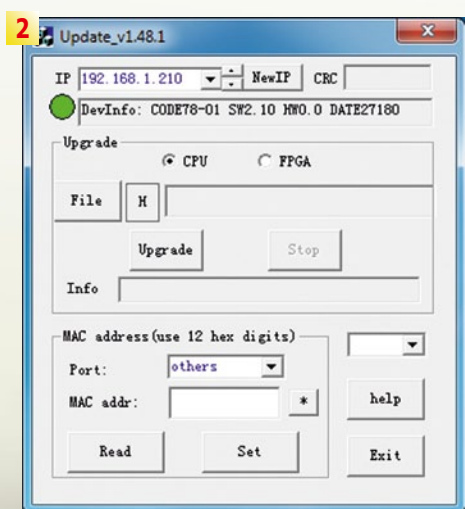
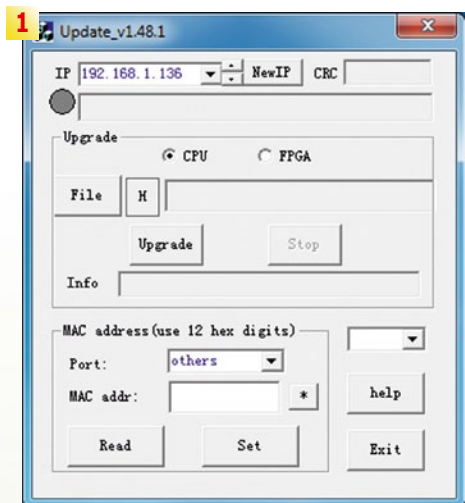
Still, we got curious about the JTAG HW-upgrade option and opened the

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 up-



date 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.



TEST REPORT Professional Integrated Receiver and Decoder
DESING

Desing NDS3975

- LCD video monitor on front panel
- tuners for DVB-S2, DVB-T, DVB-C and ISDB-T available
- integrated re-multiplexer
- simultaneous support of tuner, IP and ASI input on the incoming side, as well as IP and ASI on the outgoing side
- supports 2 x CAM

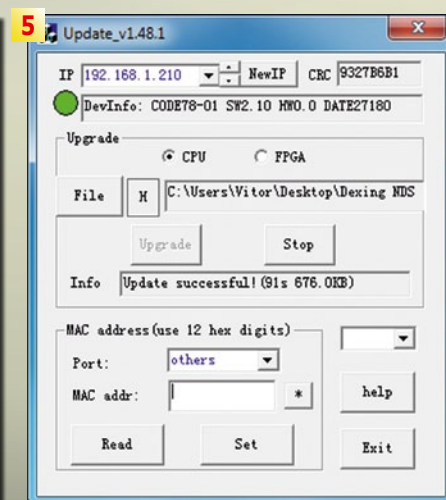
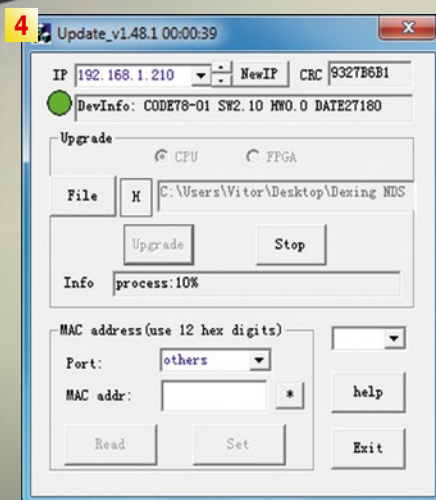
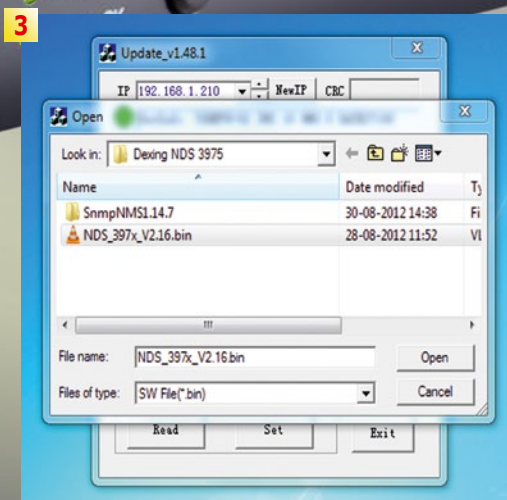
In TELE-audiovision 01-02/2013 we reported on the NDS3975, a professional IRD manufactured by DEXIN. In this report we describe how to upgrade its Firmware.
www.TELE-audiovision.com/13/01/desing

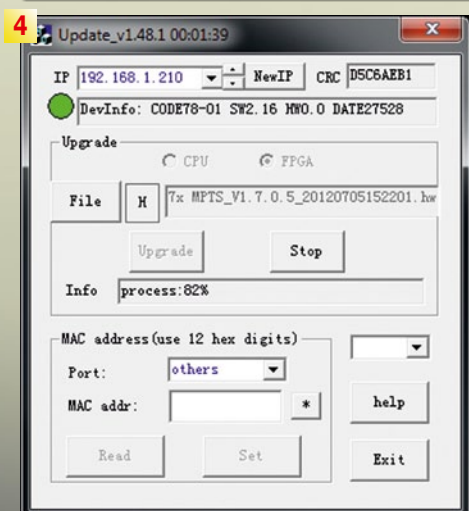
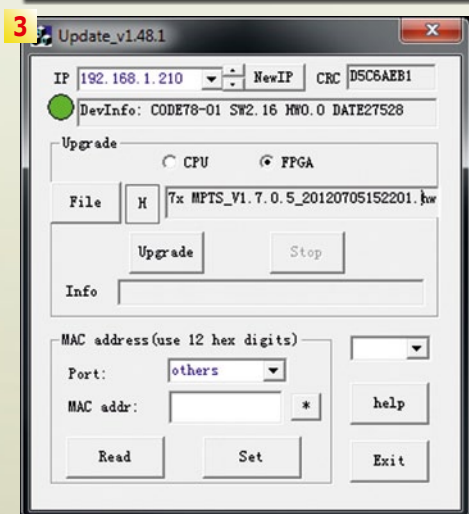
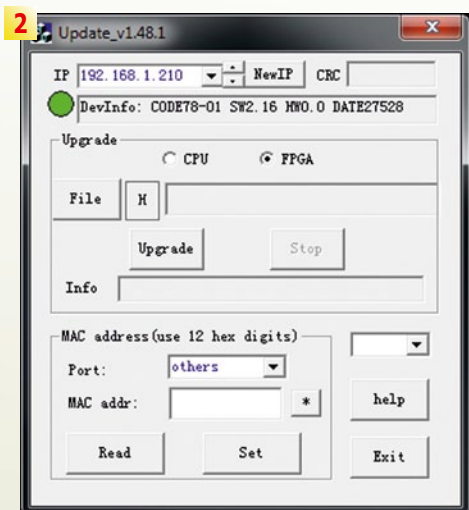
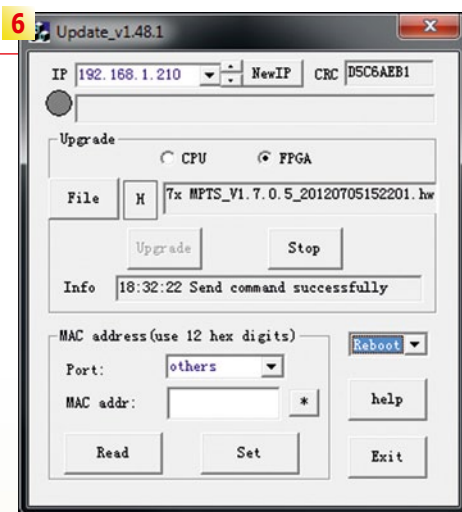
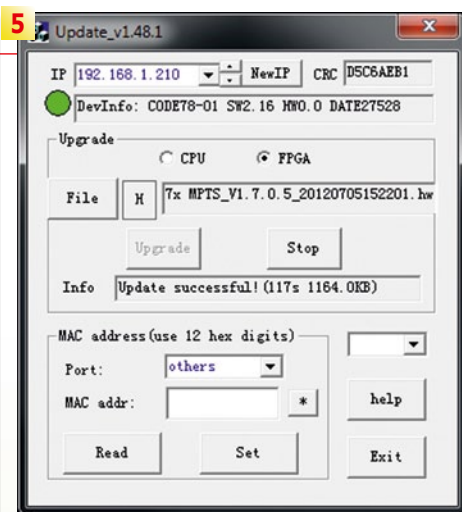
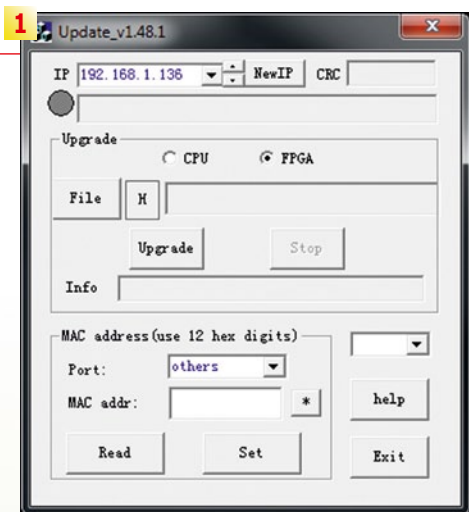
SW Update

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.

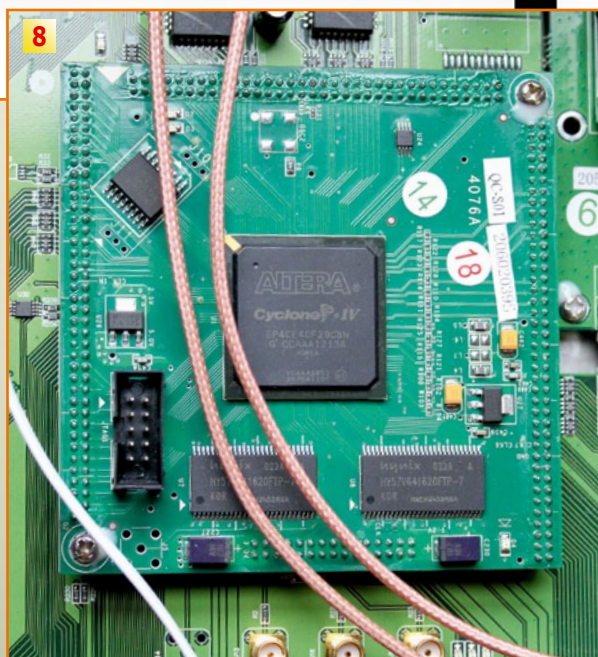
5. The message "Update successful!" means that the flashing has been completed and that the IRD can be rebooted to start the new firmware version.





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.

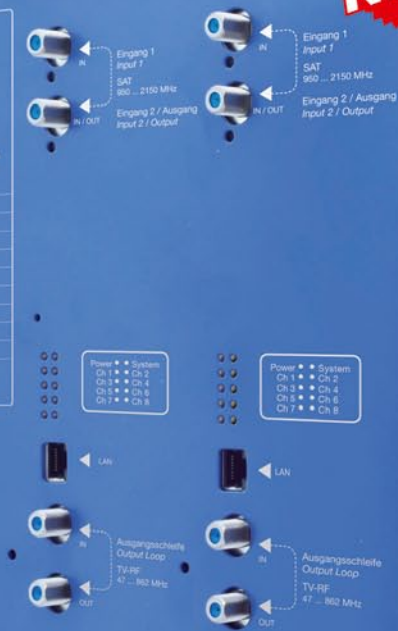


JTAG

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.

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

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SORx 1310607 NF and SORx 1310607/1 NF

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Revealing the Secrets of the AZBox ME Super Box



- 
- *firmware updates made easy*
 - *thanks to OpenPLI support developers all over the world work on different firmware versions*
 - *new kernel version opens up new possibilities*
 - *the recovery switch of the AZBox is your safety net: whenever something turns out wrong you can always fall back on the initial firmware*

Part 4:

Firmware

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

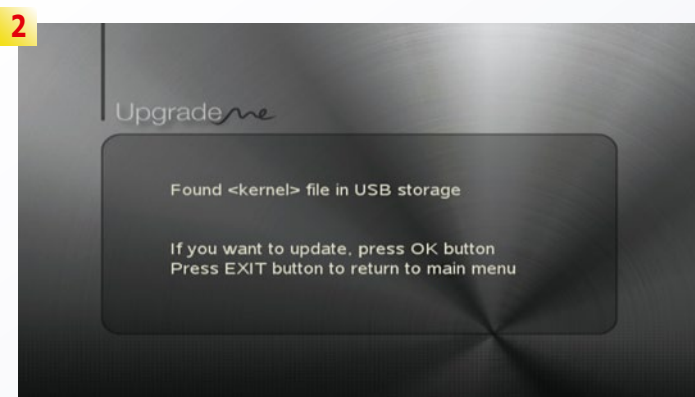
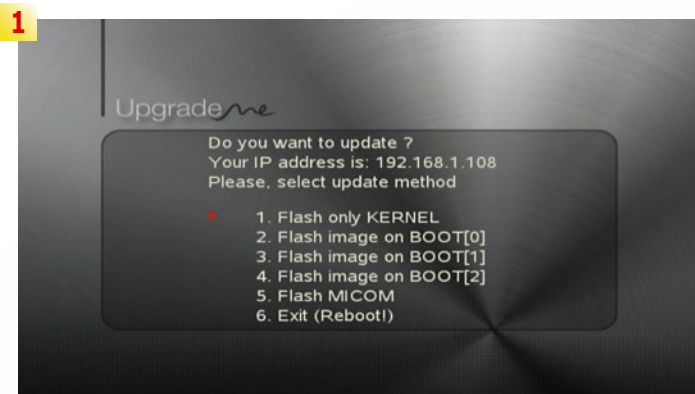
1. The boot loader menu for firmware updates starts automatically when the receiver is started with an inserted USB memory that contains a valid firmware update.

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.



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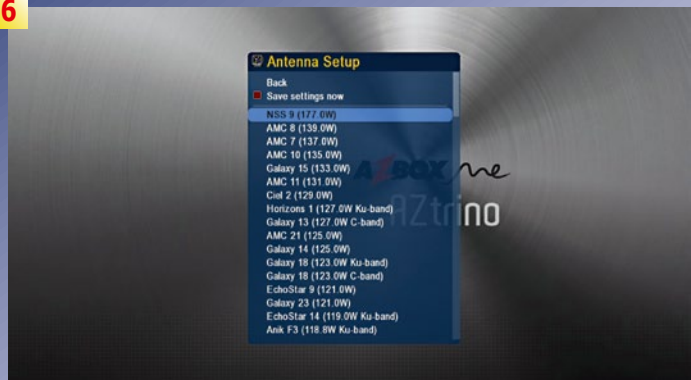
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6



7



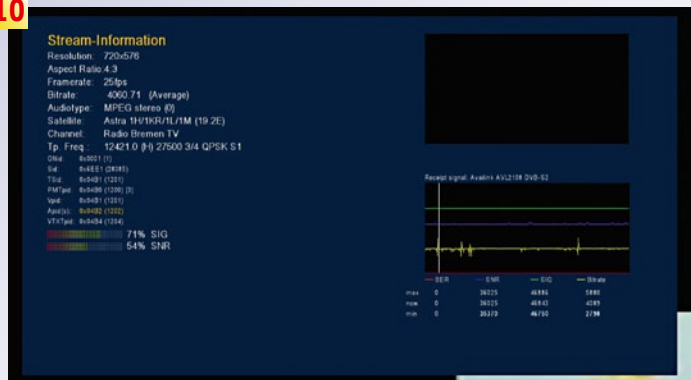
8



9



10



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.

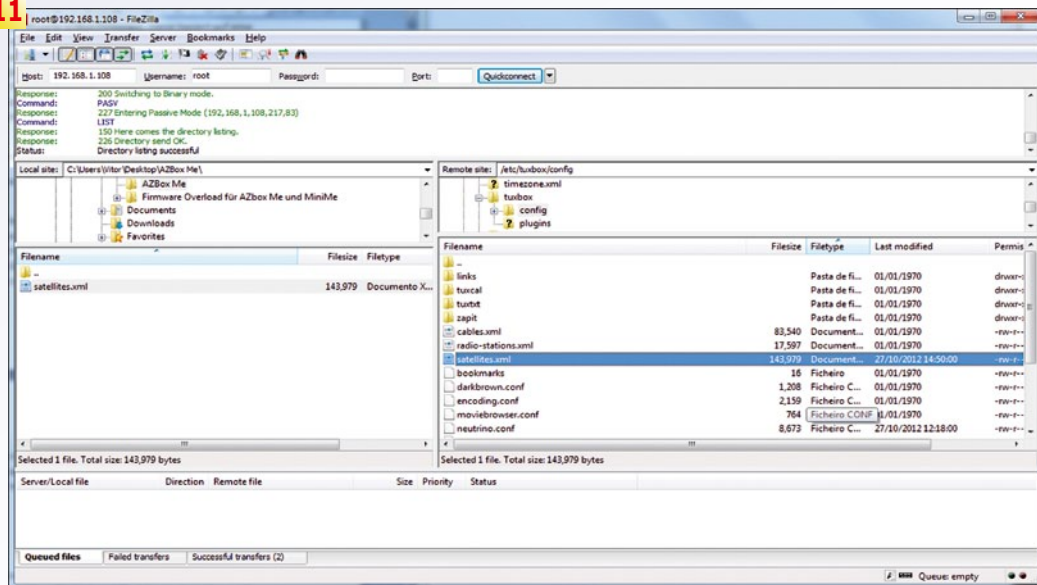
8. After exchanging the satellites.xml file with one for European markets, the search will include satellites of this region.

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.

11



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.

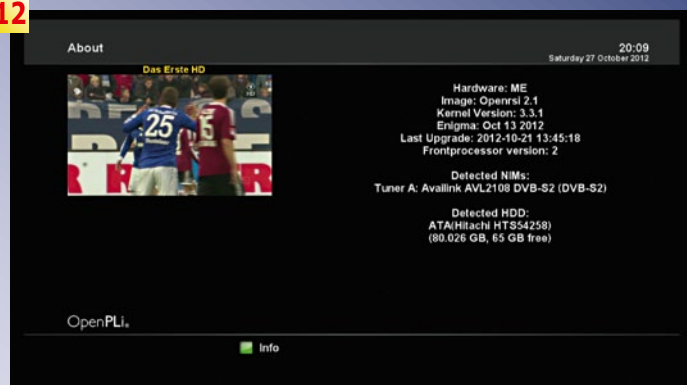
If your receiver has an older kernel version (below 3.3.1) installed, the flash menu will not pop up automatically. Instead, you have to observe the display on your receiver. Another point worth mentioning is that the file format of the firmware is different for USB updates than for browser updates. 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

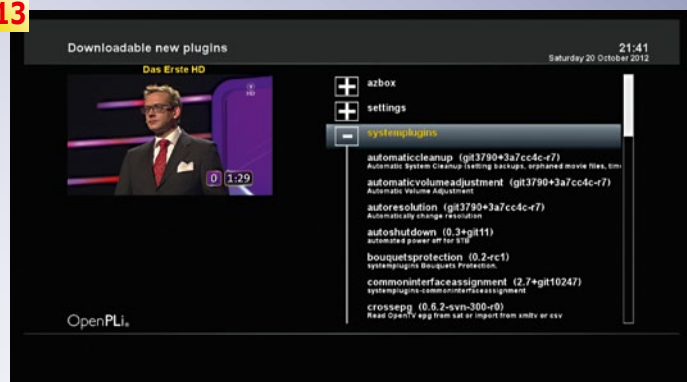
The files always have the same name, irrespective of the firmware version, but you have to be careful: The name of the first file (Image0.jffs2) must be adjusted to reflect the desired memory position. For example, if you want a specific firmware version to be saved at position 2, you have to change 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

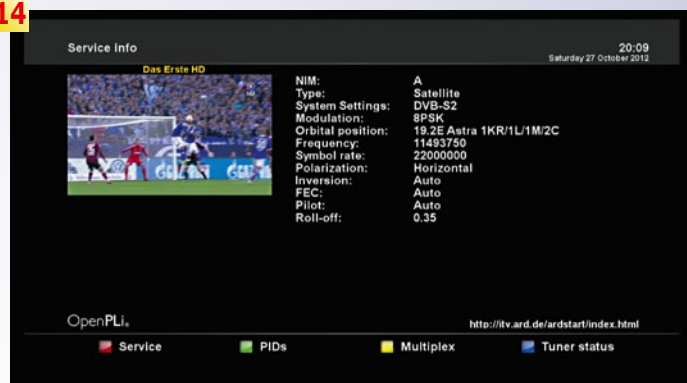
12



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14



15



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

OpenRSI

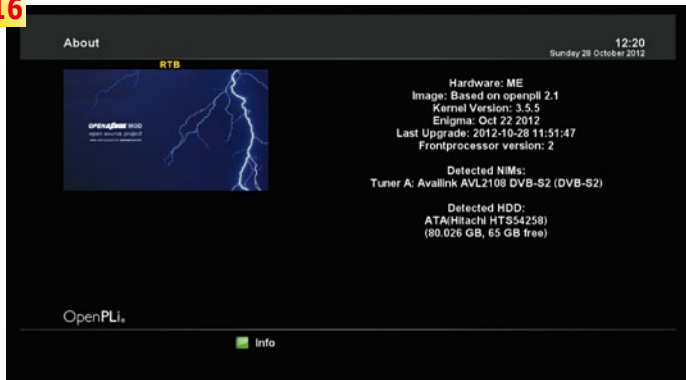
12. About screen of OpenRSI – notice the kernel version 3.3.1

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

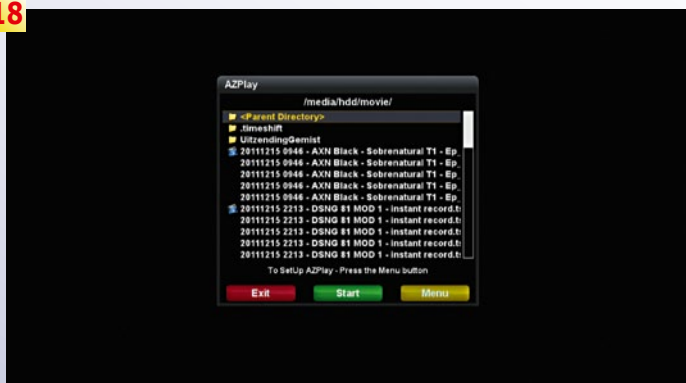
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19



20



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 say-

ing 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

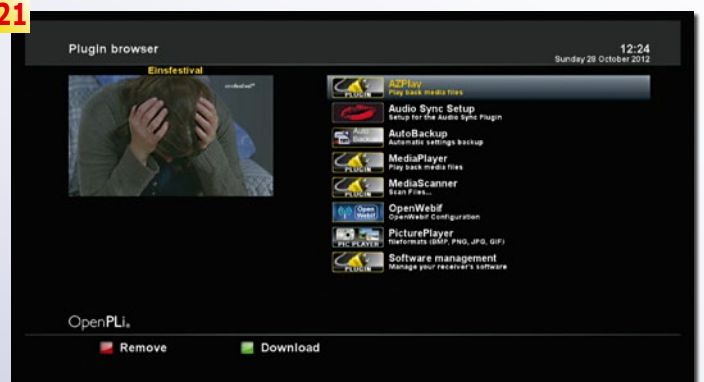
subtitles, which can be configured to suit the individual requirements.

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.

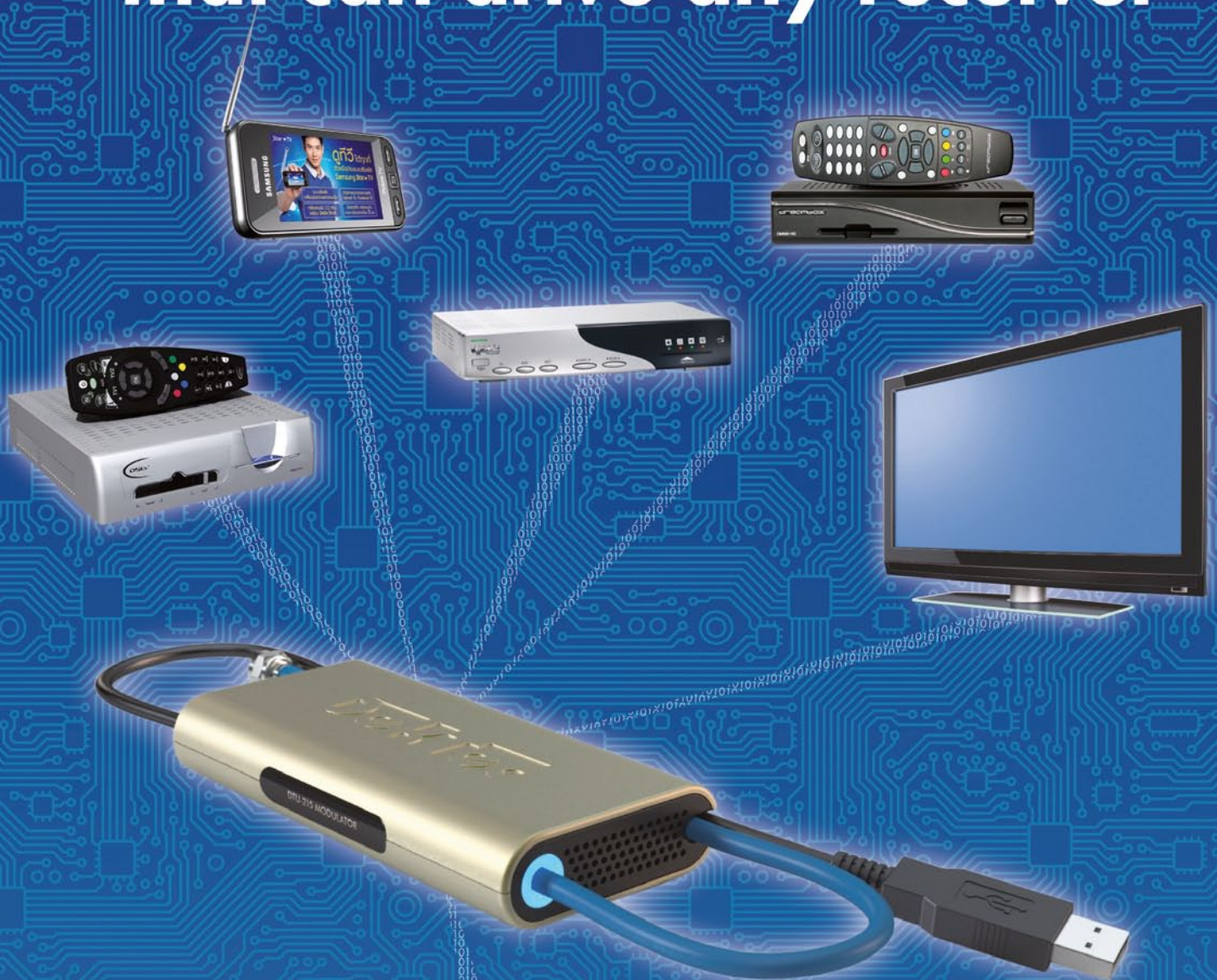
21



22



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DTU-215-GOLD

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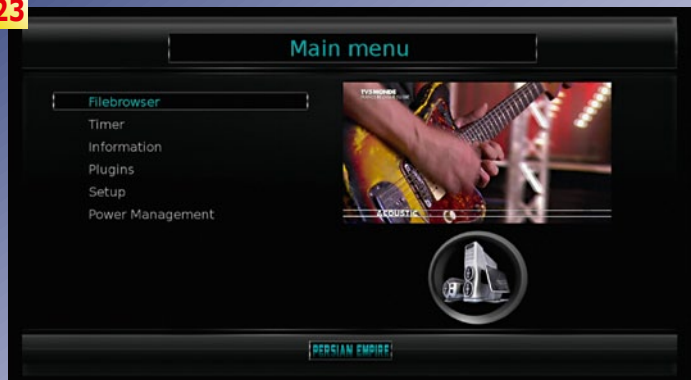
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DeKtec
www.dektec.com

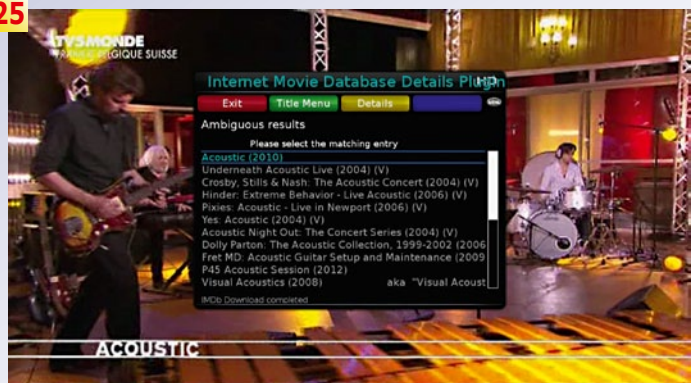
23



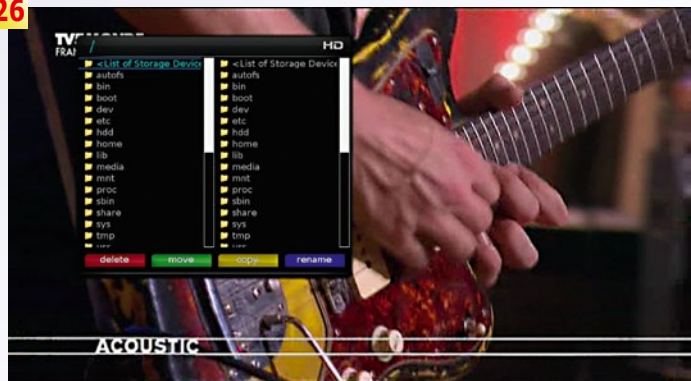
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26



27



in North America. How do you do that?

With an FTP client you need to copy the 'satellites.xml' 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

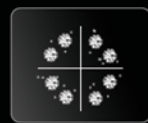
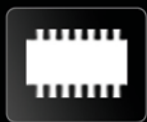
23. Main menu with different menu-items.

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!

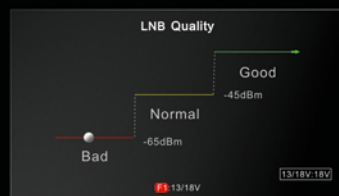
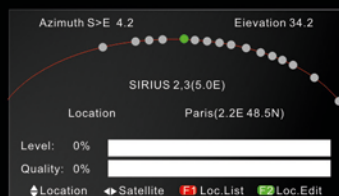
25. This is a great function: you can automatically have the AZBox search the IMDB (Internet Movie Database) to display further information about the current program. Even if your provider does not include a proper EPG, you will from now on know everything there is to know about the concert, series or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



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Constellation Chart

LNB Test MDU & Unicable

BER, S/N(MER),FEC Measurement

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Satellite Name & Degree Auto Detective & Display

Auto DiSEqC1.0/DiSEqC1.1/DiSEqC1.2,USALS

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Li-ion Battery(2350mAH), last 6 hours, Fast Charge(2 to 3 hours)

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Water-Proof Bag,Compass,User Manual

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Minisat-plus S2/NIT/DSS

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28



29



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.

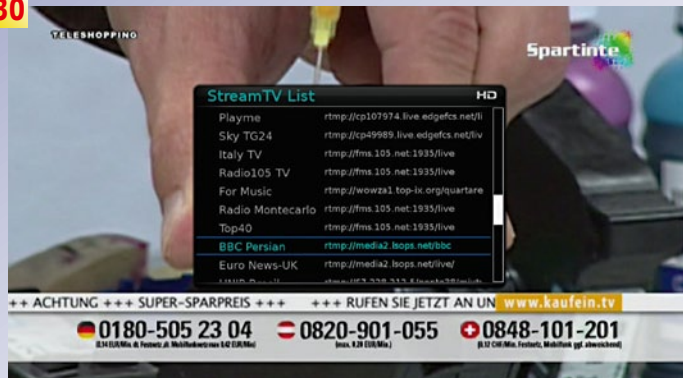
These are busy times for AZBox developers, and thanks to the fact that this receiver type is fully OpenPLI-compatible we can expect that software variations and improvements will

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

30



31



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:

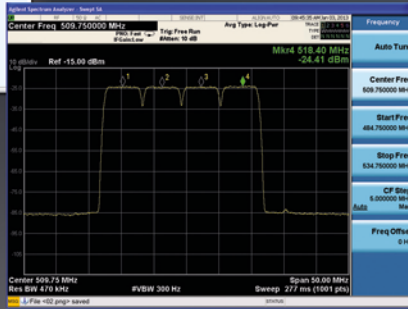
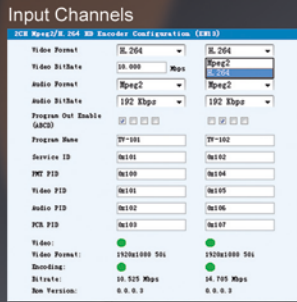
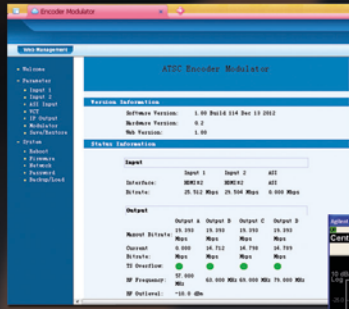
- www.azbox.com
- www.azbox.ca
- www.openrsi.org
- www.openazbox.info
- www.persianpros.org

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 v2.1 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



Shoulder Level



Wall Mount



Rack

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- Turn MPEG2/MPEG4 HD Video signals into a real digital RF
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Revealing the Secrets of the AZBox ME Super Box



Part 1: Blindscan

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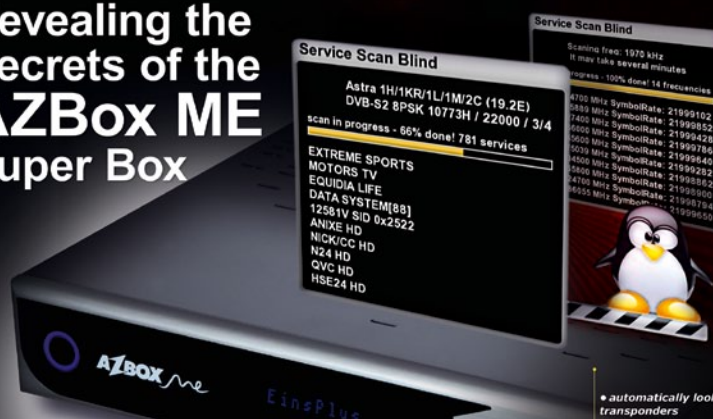


www.TELE-audiovision.com/12/05/azbox-me

FEATURE 测试技术设备商工程软件 | AZBox ME Receiver Software |

Revealing the Secrets of the AZBox ME Super Box

Part 1: Blindscan



- automatically looks for all active transponders
- also detects channels with very low symbol rate
- makes full use of the AZBox ME tuner's capabilities
- finds all active channels
- blind scan mode currently in beta mode

Part 2: Multimedia

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- My Videos
- My Music
- My Pictures
- My UPnP

- easy integration in media network at home
- receiver shows films, plays music and displays images
- subtitles can be inserted for movies
- playlists can be set up for music

Part 2: Multimedia

Part 3: Plugin-Installation

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Part 3: Plugin-Installation

- Step-by-step guide to installing plugin
- simple extension of the functions of the AZBox ME
- AirPlayer plugin transforms the TV set for the photo shows with friends
- Integration with the AZBox smartphones and tablets

Part 4: Firmware

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Revealing the Secrets of the AZBox ME Super Box

- firmware updates made easy
- thanks to OpenPLI support developers all over the world work on different firmware versions
- new kernel version opens up new possibilities
- the recovery switch of the AZBox is your safety net: whenever something turns out wrong you can always fall back on the initial firmware

Part 4: Firmware

Roku2 XD



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BoMTV Channel

★★★★☆ 21 ratings

BoMTV hosts over 15 Malayalam channels of Movies, News, Music, Events, and more.

- ***SD and HD TV via the Internet***
- ***Can also be used as a radio***
- ***Large selection of Apps for every application***
- ***Outstanding video and audio quality with 1080p and Dolby 5.1***

ROKU

Miniature Streaming Player

Roku

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 pre-

vent 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

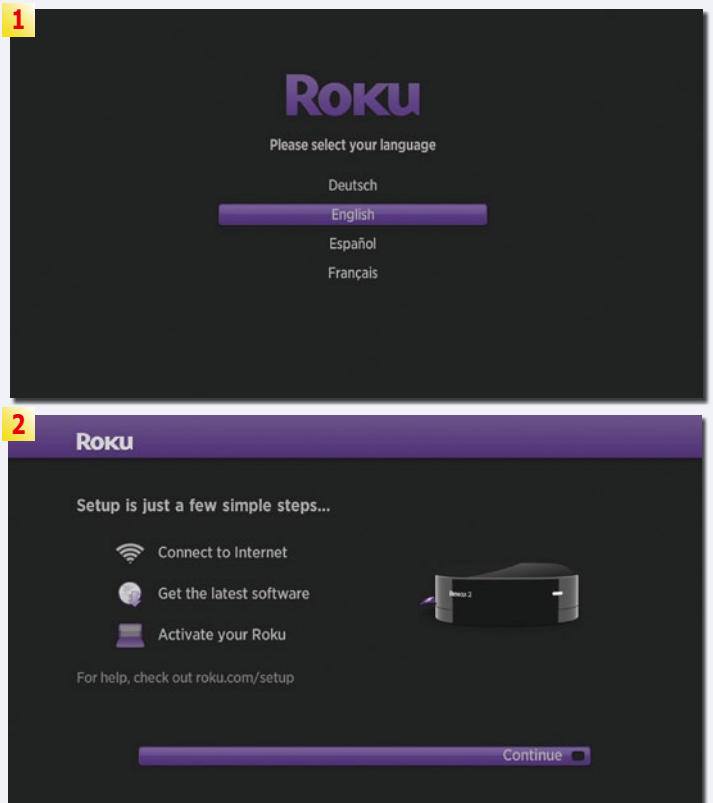
We are back providing broadcast uplinks

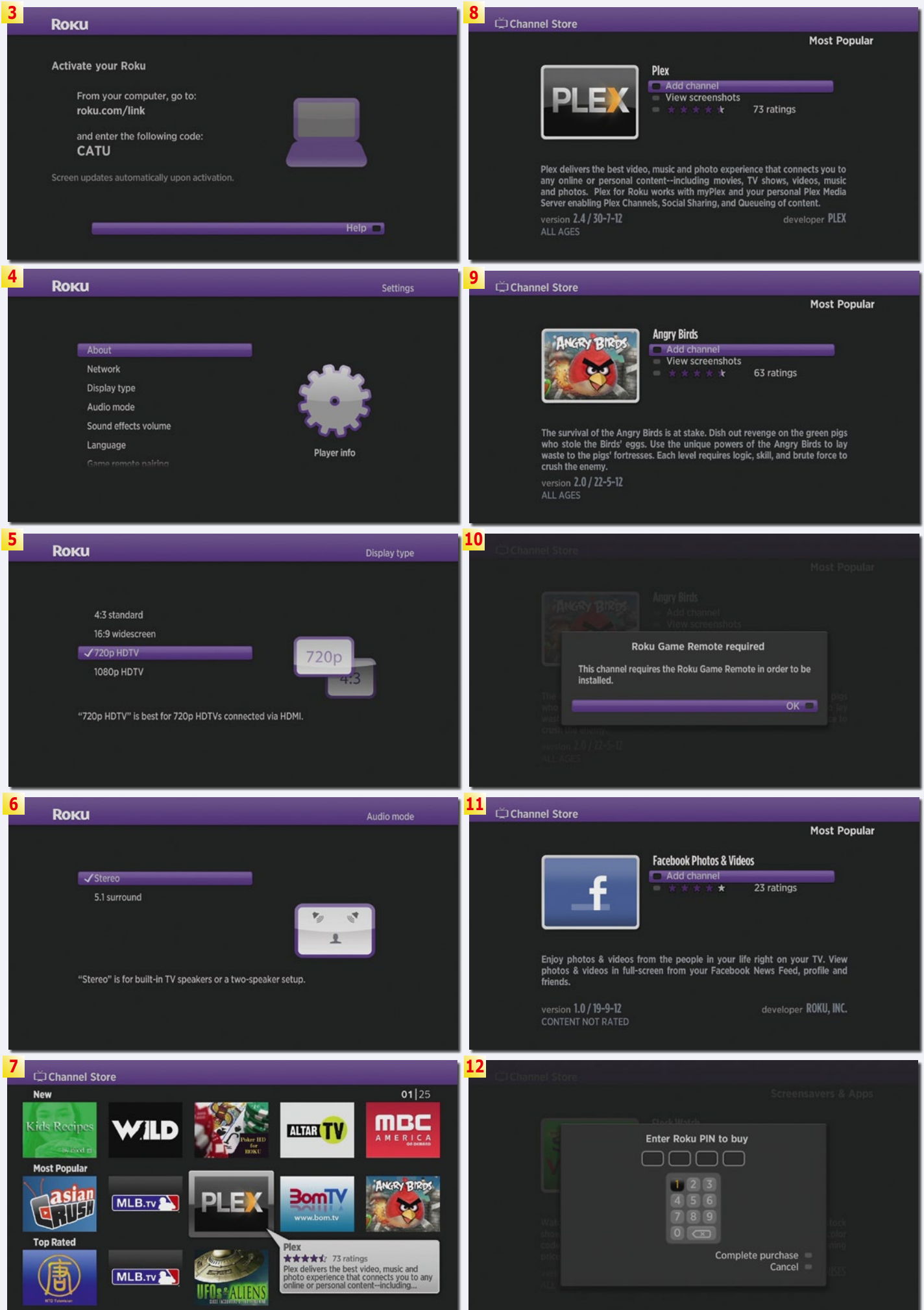
Satellite Program Providers can take advantage of BT's superior technical quality at our South-West England's Satellite Uplink Station:

- 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

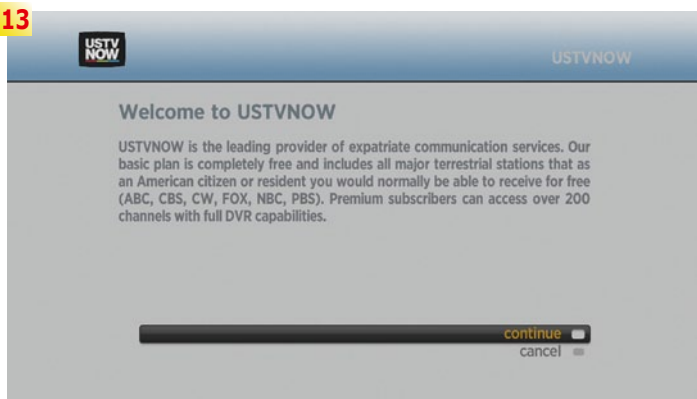


1. The Roku 2 XD can present the OSD in German, English, Spanish and French
2. The setup of an Internet connection via WiFi worked perfectly
3. The Roku 2 XD needs to be activated via its own Internet page
4. Settings menu
5. The video signal from our test model, in addition to SD, can also be provided 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

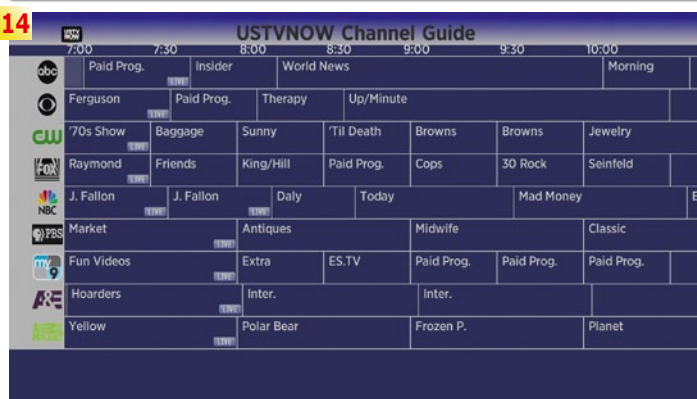




13



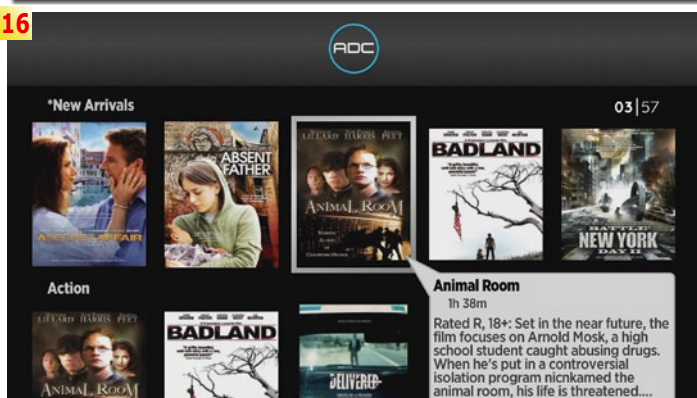
14



15



16



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

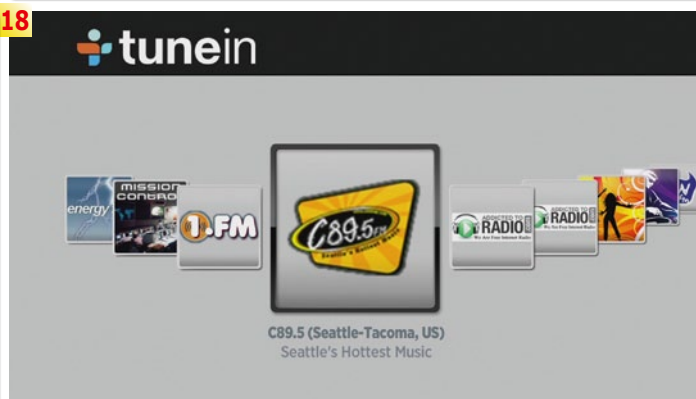
20. You can easily display pictures and videos from your Facebook friends

21. Flixster provides access to current movie and DVD trailers

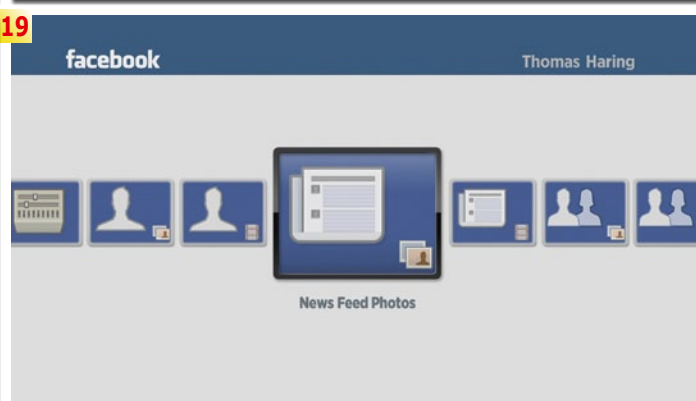
17



18



19



20



21



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.

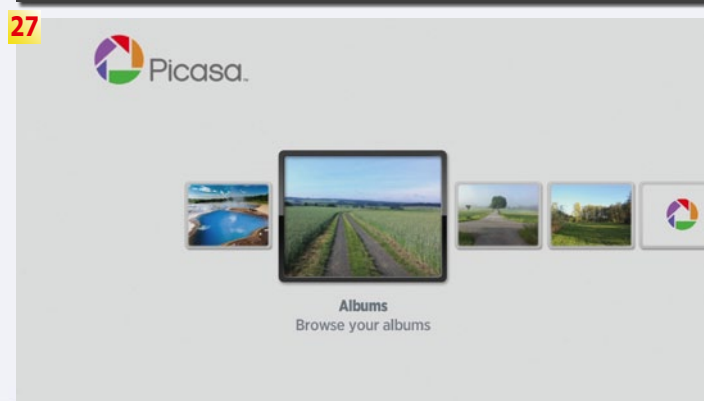
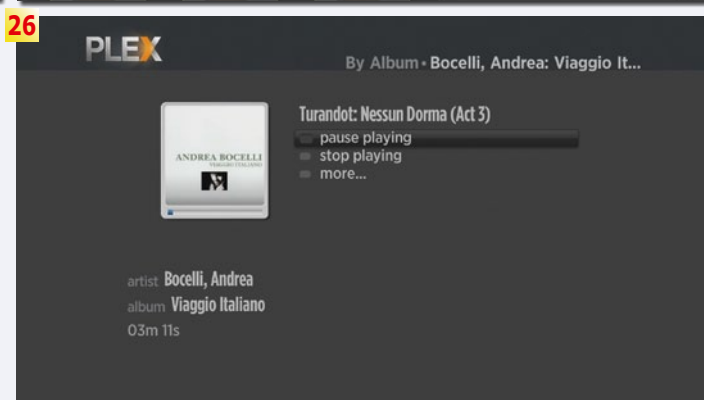
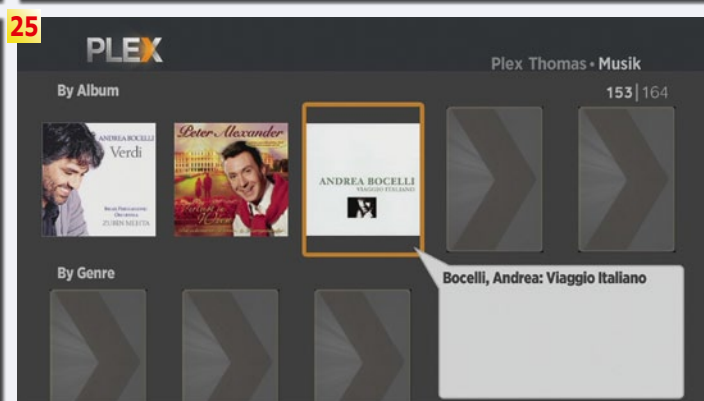
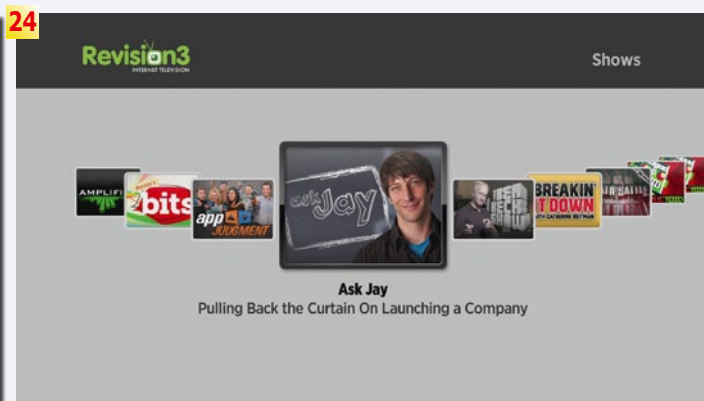
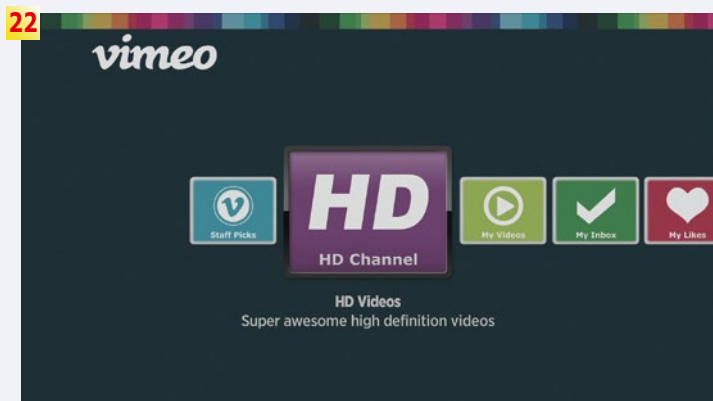
Available in lengths of 30 seconds and 5 minutes on USB memory sticks or by FTP download.
File format: .ts

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



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.

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

ALuoSat 阿罗卫视
Export Digital TV Products from China

LUO SHIGANG
President

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



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

*regularly updated

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Export Digital TV Products from China

AWARD WINNING

**DIGITAL
RECEIVERS OF
21ST CENTURY**

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



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Business Voucher

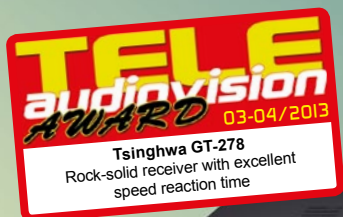
www.TELE-audiovision.com/13/03/panodic
Read TELE-audiovision Test Report



PANODIC



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



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www.TELE-audiovision.com/13/03/tsinghua
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TSINGHWA

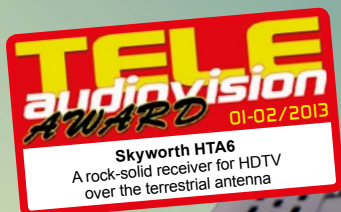
Manufacturer	Skyworth
Website	www.skyworthdigital.com
Function	DVB-T / DVB-T2 HDTV Receiver
DVB-T2/LAN	• / —
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	— / —



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

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



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JIUZHOU



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	• / —



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



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	— / •



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Expert Opinion

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



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	• / •



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



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International
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**Expert
Opinion**

www.TELE-audiovision.com/12/07/amiko
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Manufacturer	Panodic
Website	www.panodic.com
Function	Small DVB-T HD PVR Receiver
DVB-S2/LAN	— / —
DiSEqC	—
S-Video/HDMI	— / •
Scart/Digital Audio	• / —



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



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



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Expert Opinion

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



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	— / —



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



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	— / —



PANODIC



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



AZBOX



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



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President

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that matches your needs and requirements

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do the rest

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ANALYZERS OF
21ST CENTURY**

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Expert Opinion

www.TELE-audiovision.com/13/03/horizon
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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
AWARD 03-04/2013

HORIZON Nano-S2
Very easy to use instrument
for quick installation of satellite
for HDTV reception

HORIZON



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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
AWARD 01-02/2013

KWS VAROS 109
Extremely high-quality meter
for everyday use
by satellite installers

KWSELECTRONIC



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www.TELE-audiovision.com/12/11/satlink
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Manufacturer	Fujian Baotong
Website	www.sat-link.com.cn
Function	Digital Meter & Receiver for DVBS and DVBT 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



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Expert Opinion

www.TELE-audiovision.com/12/11/horizon
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Manufacturer	Horizon Global Electronics
Website	www.horizonhge.com
Function	Digital Meter for Analogue, DVBT and DVBT2 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



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www.TELE-audiovision.com/12/11/deviser
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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 simple to use but
at same time very accurate

DEVISER



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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



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



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





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

HORIZON



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



12-14 MARCH 2013

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



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Global VSAT
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Professionals International



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Association

CHINA



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Export Digital TV Products from China

ALuoSat 阿罗卫视
Export Digital TV Products from China

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



AWARD WINNING

21
IPTV/WebTV
RECEIVERS OF
1ST 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	— / •



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Expert Opinion

www.TELE-audiovision.com/13/03/roku
Read TELE-audiovision Test Report



ROKU



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	• / •



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Expert Opinion

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





Manufacturer	AZBox
Website	www.azbox.com
Function	HDTV 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	— / •



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



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www.TELE-audiovision.com/12/07/amiko
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Manufacturer	Logitech
Website	www.logitech.com
Function	IPTV Receiver



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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)



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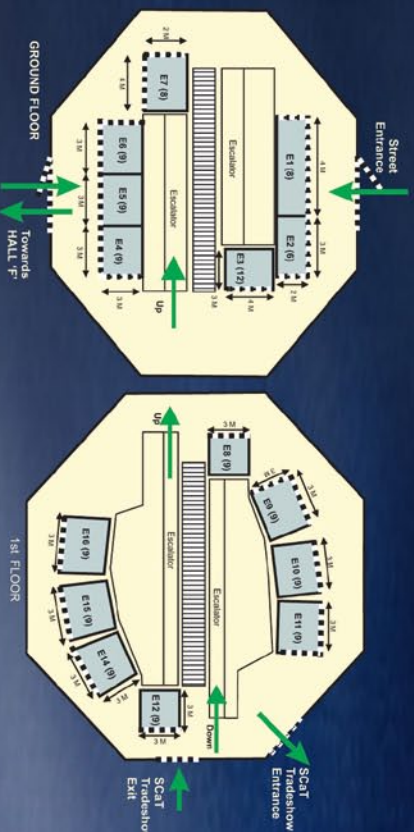
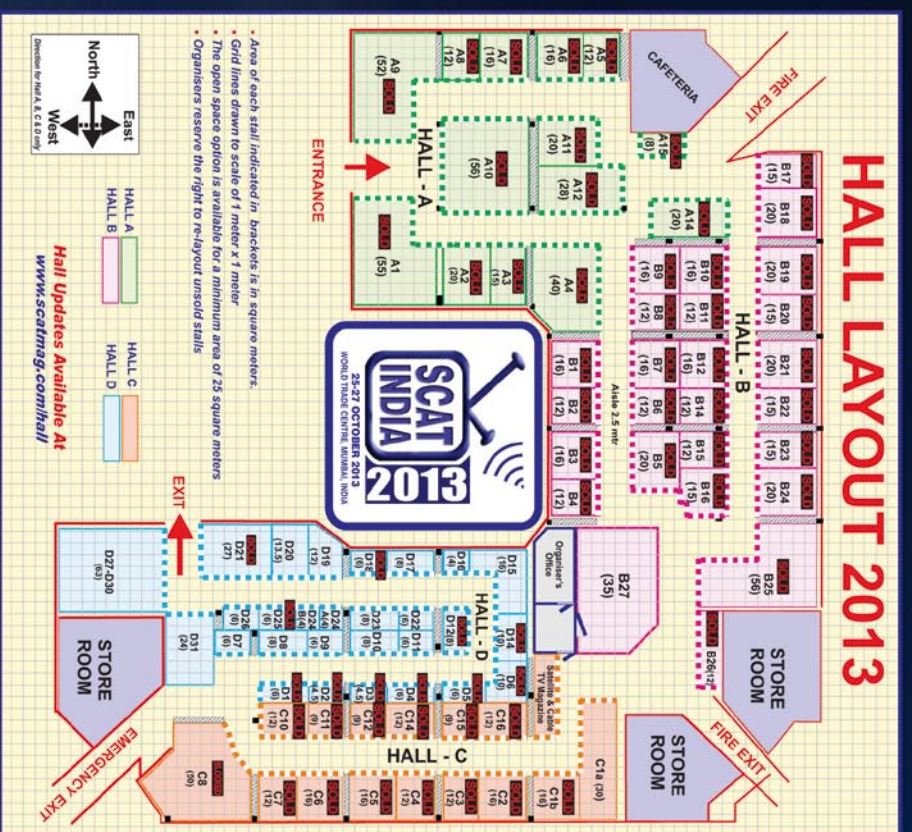
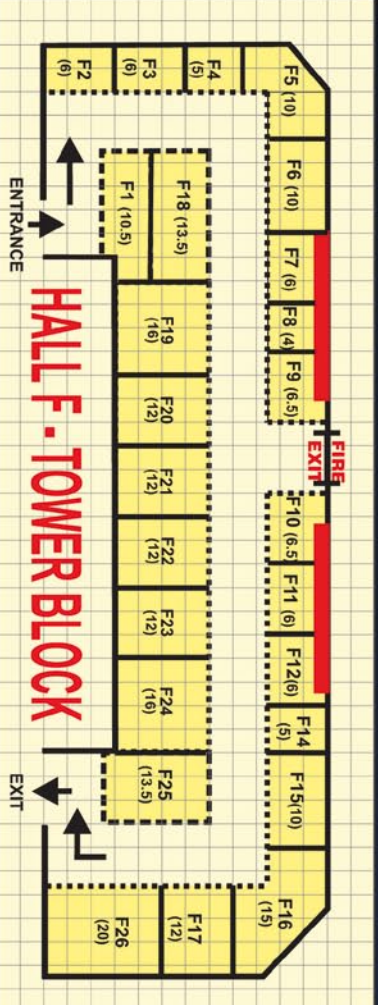
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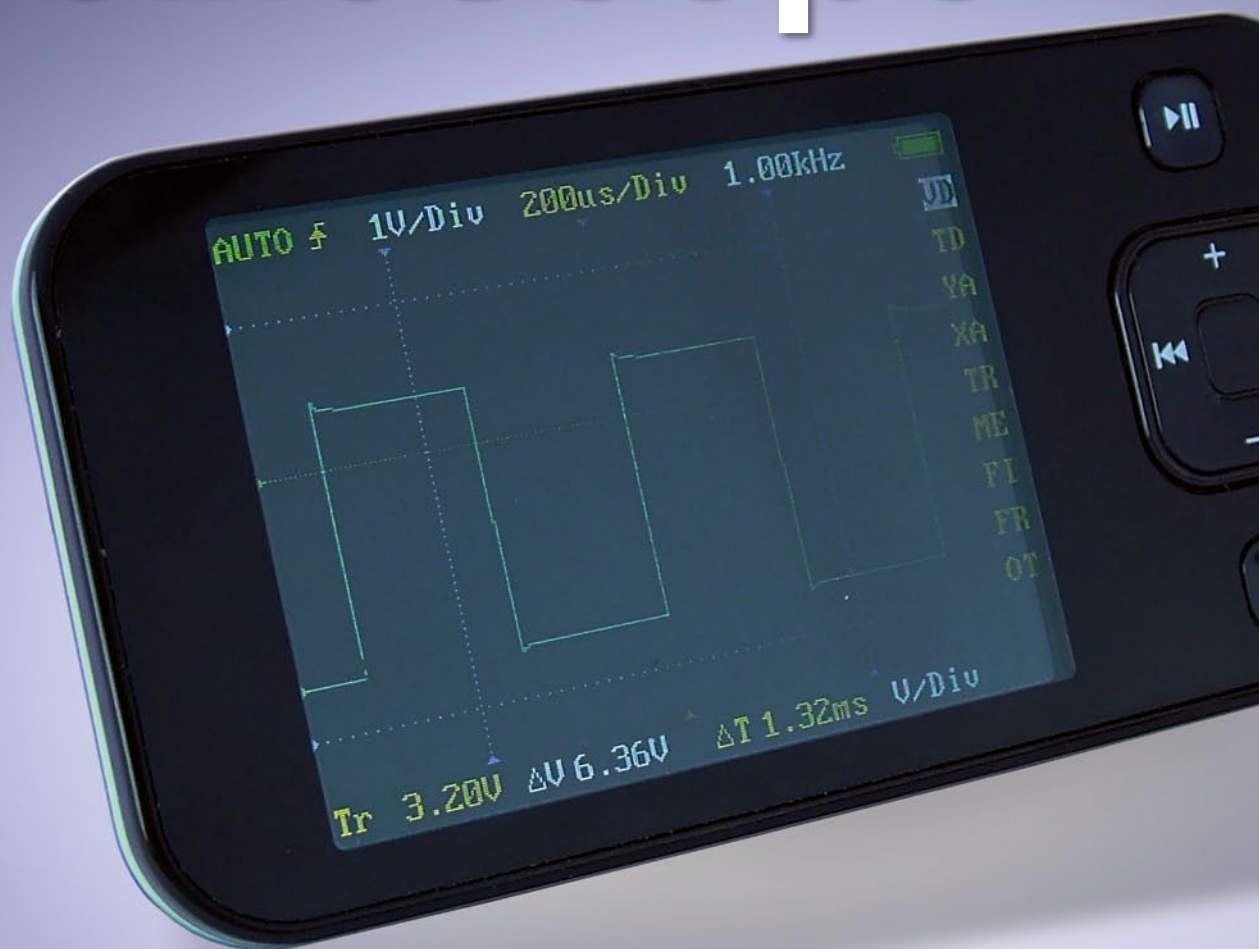
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Pocket Oscilloscope

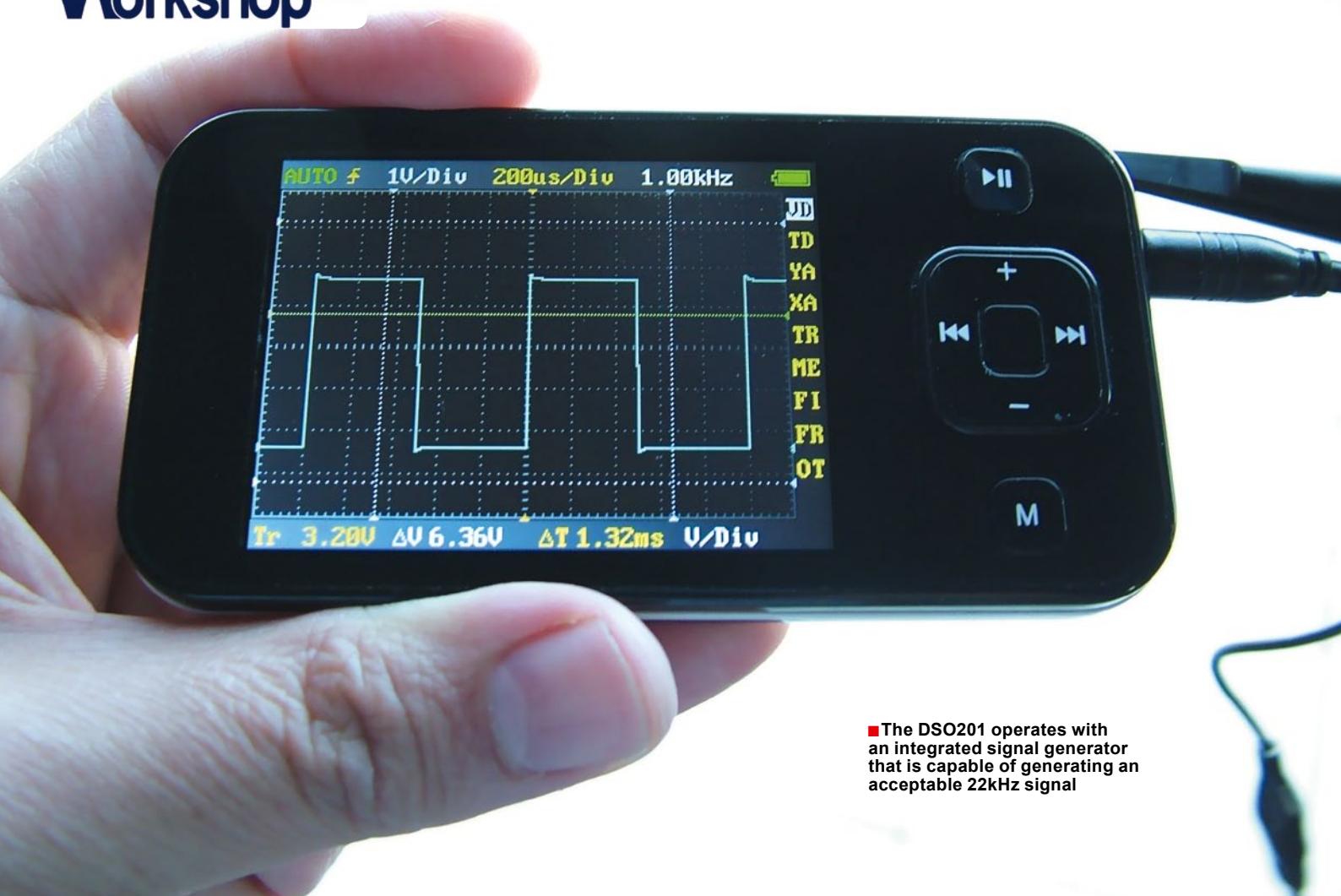


DSO201



- *Provides a simple and easy way to check the basic functions of a satellite system*
- *Produces a 22kHz signal*
- *Can also be used to check the video and audio signal*
- *Especially capable of finding complex errors*





■ 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 fre-

quency 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?

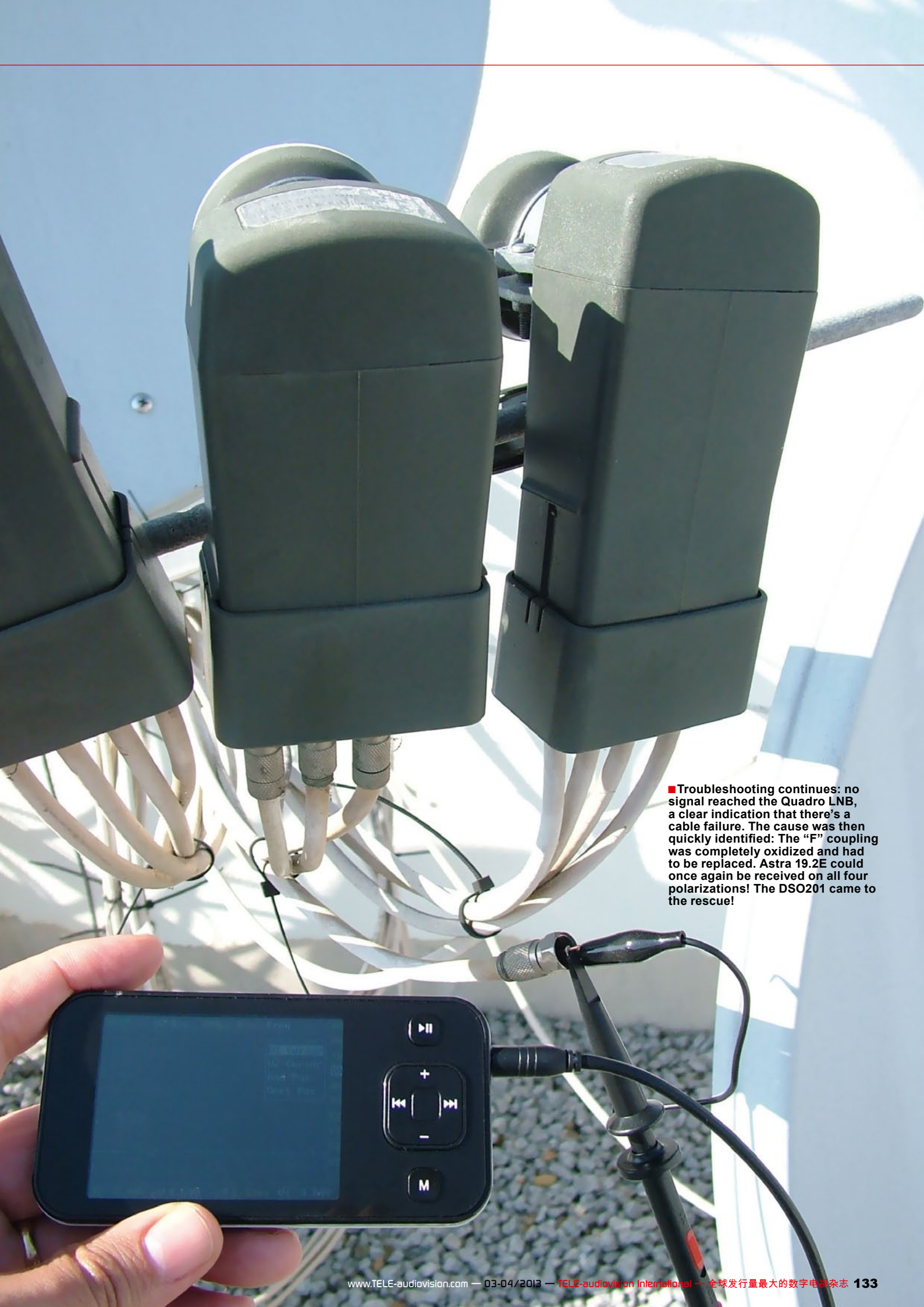
As previously mentioned, an oscilloscope measures a voltage over a period of time. This time period is user-settable, typically from 1µs to 1s or even longer. This value represents the time period on the x-axis while the voltage is represented by the y-axis. When the end of the x-axis is reached, the 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 Troubleshooting: 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.

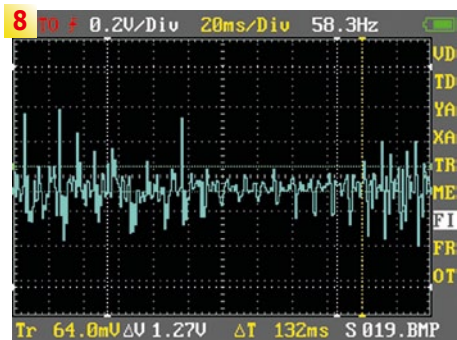
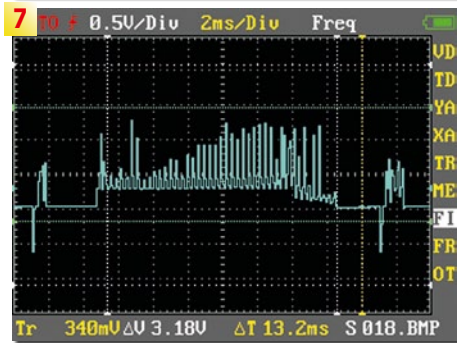
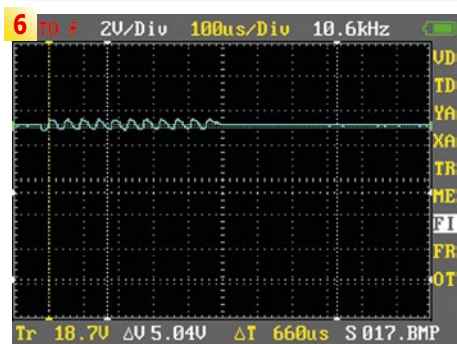
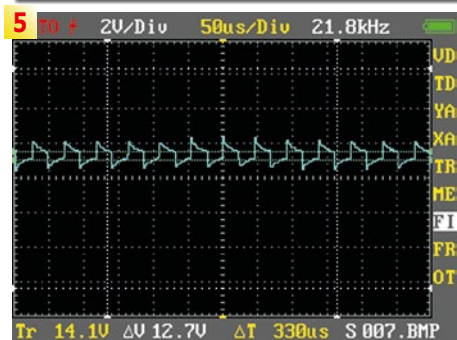
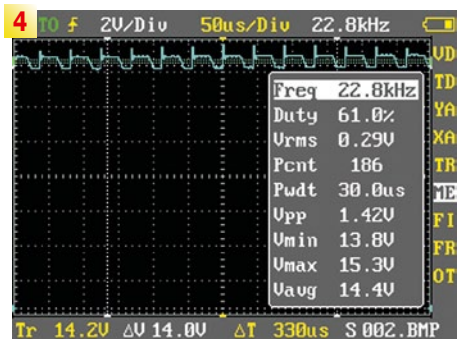
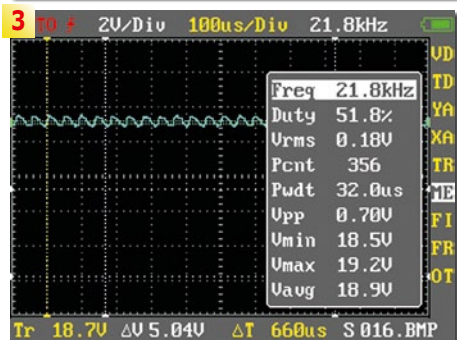
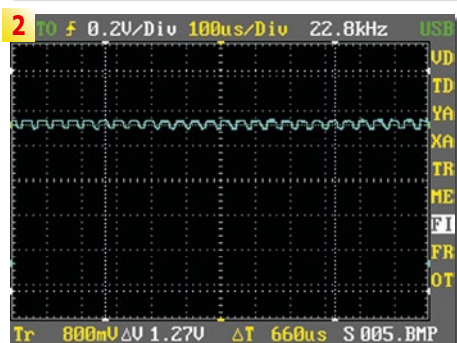
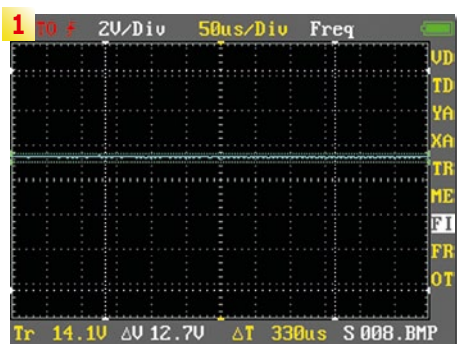
4. With another receiver the frequency is 22.8kHz and for the vertical polarization we measured 14.4V.

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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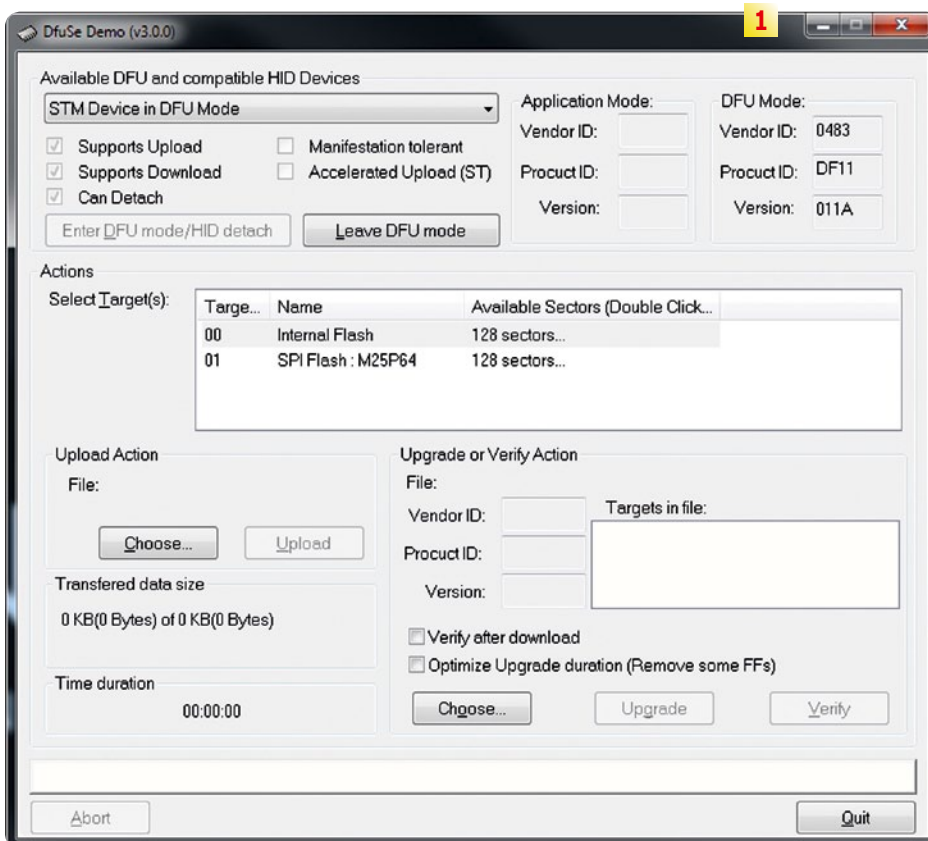
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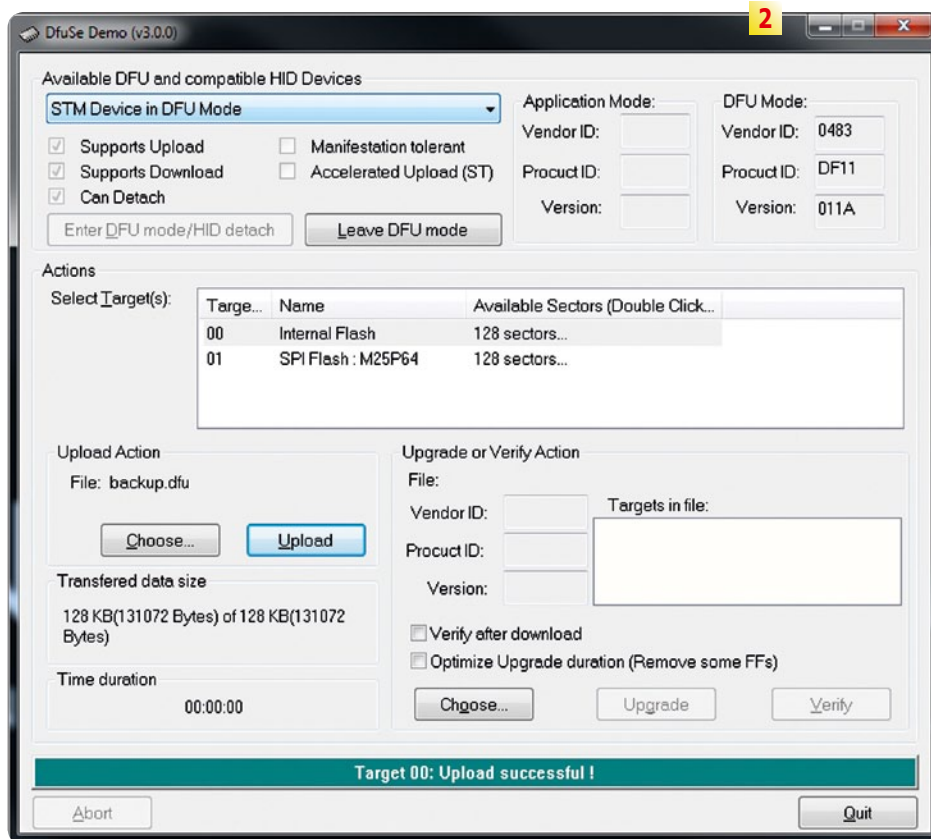
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- RS-232: The DSO201 can also be used to display the RS-232 signals, that is, the serial interface communications. It's not possible to log or interpret these signals but you will be able to recognize, just like with DiSEqC commands, that data bits 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 the DSO201 to determine that the tuner was no longer supplying the necessary 14/18V. That I was still able to receive tran-

sponders 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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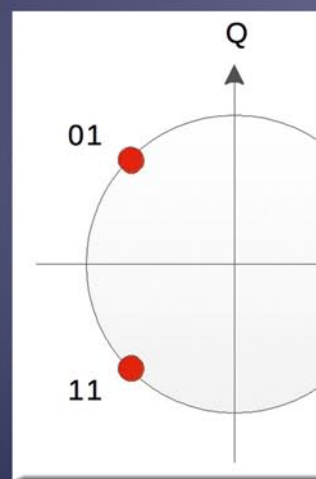


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$$y(t) = \sqrt{2} \sin(\omega t + 45^\circ)$$

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

$$y(t) = \sqrt{2} \sin(\omega t + 225^\circ)$$

$$y(t) = I x \sin \omega t + Q x \sin(\omega t + 90^\circ)$$

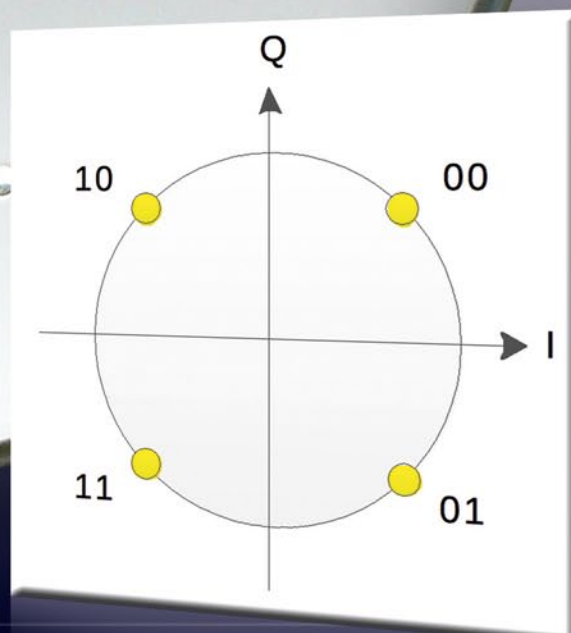
- *how to detect phase shifts automatically*
- *reversing inverted phase shifts*
- *finding the synchronization byte*
- *how a constellation diagram shows swapped vectors*



$$\sqrt{2} \sin(\omega t + 225^\circ)$$

$$\omega t + 90^\circ)$$

$$y(t) = \sqrt{2} \sin(\omega t + 315^\circ)$$



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 cor-

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

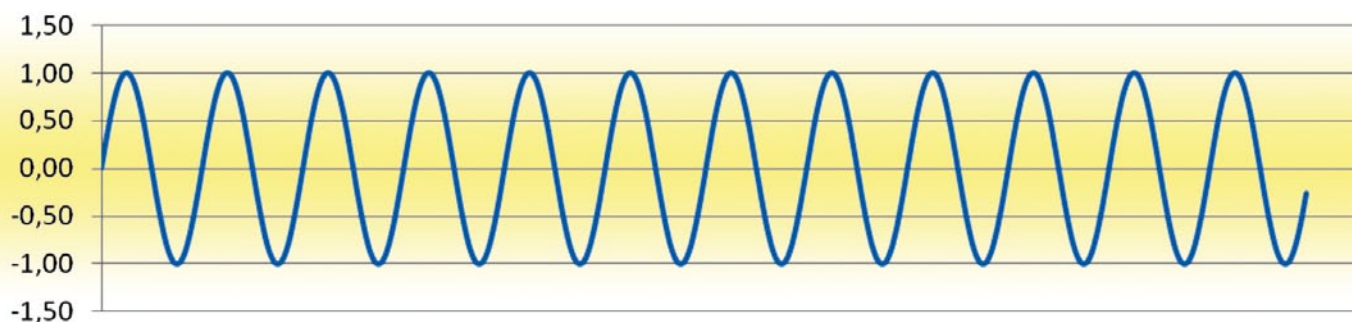
responds to four different symbols.

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

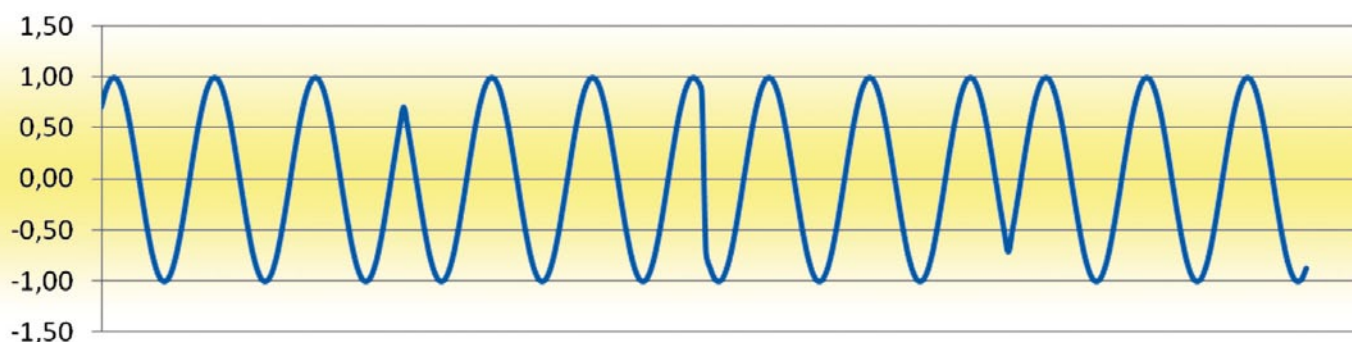
Unmodulated carrier

■ graph 1.



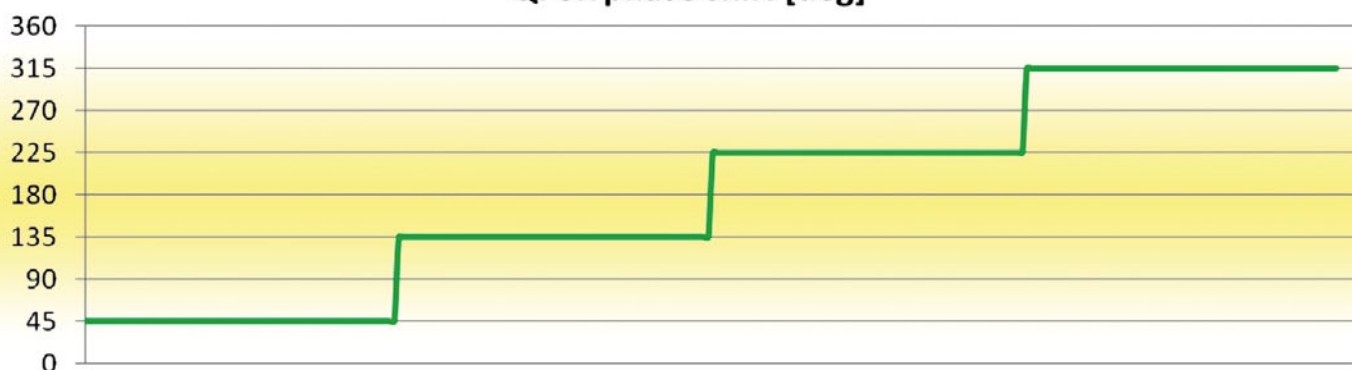
QPSK modulated carrier

■ graph 2.



QPSK phase shift [deg]

■ graph 3.



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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:

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

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 $y(t)$:

$$y(t) = \sqrt{2} \sin(\omega t + 45^\circ)$$

or

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

or

$$y(t) = \sqrt{2} \sin(\omega t + 225^\circ)$$

or

$$y(t) = \sqrt{2} \sin(\omega t + 315^\circ)$$

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 in-

coming signal is shifted 45° in phase,

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

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.

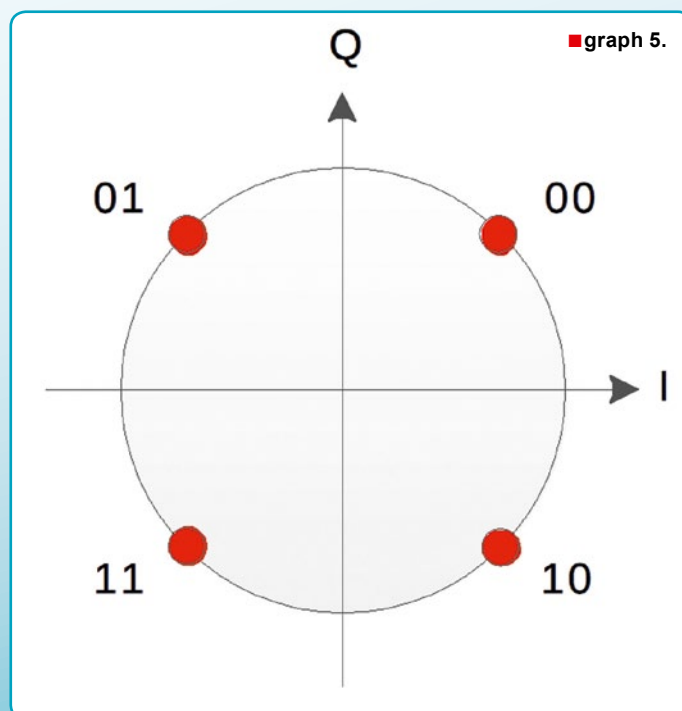
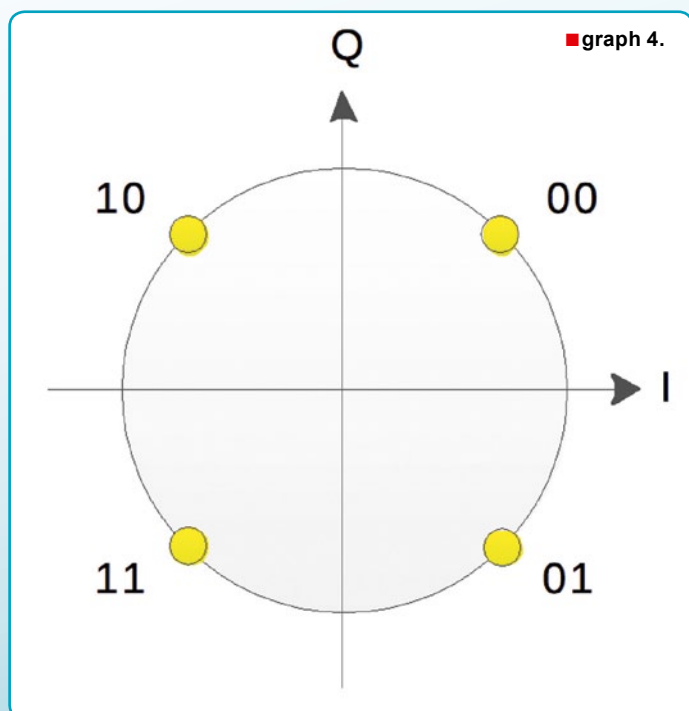
Some old timers can still remember the first generation of satellite receivers that in their transponder data required the user to define I/Q Normal or I/Q Inverted. More recent receiver can automatically detect I/Q inversion and reverse the operation of their demodulators accordingly. But how is it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



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Take Advantage

A young woman with long, wavy red hair and blue eyes is smiling at the camera. She is wearing a red, short-sleeved top with ruffled shoulders. She is holding a black tablet computer with both hands. The tablet screen displays a white rectangular box containing promotional text.

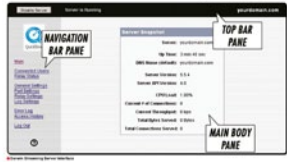
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Streaming TV via the Internet

FEATURE TV via Internet

Streaming TV via the Internet - Quick Setup and Free!

This wouldn't be the first time that we reported in TELE-audiovision on streaming solutions that allow you to receive TV and radio content via the Internet. In this way you could be on vacation in your hotel on the other side of the world and playback your favorite programs from your living room via an Internet stream or simply watch your favorite TV channels while on vacation.



WOL - Wake On LAN technology, the two LAN cards must be connected to the same LAN. The Wake On LAN card must be connected to the LAN card. The Wake On LAN card must be connected to the LAN card. The Wake On LAN card must be connected to the LAN card.

For the WOL, before this address is used, it must be set to the correct address. The Wake On LAN card must be connected to the LAN card. The Wake On LAN card must be connected to the LAN card. The Wake On LAN card must be connected to the LAN card.

Reading the host address is necessary for the WOL. The Wake On LAN card must be connected to the LAN card. The Wake On LAN card must be connected to the LAN card. The Wake On LAN card must be connected to the LAN card.

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How ABS-S Works

FEATURE New Digital Standard

ABS-S: a competition for DVB-S/S2?

Jack Pawlowski

When we were reading a press release about the launch of the ABS-S satellite, we found it interesting that China had ordered the satellite in 2008. It was the first time that a satellite was ordered by a country other than the United States.

ABS-S is a new digital standard for satellite broadcasting. It is a competition for DVB-S/S2. It is a new digital standard for satellite broadcasting. It is a competition for DVB-S/S2.

Why is it called ABS-S? The name ABS-S stands for Advanced Broadcast System. It is a new digital standard for satellite broadcasting. It is a competition for DVB-S/S2.

It is important to note that the ABS-S satellite is a competition for DVB-S/S2. It is a new digital standard for satellite broadcasting. It is a competition for DVB-S/S2.

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www.TELE-audiovision.com/TELE-satellite-1007/eng/streaming.pdf

www.TELE-audiovision.com/TELE-satellite-0903/eng/abs-s.pdf

Testing Horizon to Horizon Actuator

FEATURE Horizon-to-Horizon Antennas

How Can You Test H-H Antenna Actuators?

Heinz Koppitz



H-H actuators are sophisticated components that can turn any mono-feed antenna into a reception system for all locally available satellites. All H-H actuators are ISO9001:2000 compliant and accept USALS (USALS 1.1) commands.

It is important to note that the H-H actuator is a sophisticated component. It is a mono-feed antenna into a reception system for all locally available satellites.

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Matching LNB with Dish

FEATURE LNB Types

Matching LNB and Dish Type

Jack Pawlowski

With satellite technology, it is not only possible to receive satellite signals, but also to transmit signals. This is why it is important to match the LNB with the dish type.

It is important to note that the LNB must be matched to the dish type. This is why it is important to match the LNB with the dish type.

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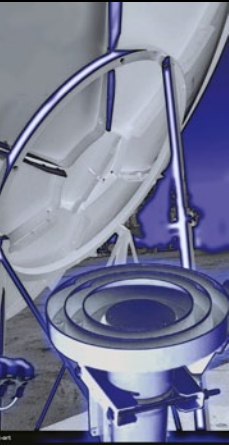
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www.TELE-audiovision.com/TELE-satellite-1005/eng/h-h-actuator.pdf

www.TELE-audiovision.com/TELE-satellite-0811/eng/lbn+dish.pdf

How SCR Works

FEATURE SCR LNBs

Thanks to SCR: One single cable for up to eight receivers

Thomas Haring



SCR is short for Satellite Channel Router and is a specification defined in the EN 50464 standard, which applies worldwide and which is the result of joint efforts between several companies under the guidance of SES Astra. So what's in it for you?

It is important to note that the SCR LNB is a specification defined in the EN 50464 standard. It is a worldwide standard.

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How to Calculate the Power Factor

FEATURE Energy Saving

Power Factor

Jack Pawlowski

All satellite systems need electrical energy to operate. Electricity, of course, is a form of energy that can be converted into other forms of energy. This is why it is important to calculate the power factor.

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www.TELE-audiovision.com/TELE-satellite-0911/eng/scr.pdf

www.TELE-audiovision.com/TELE-satellite-0809/eng/powerfactor.pdf

How Decoding Works

FEATURE Pay TV

Decoding of Encrypted Content

Thomas Haring



The main goal of the decoder is to decrypt the content of the satellite signal. This is why it is important to understand how decoding works.

It is important to note that the decoder is a device that decrypts the content of the satellite signal. This is why it is important to understand how decoding works.

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How to Solve Problems with DiSEqC

FEATURE DiSEqC

Why DiSEqC Isn't Always Reliable

Heinz Koppitz

The DiSEqC protocol is used to control the motor of the satellite dish. It is a protocol that is not always reliable. This is why it is important to understand how to solve problems with DiSEqC.

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www.TELE-audiovision.com/TELE-satellite-0909/eng/decoding.pdf

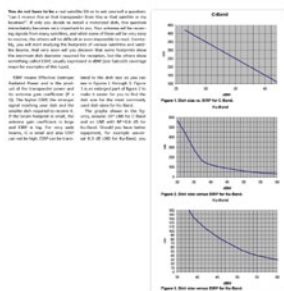
www.TELE-audiovision.com/TELE-satellite-0807/eng/diseqc.pdf

The Relation of Dish Size and EIRP

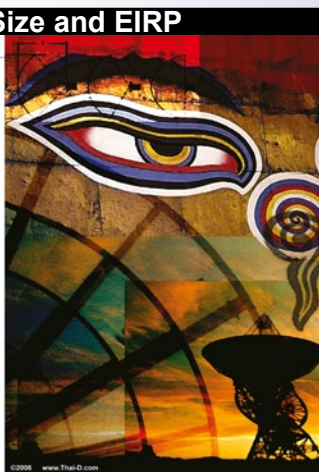
FEATURE The ERP Secret

Dish Size versus EIRP

Peter Miller



As the dish size increases, the EIRP also increases. The relationship is shown in the graphs above. The EIRP is a measure of the power density of the signal, and the dish size is a measure of the area over which the signal is spread. The larger the dish, the more power is spread over the area, and the higher the EIRP.



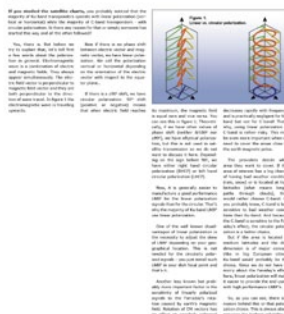
www.TELE-audiovision.com/TELE-satellite-0701/eng/dishsize.pdf

The Secrets of Polarization

FEATURE Polarization

Circular or Linear Polarization

Peter Miller



The Secrets of Intermodulation

FEATURE Intermodulation

The stronger, the better – it that always true?

Probably all our readers are aware that in order to have a reliable satellite reception, we need to have strong enough signal at the receiver input. Generally, the stronger the signal, the better the quality. Always?



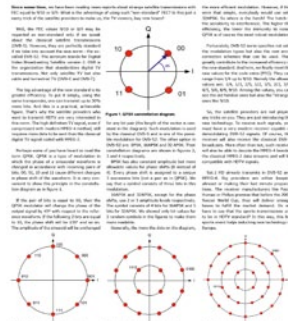
www.TELE-audiovision.com/TELE-satellite-0609/eng/intermodulation.pdf

The New FEC in DVB-S2

FEATURE MPEG-4 & DVB-S2

FEC equal to 9/10 or 8/9 – what is this?

Peter Miller



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13° E — Hotbird 6 (Hot Bird 6) / Hotbird 8 (Hot Bird 8) / Hotbird 9 (Hot Bird 9)

[111], Hotbird 8 (13° E), Europe8, QPSK, DVB, Arqiva (318/11100) (Filtered)

[133], Hotbird 8 (13° E), Europe8, QPSK, DVB, GlobeCast (318/12200) (Filtered)

Encryption Package Res. V_PSID A_PSID

SD MPEG-2 5701 5711

Central Europe

TV

SD MPEG-2 7401 7412

SD MPEG-2 7501 7512

SD MPEG-2 7601 7612

SD MPEG-2 7701 7712

TV

SD MPEG-2 6801 6812

TV

SD MPEG-2 7201 7212

TV

SD MPEG-2 7701 7712

R. FTA

[133], Hotbird 8 (13° E), Europe8, QPSK, DVB, RRSat Global Network (318/12300) (Filtered)

[14], Hotbird 8 (13° E), Europe8, QPSK, DVB, SatLink (318/1400) (Filtered)

16° E —

Albanian

Arabic

Armenian

Azerbaijani

Belarusian

Bengali

Berber

Bosnian

Bulgarian

Catalan

Catalan

Bengali

Berber (Other)

Bosnian

Bulgarian

Catalan

Dutch

English

Faroese

French

Georgian

German

un-09 0

Signal Analyzers from SAT-LINK

SATLINK

SATLINK

■ 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.

SATLINK

- *Only five years on the market*
- *Focusing on the signal analyzer product group*
- *Offers signal analyzers in four function classes and four price classes*
- *Optimizes signal analyzers for every region*
- *Brand new: combo analyzers for DVB-S2 and T2 with fast spectrum display*

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

■ QingZhang Lin is SAT-LINK's General Manager



If you do only one thing, you can fully focus on that one thing. This is QingZhang 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.



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

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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 se-

curity 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."

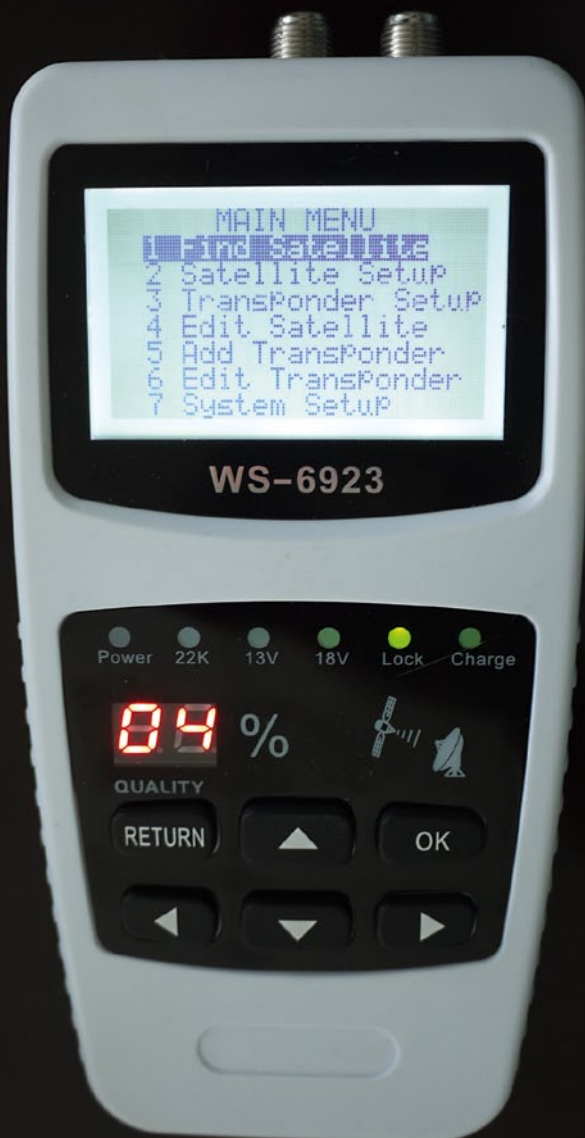
While SAT-LINK in their first year was only able to sell about 10,000 pieces, five years later those production numbers have nearly quintupled. And it's especially their brand new combo model for DVB-S2 and DVB-T2 that promises to be quite a success for SAT-LINK. Since many of the countries in Europe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

2



3



1


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.

2


TEST REPORT Combo Meter for DVB-S and DVB-T

Satlink WS-6936

- suitable for measuring DVB-S and DVB-T signals
- integrated blind scan for satellite signals as special treat
- can be used as receiver as well, if required
- suitable for alignment of motor-controlled antennas
- very precise presentation of measuring results

■ 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.



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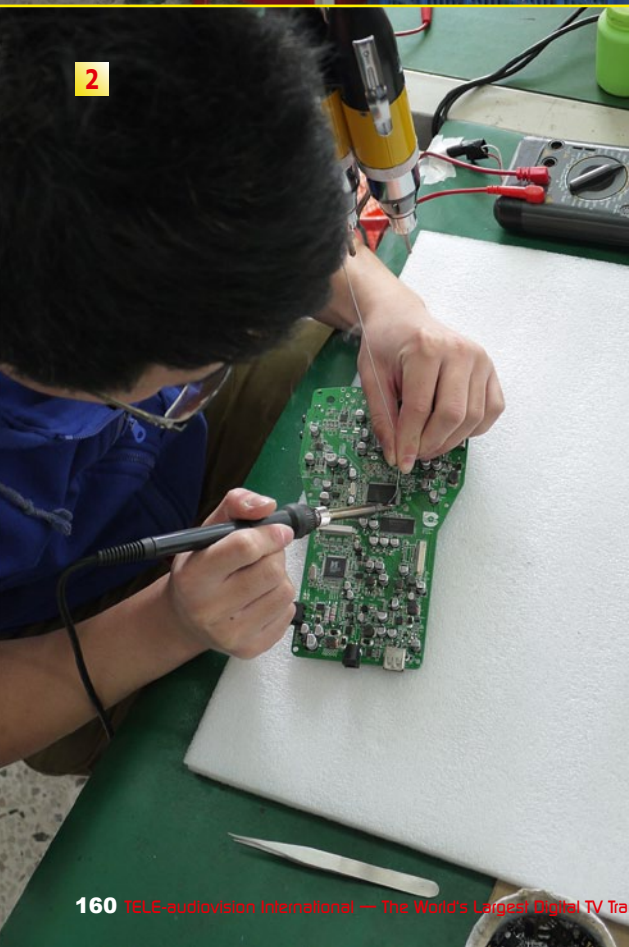
DEVISER

Signal Analyzer Production at SAT-LINK

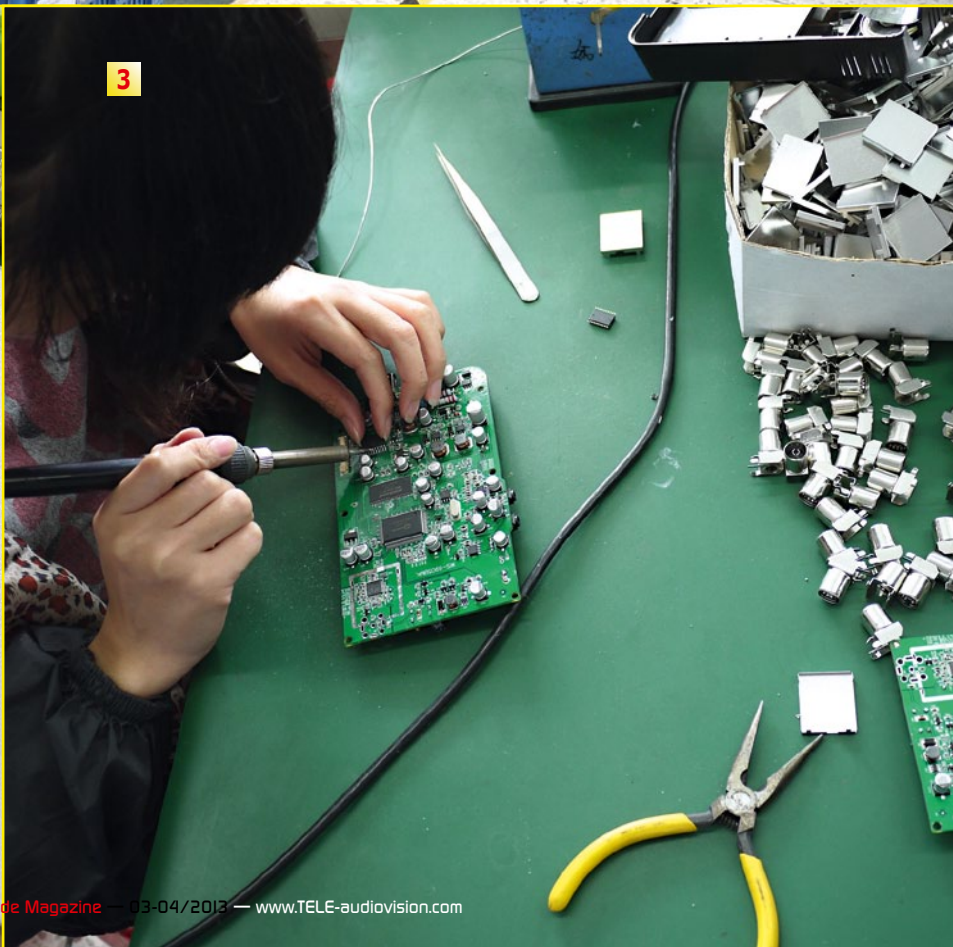
1



2



3





4



5

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.



6


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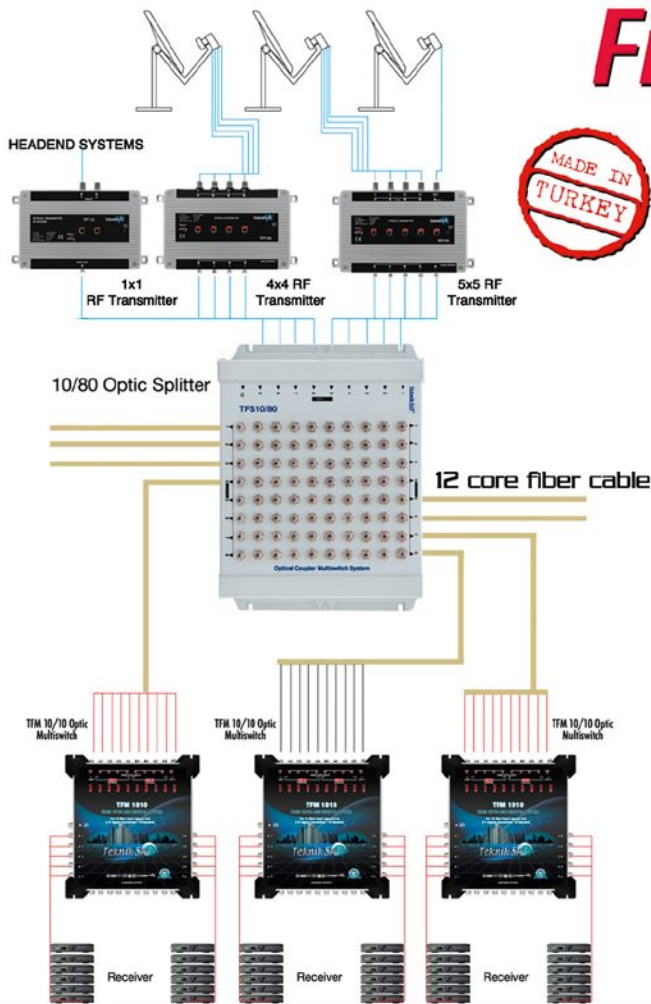
7. Problem found: the technician identified a cold solder joint

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.

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NEW

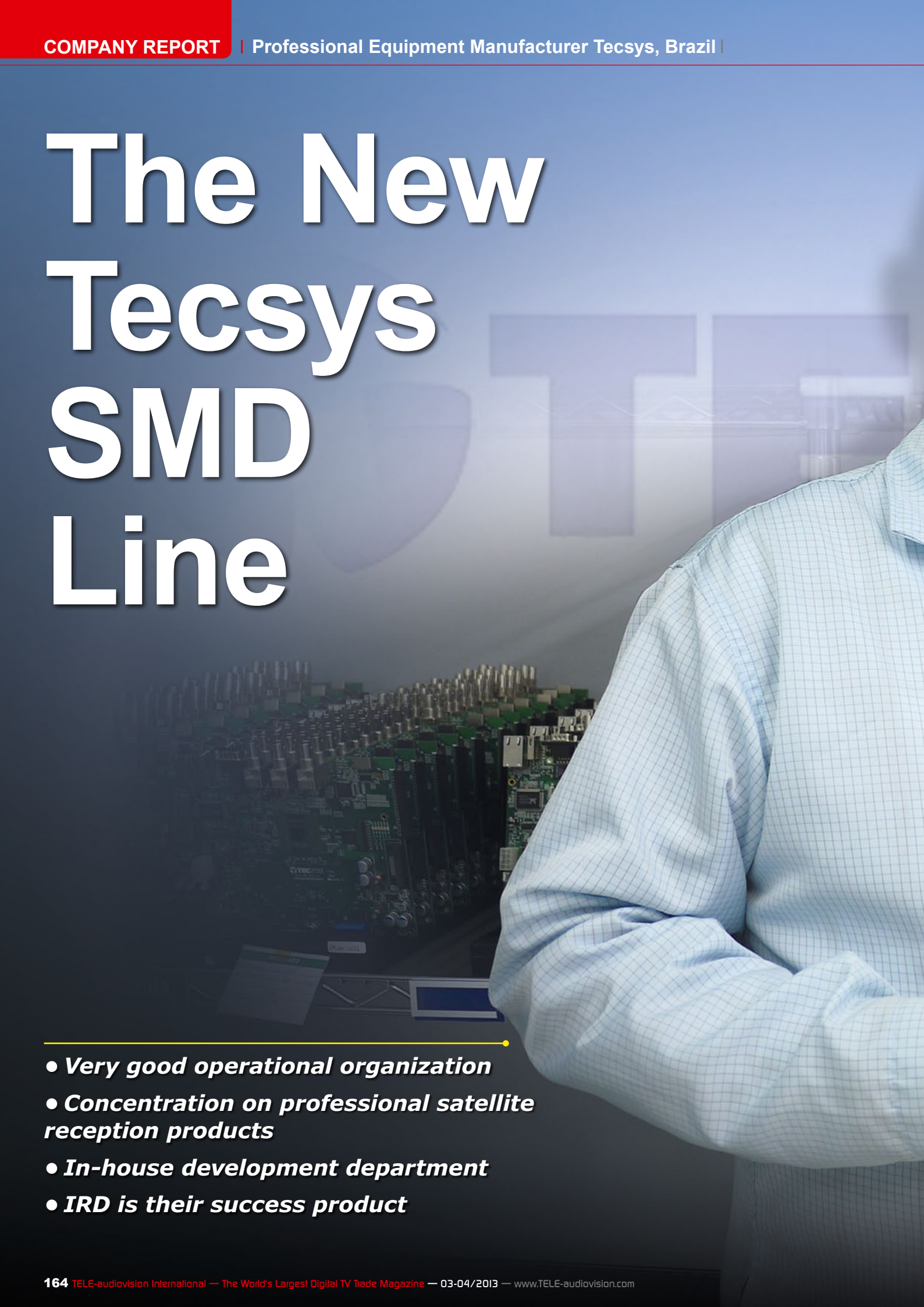
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The New Tecsys SMD Line

- 
- ***Very good operational organization***
 - ***Concentration on professional satellite reception products***
 - ***In-house development department***
 - ***IRD is their success product***

■ 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,

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



São José dos Campos

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



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



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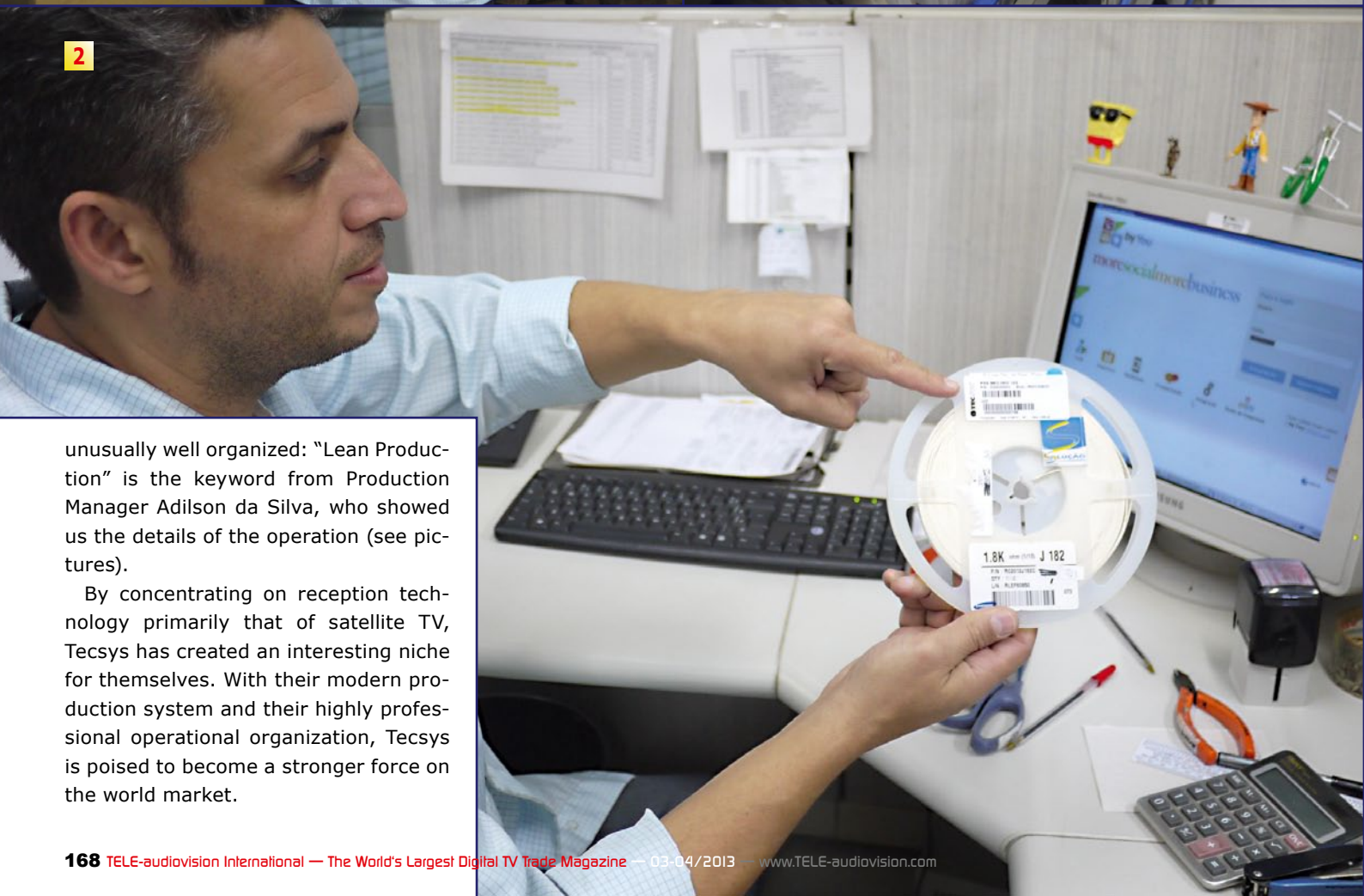
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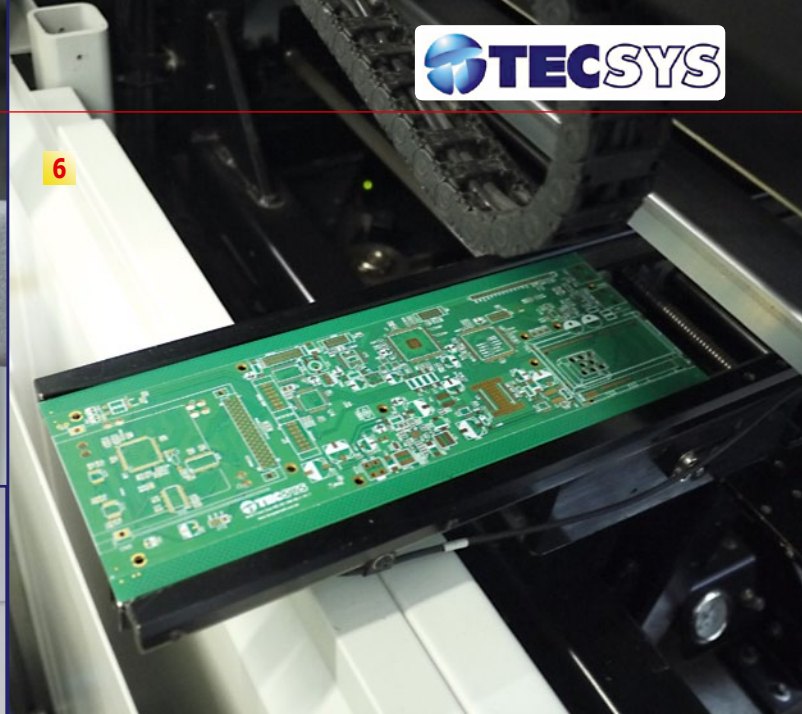


2



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.



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.

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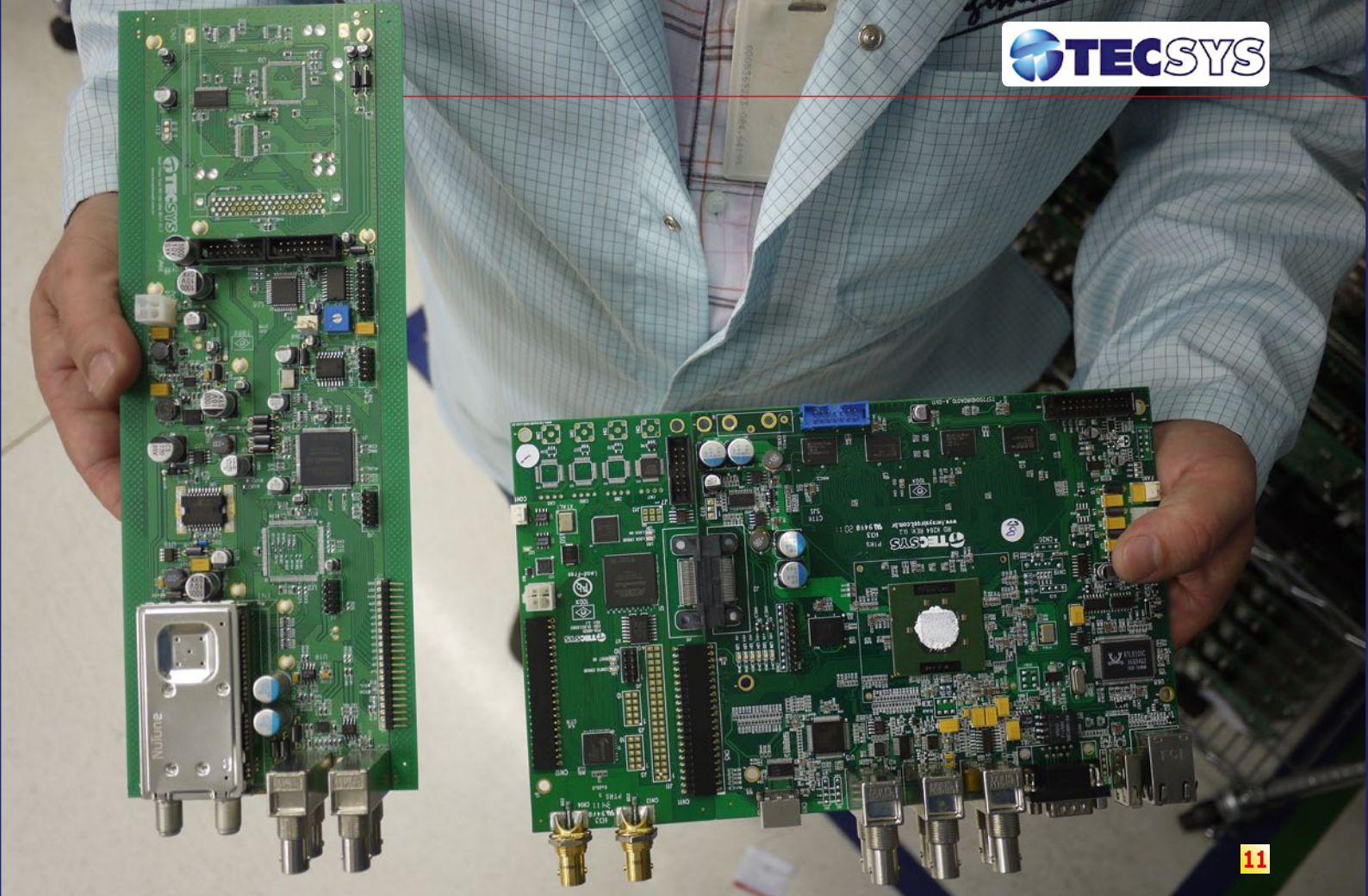
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- *Develops receivers with complex features*
 - *Installation of Apps on a limited basis*
 - *Android system requires higher quality components that results in higher costs*
 - *Android is well-suited for private users but only limited for cable network operators*
-

Jiuzhou's Android Department



■ 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-

TEST REPORT | DVB-T Android Receiver |

Jiuzhou DTP2100



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- Playready Digital Rights Management



ZHOU

■ 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



Shenzhen

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



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Tópicos fixos e anúncios	Resp.	Views	Atualizado
1. INFOSAT BSD Autor: VALDECIR ADOIRDO DA SILVA (Pág. 1, 11, 12, 13)	247	12894	21/10/2011, 14:19
2. Medidor de sinal DSSM pra apontamento de antenas Autor: Marcos Bernardini (Benni) (Pág. 1, 2, 3)	46	1306	21/10/2011, 12:53
3. TOT CARINA Autor: VALDECIR ADOIRDO DA SILVA (Pág. 1, 25, 36, 37)	739	87012	07/10/2011, 21:50
4. Receptor Telestream F11 e F12 HD (Máximo único) Autor: Elvira Morais (Pág. 1, 2, 3, 4)	77	2063	20/10/2011, 11:12
5. Canal tempestade Autor: Elvira Morais (Pág. 1, 2, 3, 4)	12	10	10/10/2011, 11:12
6. Canal tempestade Autor: Elvira Morais (Pág. 1, 2, 3, 4)	83	3866	12/10/2011, 18:39

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The 2013 program promises to be better than ever and will feature key industry figures and renowned experts in their field.

Program topics will include: changes in media consumption technology and behavior; public and private broadcaster strategies; spectrum issues; OTT + CDN technology; LTE, mobile video; Second Screen technologies; Cloud TV; video coding and HEVC; UHDTV; 3DTV and of course updates on a multitude of DVB standards. More details can be found on the DVB World website.



1

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HENZHEN JIUZHOU ELECTRONICS CO., LTD.



1. In the Jiu Zhou lobby: Android Product Manager Yongjun Zhang (left), TELE-audiovision Editor-in-Chief Alexander Wiese (center) and Demi Tao (right) from Jiu Zhou'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.

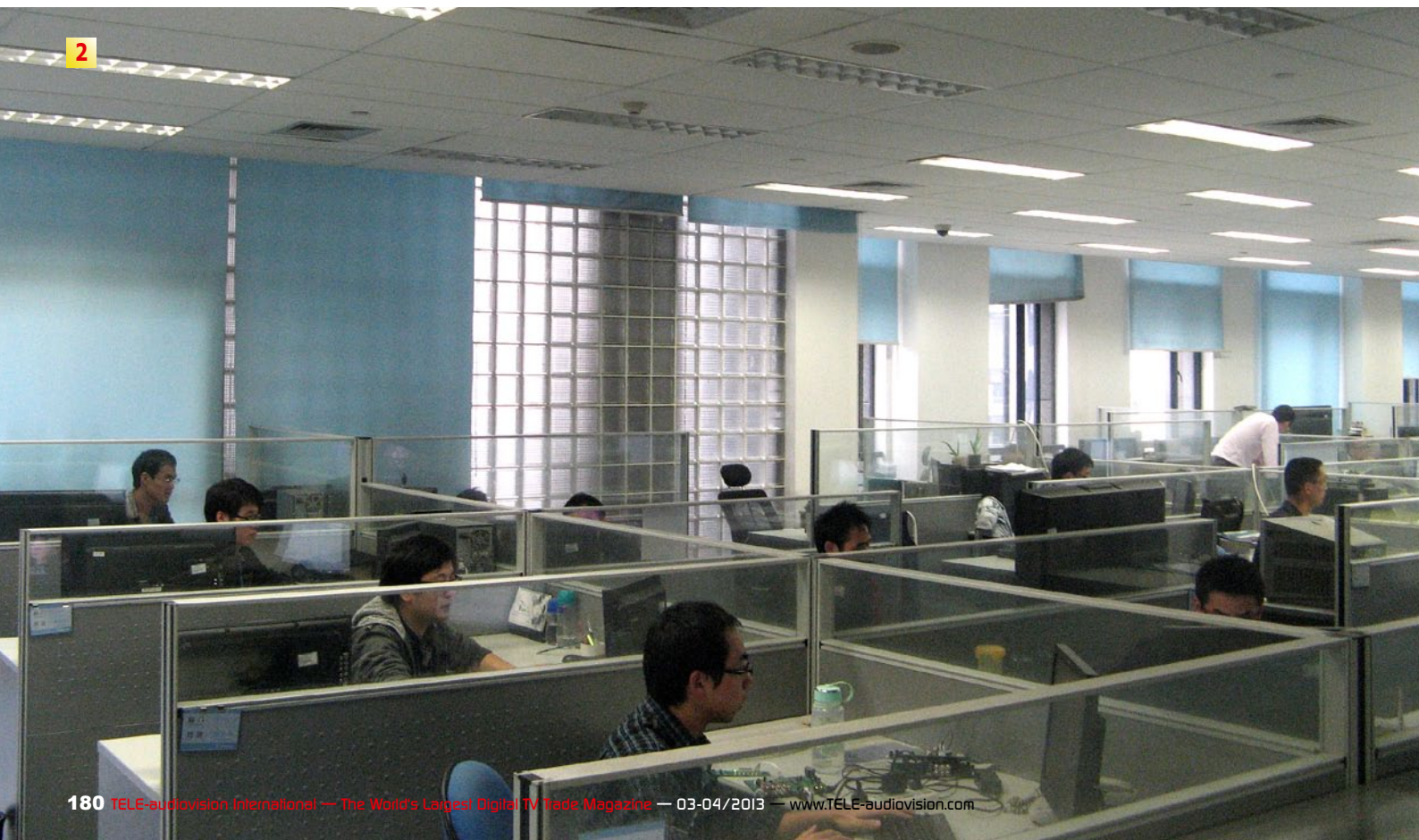
ucts together with 15 engineers. He tells us: "We started developing an Android based receiver back in 2011 and this was with 10 engineers." The first receiver came out in 2012, the one we introduced in the 11-12/2012 issue. "A

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-

2



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

riety 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

3

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

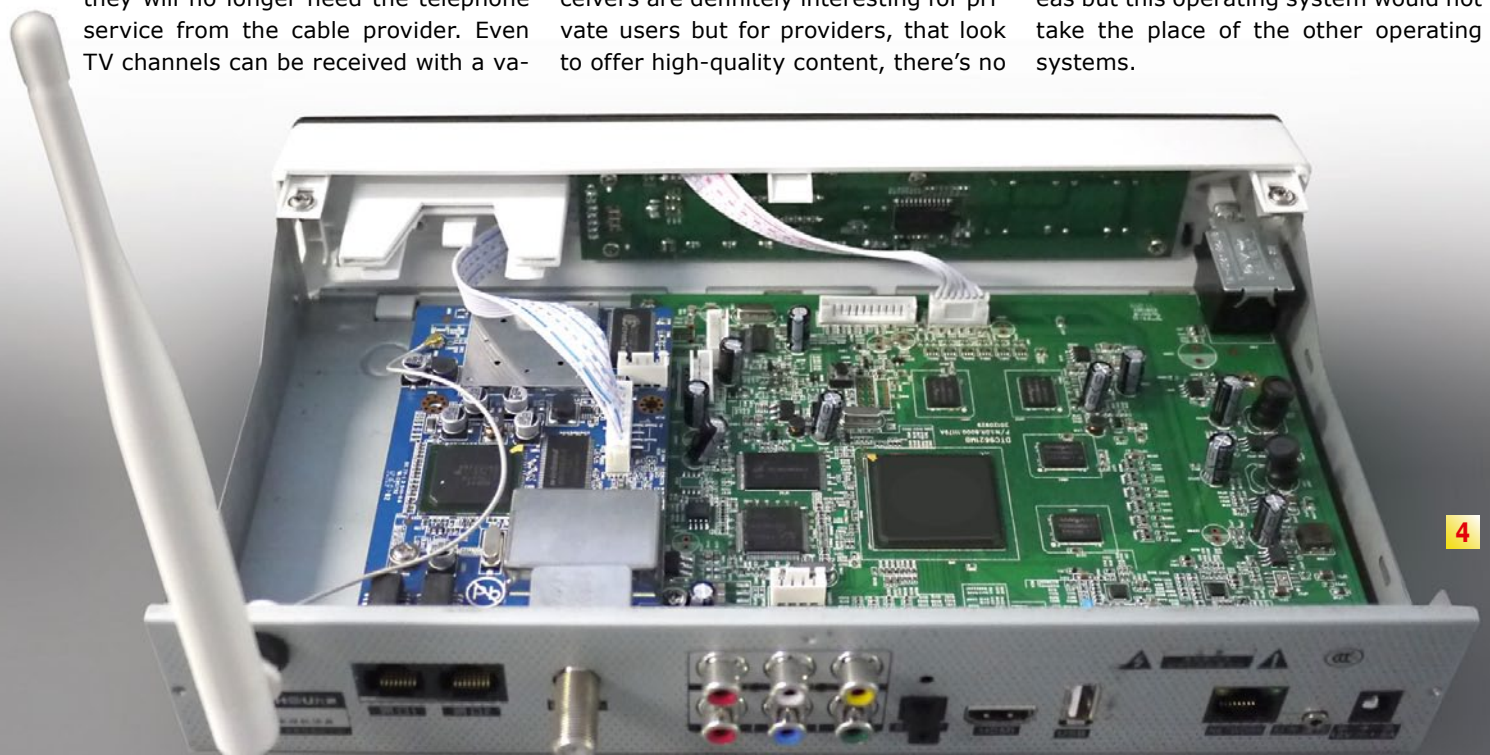


from cable operators will no longer be needed. As a result, in the eyes of cable operators, Android won't be of any use to them. "Many of the cable operators want to offer their Triple Play service which includes TV, telephone and Internet", explains Yongjun Zhang, "but in the case of an Android box, 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 va-

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

cable operators if they were to offer lots of elaborate features. And that's exactly what the Jiu Zhou 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.



4

WORLD

of Digital TV Companies

A Listings of all Company Reports published by TELE-audiovision (aka TELE-satellite) International Magazine
 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)

	<i>Company</i>	<i>Country</i>	<i>City</i>	<i>Main Personalities</i>
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	HORIZON	UK	Harlow	John McLoone, Robert Sydee

D LIST

Companies Reviews

Magazine in recent years.

Do not cooperate with those companies marked „recommended“ in last column of list.

TELE-audiovision Company Report

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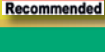
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	Company	Country	City	Main Personalities
	HORIZON	UK	Harlow	Paul Pickering
	HORIZON	UK	Harlow	Paul Pickering, John McLoone
	HORIZON	UK	Harlow	Paul Pickering
	HUBER+SUHNER	Switzerland	Herisau	Patrick Zaina, Othmar Fuchs
	INFOSAT	Thailand	Bangkok	Jiraporn Tangpiroontham
	INFOSAT	Thailand	Bangkok	Niran Tangpiroontham
	INFOSAT	Thailand	Bangkok	Niran Tangpiroontham
	INPA	Turkey	Istanbul	Ugur and Nurullah Kaki
	INVACOM	UK	Stevenage	Ivan Horrocks
	IPOINT	Hungary	Budapest	Andor Pasztor, Zoltan Korcsok
	JIUZHOU	China	Shenzhen	Huang Wei, Linda Lee
	JIUZHOU	China	Shenzhen	York Xie
	JIUZHOU	China	Shenzhen	Huang Wei
	JIUZHOU	China	Shenzhen	Zhang Enyong
	JIUZHOU	China	Shenzhen	Huang Wei
	JIUZHOU	China	Shenzhen	Jimmy Zhang
	JIUZHOU	China	Shenzhen	Yongjun Zhang
	KAIFA	China	Shenzhen	Jackie Yan
	MFC	USA	Syracuse	Carl Fahrenkrug, Sandy Nelepovitz
	MOTECK	Taiwan	Taipei	Gary Wu, Gerald Ku
	MTI	Taiwan	Taipei	Eugene Wu
	NETUP	Russia	Moscow	Ablyay Ospan, Evgeniy Makeev, Konstantin Emelyanov
	PANODIC MICO	China	Shenzhen	You Zhen Yu, Alan Yu
	PREVAIL	China	Hangzhou	Xu Quanhai, Nocy-xu
	PROMAX	Spain	Barcelona	José-Maria Clotet
	SATBEAMS	Belgium	Brussels	Alexander Derjugin
	SATELLITEGUYS	USA	Hartford	Scott Greczkowski
	SAT-LINK	China	Quanzhou	QingZhang Lin
	SATSOUNDS	Belgium	Brussels	Stefaan Cornelis
	SATSON	Belgium	Brussels	Stefaan Cornelis, Didier Debey
	SEATEL	UK	Southampton	PeterBroadhurst
	SEATEL	USA	Concord	Lorna Brady Glover
	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
	SOWELL	China	Shenzhen	Eagle Chain
	SOWELL	China	Shenzhen	Eagle Chain
	SPAUN	Germany	Singen	Kevin Spaun
	SPAUN POWER	Germany	Singen	Kevin Spaun
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Company	Country	City	Main Personalities
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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CISS	Singapore	Singapore	Lim ee Cheong
CLARK	Netherlands	Rotterdam	John Kamp
COMINTOUCH	UAE	Dubai	Mohan Kumar
COSMOSAT	Argentina	Buenos Aires	Ricardo
COWMIX	USA	Phoenix	Jeremy Tieman
DOEBIS	Germany	Mundersbach	Rainer Werking
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DVBSHOP	Germany	Munich	Axel Hundt
ECHOLINK	UAE	Dubai	Ali Abbas
EESHOP	Netherlands	Amsterdam	Antonio Gor-gievski
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GTSAT	Luxembourg	Luxembourg	Guil Mediouni
HYPEX	UK	London	Shyv Sood, Neal
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MENNYFIX	Spain	Teneriffe	Manfred Weller
MIR ANTENN	Russia	Moscow	Rinat Gubeydullin
NANOXX	Germany	Frankfurt	Marcel Hofbauer
NASA CNS	Korea	Seoul	Shin Hui Tae
OMEGA-SAT	Brazil	Sao Paulo	Carlos Augusto de Quadros
ORSAT	China	Chengdu	Li Xiaorong
P-SAT	Hungary	Budapest	Tibor Posta
QUALITY SATELLITE	USA	San Diego	Sean Falvey
RICK'S SATELLITE	USA	Kansas City	Rick Caylor
SADOUN	USA	Columbus	Jamal Sadoun
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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Aluo-Sat China

www.aluo-sat.com

Consulting
Distribution

Turnover
US\$ 1-5mio

Employees
5-10

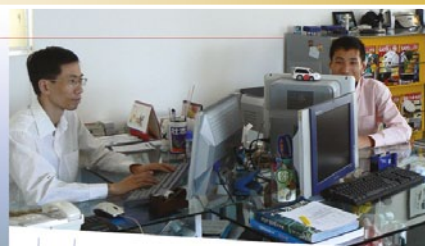


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COMPANY REPORT | Satellite Consultant, China

Aluo-sat Knows Everybody!

Somebody active in the satellite field in China can hardly get around meeting Luo Shi Gang sooner or later. Not only because he's been distributing TELE-satellite in China for many years, but also because he is a high-profile figure in many other satellite areas as well. Since China is entering the DTH age in 2009 now is a good time for visiting Luo Shi Gang in his office in Shenzhen.



range at Tia Heng from Russia at the time. From that moment on he was hooked to satellite reception. He soon started to write articles for the weekly "Electronic News" which at that time was the only available publication on the topic of satellite technology.

Today, he employs a staff of seven. They are in charge of receiving, testing, repairing and installing satellite receivers, one employee runs a satellite shop in Hong Kong and another person is looking after sales and distribution. And not too long ago, Luo Shi Gang started to distribute products from select quality manufacturers such as Changfeng for digital terrestrial TV (DTH-TV), the channels of which are broadcasted from Hong Kong but can be received perfectly in Shenzhen as well.

"We serve and work as well as we can."

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Antiference UK

www.antiference.co.uk

Manufacturer of TV
Antennas and Accessories

Turnover
US\$ 10-25mio

Employees
100-250



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COMPANY REPORT | Antenna and HDMI Manufacturer, UK

75 Years of TV Antennas from Antiference



- Manufacturing TV antennas since 1937
- Provides all the components needed for TV reception
- Expanding into HDMI distribution, as well as wireless solutions
- Expanding distribution network to the European market
- Offers their own products as OEM and private label

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Azureshine Taiwan

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Manufacturer
of Professional Dishes

Turnover
US\$ 5-10mio

Employees
50-100



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COMPANY REPORT | Satellite Dish Manufacturer Azure Shine

Dishes in Focus Alexander Wies



Alex Wies started his satellite dish manufacturing company Azure Shine back in 1988 with 15 employees. He already had experience in the manufacture of satellite antennas. He had previously worked for a dish manufacturer and then started his own company by opening the first branch in Taiwan. The company is now a leading manufacturer of satellite dishes in Taiwan. The company is now a leading manufacturer of satellite dishes in Taiwan. The company is now a leading manufacturer of satellite dishes in Taiwan.



working on product improvements. He made full use of his experience. The company is now a leading manufacturer of satellite dishes in Taiwan. The company is now a leading manufacturer of satellite dishes in Taiwan. The company is now a leading manufacturer of satellite dishes in Taiwan.



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Boiingsat China

www.boiingsat.com

LNB Manufacturer

Turnover
US\$ 10-25mio

Employees
100-250



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COMPANY REPORT | LNB Manufacturer Boiingsat, China

Boiingsat's Numerous Production Facilities

- Three Production Locations in Zhuhai/China
- Large Sales Expansion in South America
- In the Works: LNB with Two Feed Rings

LNB Manufacturer Boiingsat operates multiple production facilities in Zhuhai, China, a city with 1.5 million inhabitants located in western Guangdong Province. Zhuhai sits right next to Macao and is already fast growing in attracting more and more satellite component manufacturers.

But one of the first of these manufacturers was Boiingsat. It has been in existence since 1987. However it all really started in Taiwan. Huasen Cheng, General Manager of the company who was also born in Taiwan, explains to us how it all began.

"In 1988 I was a Production Manager at an LNB manufacturer in Taiwan, but things didn't go exactly as I had planned as in 1990 I along with three investors founded Boiingsat in Zhuhai, China".

remembers Huasen Cheng. "One of the investors here in the mainland moved on to other things but remained. Number One, as it was and is in charge of production".

The main reason for moving from Taiwan to China was obviously the costs. Wages in China are still lower than that of Taiwan. "But we still have a small R&D office in Taiwan with three engineers", says Huasen Cheng. "This for the technical expertise in Taiwan is somewhat more advanced than in Mainland China at least as far as high frequency LNBs are concerned".

"Back then we started with 30 employees and produced 20,000 C-band LNBs every month", he says looking back. In 2002 Boiingsat started a second production plant which they used to manufacture 240,000 C-band LNBs every month.

2004 became rather for Boiingsat. "We sold our first production facility and from both a cost and a market point of view we moved to Kaifeng, Henan". Here with 300 employees, production increased to 300,000 C-band LNBs per month and 150,000 Ku-band LNBs per month.

The next expansion step took place in 2008. "We constructed our third factory this time for production of direct-feed LNBs", says

Cheng. "One of Boiingsat's strong features is that it is located in Zhuhai, where 95% of the LNBs are produced. The company's administrative offices are also in Zhuhai".



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www.devisertek.com

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Dishpointer UK

www.dishpointer.com

Information Website and Software Programming



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Digital TV Forum Website and Software Programming



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COMPANY REPORT Digital TV Website DVBCN.com, China

DVBCN
LIVE

- Known by every digital TV company in China
- Provides all information regarding digital TV
- Expanding in the areas of recruitment and software development
- Focusing in future technologies such as DTT and IPTV
- Working on international expansion

Largest Digital TV Website in China: DVBCN.com

DVBCN, the office building, is located in the center of Beijing. The building is a modern, multi-story office building with a glass and concrete facade. The building is located in the center of Beijing, near the city center. The building is a modern, multi-story office building with a glass and concrete facade. The building is located in the center of Beijing, near the city center.

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GlobalInvacom
UK

www.globalinvacom.com

Manufacturer of Fibre Optic Products



Turnover
US\$ 5-10mio

Employees 50-100

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PRODUCT NEWS | Fibre Optic Products |

GloballInvacom Expands Product Palette

The British company GloballInvacom invented the optical LNB, TELE-satellite reported on this futuristic invention back in its 04-05/2008 and 08-09/2009 issues.

In the meantime, GloballInvacom has expanded its optical LNB product palette. TELE-satellite, in the 04-05/2010 issue, introduced the newest version, a PFA optical LNB, (until then optical LNBs were only available for off-antenna) and an expansion of the terrestrial optical LNB system in which the transmission of both satellite and terrestrial signals on two frequency ranges are carried on one optical cable.

Real progress hasn't come as a step at the TELE-satellite 04-05/2010 issue, there have been new editions and expansions of the optical LNB system. Jan Horvath, Director of Sales and Marketing for GloballInvacom, explains on the latest in optical cables, namely a dexting/direct burial cable.

"This cable can be used, for example, in two locations where the first location with the satellite antenna is within a radius of 100 metres and the second location might be down a street. The cable is completely underground between the two locations and is completely invisible. It's particularly designed to be buried for long stretches underground."

GloballInvacom's Technical Support Richard Adams says: "It's like having a direct burial cable with a 100m length. It can be buried underground in a trench, 5 cm in cross-section depth is sufficient according to standards."

John Horvath, Director of Sales and Marketing for GloballInvacom

Not only is the cable especially resistant to climatic conditions but it can also be used in the ground, to transport the signal from the antenna to the ground, where it can be performed at a point where the cable was buried."

"In outdoor use, cables such as 'in jacks', explains Jan Horvath while glancing at the new LNB satellite available in 2.5, 3 and 8 output versions. "The smaller models need to connect the professional cables," says Horvath. The other satellite versions were fitted with fixed connector cables. This new version provides greater flexibility for installers by making it easier to match cable lengths to each specific application."

This variation is best called where the distribution is not done vertically, that is from one connection to the next one, but rather from one central location on all different directions. It is a case in which you'll need a new terrestrial signal source as well as optical connectors."

"This variation is best called where the distribution is not done vertically, that is from one connection to the next one, but rather from one central location on all different directions. It is a case in which you'll need a new terrestrial signal source as well as optical connectors."

"To top it all off, Jan Horvath reminds us that GloballInvacom is in the process of expanding its distribution network. "We still rely on our sales mostly in Europe and the Middle East," he explains. "But now we are working on expanding into Asia."

GloballInvacom already has a distribu-

John Horvath, Director of Sales and Marketing for GloballInvacom

tor in a satellite distribution that connects even more sophisticated satellite receivers at GloballInvacom's headquarter in France.

GloballInvacom is currently expanding its product variations so that it is

always better positioned to upgrade even more sophisticated satellite receivers. In this way the superior satellite system always fits the customer and users.

GloballInvacom modified the optical signal with connector cables. The optical connection cables can be directly joined into the splitter.

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



Golden Media Germany

www.cynextra.com

Manufacturer of Digital TV Receiver

Turnover
US\$ 1-5mio

Employees
10-25



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COMPANY REPORT | Manufacturer and Distributor Golden Media, Germany

New On The Market: Golden Media



Golden Media's headquarters in Rudersberg near Stuttgart, Germany. 10 employees work here in a 500 Sqm building. The General Manager Rolf Schatz lives in a house just to the left of the office.

Shortly after you open this issue of TELE-satellite, a young company will be celebrating its first birthday, namely Golden Media, based in Rudersberg near Stuttgart in Germany. It was only first founded in September 2009 and has had surprising growth since then. We wanted to find out the secret to their quick success.



In one of the many small towns that surround Stuttgart that have made small but very hard working businesses, you will find three satellite antennas in front of an administrative building that looks like a house. This is the headquarters of a service company. That company is Golden Media.

The appearance of the building hints at the company name but the name "Golden Media" is not at all obvious. In the middle of the building, the company is working right. Golden Media developed a concept, where a manufacturer and distributor can manage to have success even in times where price is becoming more and more important.

Who better to explain this company concept than the General Manager Rolf Schatz. He explains to us: "We are working very closely with a manufacturer that produces their products in the Targu Jiu area in Romania."

GOLDEN Media

Golden Media has discovered a very interesting niche: a production location near Europe but with lower costs than outside of Europe. Rolf Schatz has some other reasons for his business strategy: "The space here not only has very short transport distances but also has the flexibility to modify contracts with very short notice. This wouldn't be possible if we had to ship by sea, a method that would take several weeks." And there's even another reason: "We can monitor quality with our own engineers on site since travel times between Germany and Romania are minimal."

The business concept is interesting and the success there has since the founding of the company proved the strategy was correct. With just 10 employees Golden Media manages sales of nearly 100,000 receivers in just their first year.

Direct Schatz also notes that, "We're selling MPEG4 models, which is standard where terrestrial is used in MPEG2 because more or less MPEG4 will not find its way there and customers want to be sure they get the right product."

In addition to satellite, terrestrial and cable receivers, Golden Media also provides accessories such as cable cables, satellite dishes and LNBs. At the moment, Golden Media is very busy. Rolf Schatz, "We even have some LNBs for the Canal and Ku-band," comments Rolf Schatz. "We're looking at our next LNB for the next generation." According to Rolf Schatz, "we're already sold 250,000 LNBs in our first six months."

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



GOOSAT China

www.goosat.com

High Quantity Manufacturer

Turnover
US\$ 100-150mio

Employees
500-1000



Read Full Report

COMPANY REPORT | Receiver and TV Manufacturer: GOOSAT, China

GOOSAT's New Super-Modern Production Facility



- Producing to the highest technical standards
- 200 R&D employees
- 3D development
- Manufacturing capacity of several million receivers per year
- Expansion into TV production

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



Horizon UK

www.horizonhge.com

Manufacturer of Signal Meters

Turnover
US\$ 2-5mio

Employees
10-50



Read Full Report

FIRMEN REPORT | Digital TV Meter Manufacturer, UK



Horizon on the Way Up

- Numerous new products for new DVB sectors
- Exports to every country as an OEM and under their own name
- Focusing expansion to emerging countries such as South Africa and in South America
- Specializes in easy to use analyzers for installers

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



Satbeams Belgium

www.satbeams.com

Satellite Information
Website and Software
Programming

Turnover
US\$ 0.5-1mio

Employees
2-5



Read Full Report

SOFTWARE REPORT | Satellite Footprints |

Satbeams
Die Website für Profinutzer

Hohes Ziel hat sich Alexander Derjugin gesetzt. Er ist Gründer und Betreiber der Website satbeams.com und will damit vor allem die professionellen Nutzer erreichen. Das ist ein ambitioniertes Ziel und deswegen wollten wir von ihm persönlich wissen, wie er dieses Ziel erreichen will. In Brüssel, wo er zuhause ist, treffen wir Alexander Derjugin.

Zunächst wollen wir wissen, was er überhaupt zum Thema Satellitenprogrammierung macht. Er erzählt uns, dass er bereits vor der IT-Welt war. Er war ein großer Fan von Satelliten und hat sich in den 1990er Jahren mit der Entwicklung von Satellitenprogrammen beschäftigt. In den 2000er Jahren hat er sich mit der Entwicklung von Satellitenprogrammen beschäftigt. In den 2000er Jahren hat er sich mit der Entwicklung von Satellitenprogrammen beschäftigt.

Thema: Satellitenprogrammierung. Alexander Derjugin ist ein Experte für die Entwicklung von Satellitenprogrammen. Er hat sich in den 1990er Jahren mit der Entwicklung von Satellitenprogrammen beschäftigt. In den 2000er Jahren hat er sich mit der Entwicklung von Satellitenprogrammen beschäftigt.

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SATBEAMS

Die Website satbeams.com ist die beste Adresse für die Entwicklung von Satellitenprogrammen. Sie bietet eine Vielzahl von Tools und Ressourcen für die Entwicklung von Satellitenprogrammen. Die Website ist in mehreren Sprachen verfügbar und bietet eine Vielzahl von Tools und Ressourcen für die Entwicklung von Satellitenprogrammen.

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www.TELE-audiovision.com/10/11/satbeams



Sat-Link China

www.sat-link.com.cn

Signal Analyzers
for Digital TV

Turnover
US\$ 5-10mio

Employees
250-500



Read Full Report

COMPANY REPORT | Digital Meter Manufacturer SAT-LINK, Quanzhou, China

Signal Analyzers from SAT-LINK

- Only five years on the market
- Focusing on the signal analyzer product group
- Offers signal analyzers in four function classes and four price classes
- Optimizes signal analyzers for every region
- Brand new: combo analyzers for DVB-S2 and T2 with fast spectrum display

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



Satson Belgium

www.satson.com

Special Product
for HDMI Distribution

Turnover
US\$ 0.5-1mio

Employees
2-5



Read Full Report

COMPANY REPORT | HDMI Distributor SATSON, Belgium

The HDMI Professionals from SATSON

- Conquers the new HDMI distribution niche with their specialized products
- Conceives their own HDMI products
- Distribution of HDTV signals in private homes with HDMI Extenders
- Compatible with coaxial cable as well as with Ethernet cables

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



SatGuys USA

www.satelliteguys.com

Satellite Information
Website and Forum

Turnover
US\$ 0.5-1mio

Employees
5-10



Read Full Report

COMPANY REPORT | Satellite Forum Operator Scott's SatelliteGuys, USA

Scott's SatelliteGuys

- Provides assistance with technical satellite reception questions
- Founded by Scott as a non-profit forum
- All advertising income is reinvested in better technology
- New is the use of the forums through Customer Service employees of digital TV companies

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



Skyworth China

www.skyworthdigital.com

High Quantity
STB Manufacturer

Turnover
US\$ 200-300mio

Employees
2000-3000



Read Full Report

COMPANY REPORT | Receiver Manufacturer SKYWORTH, China

SKYWORTH is Expanding

One of the larger receiver manufacturers in China is SKYWORTH. They've consistently been in expansion mode and have managed to make a phenomenal entrance into the South American marketplace in 2010: a large contract with the government of Argentina involving 400,000 receivers for the terrestrial ISDB-T standard resulted in SKYWORTH's intense production activity. "All these receivers have already been shipped," we learn from Jack Jiang, Sales Director of SKYWORTH's receiver division. The company's official name is Shenzhen SKYWORTH Digital Technology Co., Ltd.

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www.TELE-audiovision.com/11/03/skyworth



SmartWi Denmark

www.smartwi.net

Manufacturer
of Wireless Card Reader

Turnover
US\$ 1-2mio

Employees
5-10



Read Full Report

COMPANY REPORT | Wireless Card Reader Producer SmartWi

SmartWi to Conquer Provider Market

Readers of this magazine have been familiar with wireless card reader manufacturer SmartWi for years. In TELE-satellite issue 06-07/2007 we published the first report on this Danish company which has come up with a glorious idea: How about transmitting data from a pay TV provider's subscription card to a second card in the same household? All of a sudden your viewing pleasure can be extended from the living room all the way to the bedroom, den or any other room at your place. Pay TV wherever you like - and a smart idea like that deserves a proper name too: smart Wi, or SmartWi in short.

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www.TELE-audiovision.com/10/11/smartwi



Sowell China

www.sowell-tech.com

Digital TV STB Manufacturer

Turnover
US\$ 50-100mio

Employees
50-100



Read Full Report

IPTV is Future

Receiver Manufacturer Sowell, China

- Already operating the first IPTV project
- 3D planned for the future
- Integration of TV reception with IPTV
- 60% of all Sowell receivers are already HD

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



Spaun Germany

www.spaun.com

High Quality
Accessories Manufacturer

Turnover
US\$ 10-25mio

Employees
50-100



Read Full Report

Spaun at 40 years
Moving into the new decade with many new products
Alexander Wieser

Well, actually, the title isn't quite correct: the company Spaun doesn't celebrate its 40th anniversary until 2019. But Spaun is so full of energy and is getting ready to introduce a whole range of new products in their anniversary year that we simply couldn't wait to find out about this company's long history.

Almost every TELE audiovision reader will associate the name Spaun with high-quality satellite distribution components. "Quality made in Germany" is not just a slogan, it's a reality. Spaun's mission is to ensure that the quality of their products is always top of the range.

But more than that, let's take a closer look at Spaun itself. This is a company that can be found in extreme mountainous Germany. The founder of the company, that today has nearly 100 employees, is Friedrich Spaun. He explained to us how it all started: "It all began for me in my home town in 1979. From the very start, I wanted to produce high-quality satellite components. It quickly became clear that many of the satellite components available at the time were of poor quality. I decided to produce my own components. For many years we were a reference point for the manufacture of these parts."

Then the production plan in a related branch, but that all changed in 2009. "Then, when we built our production facility in Singen, we had to sell out of the old building and move into a new one. This was a great opportunity for us to expand our production capacity. We have now moved into a new building, which is a great step for the manufacture of these parts."

At the end of the interview, Friedrich Spaun is happy to see the company's growth and the quality of its products. He says: "We are proud of our products and the quality of our work. We are looking forward to the future and the many new products we will be introducing in the coming years."

www.TELE-audiovision.com/08/03/spaun



Spaun Power Germany

www.spaun.com

Manufacturer
of Power Supplies

Turnover
US\$ 2.5-5mio

Employees
25-50



Read Full Report

Power Supply Units Made by SPAUN – guaranteed!

Every multi-switch and every amplifier comes with one, and of course every receiver has one, too: a power supply unit which is required to connect the device to the mains. It has become such an everyday component of virtually any electronic device that we have stopped thinking about how it actually works. SPAUN, on the other hand, has given it a great deal of thought and has arrived at a remarkable conclusion. Kevin Spaun is the managing director of SPAUN, one of the most renowned quality manufacturers of multi-switches and other accessories for satellite distribution. He tells us what it's all about.

In the 40th anniversary year of the company, SPAUN is celebrating its long history. The company has been producing high-quality satellite components for over 40 years. The company's mission is to ensure that the quality of their products is always top of the range.

But more than that, let's take a closer look at SPAUN itself. This is a company that can be found in extreme mountainous Germany. The founder of the company, that today has nearly 100 employees, is Friedrich Spaun. He explained to us how it all started: "It all began for me in my home town in 1979. From the very start, I wanted to produce high-quality satellite components. It quickly became clear that many of the satellite components available at the time were of poor quality. I decided to produce my own components. For many years we were a reference point for the manufacture of these parts."

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www.TELE-audiovision.com/10/11/spaun

Satellite Dish Mass Manufacturer

**Employees
250-500**



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PC Card Manufacturer

Employees 10-25



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www.TELE-audiovision.com/11/03/tenow



Analyzer Software and Programming

Employees
1-5



[Read Full Report](#)



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

The FTA Fan

■ 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.

- *Runs an Internet list of all FTA channels in North America*
- *Monitoring station with a total of five satellite dishes*
- *Recently active in IPTV*
- *Provides easy-to-understand satellite reception tips on his website*



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



A man with grey hair, glasses, and a mustache, wearing a yellow short-sleeved button-down shirt and olive green cargo shorts, is smiling while working on a large white satellite dish antenna. He is holding a blue LNB (Low Noise Block) and a white cable. The antenna is mounted on a wooden frame in a grassy backyard. In the background, there are trees and a fence.

■ 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 his 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



2



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.

SatelliteGuys.US

America's Satellite Information Source

Proudly Presents:

SATMAPS!

Where does the satellite signal go?
Find out at SATMAPS!

Real Satellite Beam Data for
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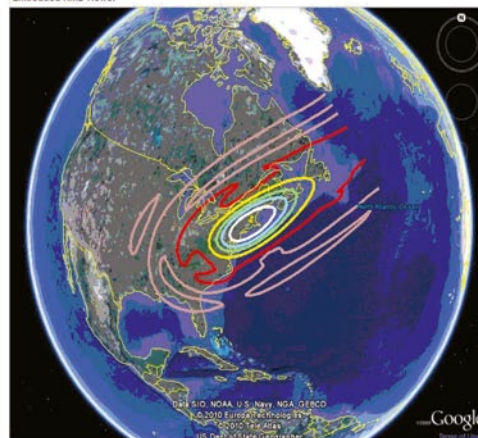
Find SATMAPS online at:
<http://satmaps.satelliteguys.us>

SatelliteGuys.US

FCC Satellite Maps - Chrome, Firefox or Safari required to view and sort Spreadsheet. IE requires adding "https://www.google.com" to IE Trusted Sites.

Echostar 7 119W S13 New Haven

Embedded KML Viewer

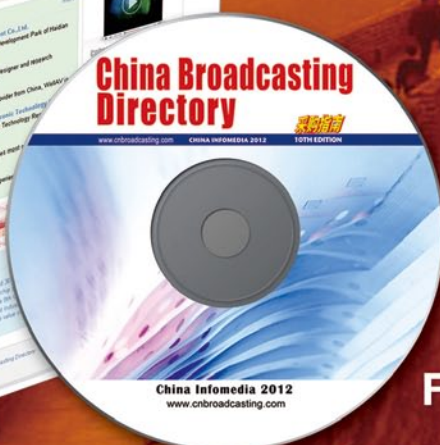


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that he even started his own TV channel on a test basis. "For several weeks now I've been offering a TV channel with copyright-free content via the company TVU Networks." This compa-

ny (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



www.dvbcn.com

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

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DTMB Television CMMB-network
DVB-T MonitoringSTB-Design
Internet TV-Software
radioMDTV CPU Digital
IPTV CATV



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 ...



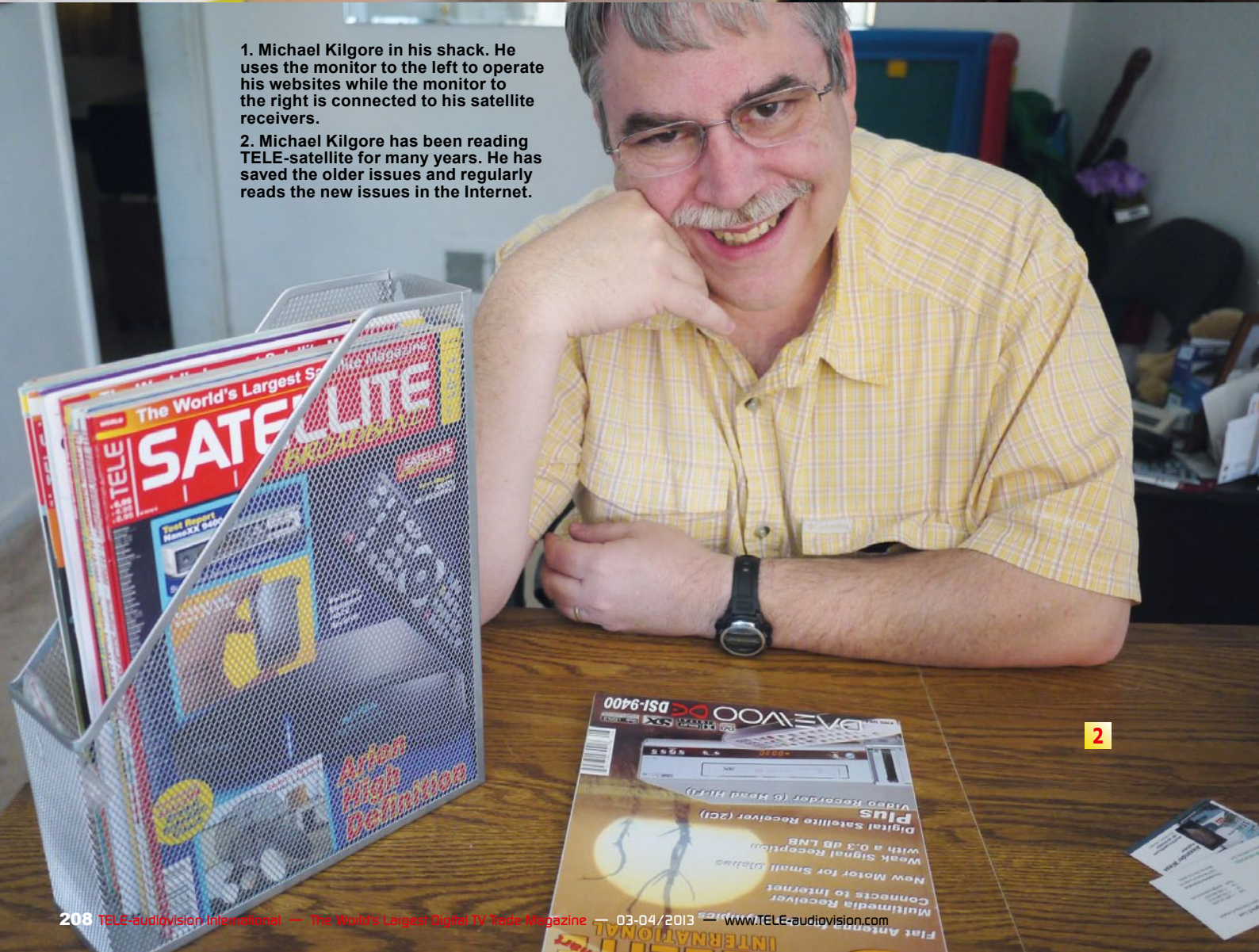
www.ftatv.com.ar



1

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.



2

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!

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.

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.



References



www.dishpointer.com
info@dishpointer.com

The best source of information for TVRO fans in China



www.ASIATVRO.com

ASIA TVRO Always up to date





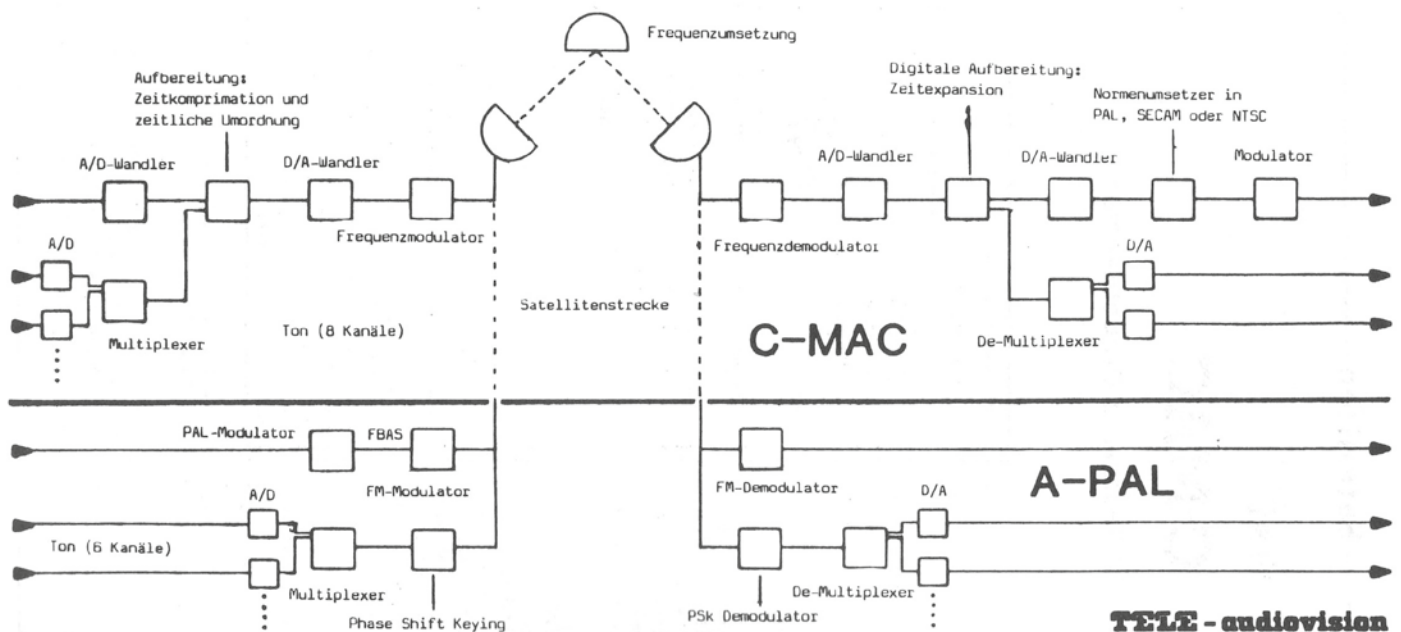
30 Years Ago

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 British 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.



GEGÜBERSTELLUNG C-MAC GEGEN A-PAL

Das Blockschaftbild 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 Zeitkompression 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

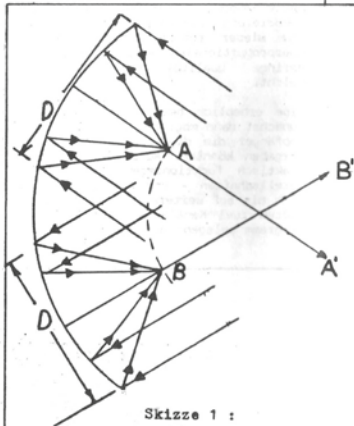
In den USA ist eine Art aufgeschnittene Parabolantenne entwickelt worden, die den gleichzeitigen Empfang einer Vielzahl von Satellitensendern ermöglicht. Über eine ähnliche Antenne für das europäische 12-GHz-Satellitenfernsehen ist uns bislang noch nichts bekannt.

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 erfindend, 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) anzufassen.

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'

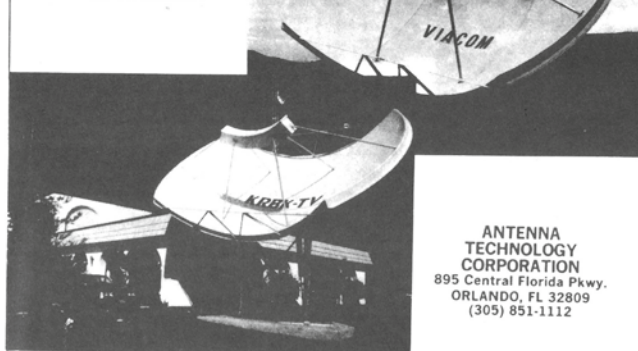
B = Brennpunkt des anderen Satelliten

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

ATE



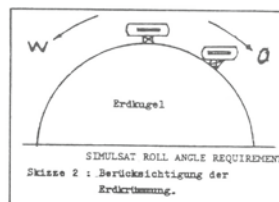
ANTENNA
TECHNOLOGY
CORPORATION
895 Central Florida Pkwy.
ORLANDO, FL 32809
(305) 851-1112

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 Bogeminuten = 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 Erregerschleife mühelos angezapft werden. Wechselt einer der Programmierer den Satelliten, so braucht auch nur der Platz des Erregers auf der Erregerschleife 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 Polarisationssebene zu erhalten (Skizze 2).

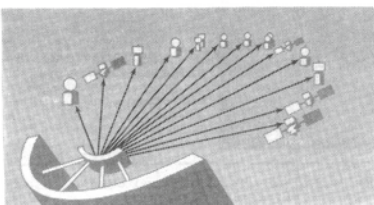
Da in Europa im 4 GHz-Band noch recht wenig empfangen werden darf, ist der Einsatz einer derartigen Antenne noch unrentabel. Interessante Transponder wären die von Spanien (34,5 Grad West), Portugal (24,5 Grad West), UdSSR (Gorizont-Serie) und einige nordafrikanische Staaten. Interessant wird eine derartige 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, betrieben.

RB

Technische Daten der Simulsat-5-Antenne der Firma ATE, 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
Reflektorgroße	5 x 7 Meter
Gewicht	1,5 Tonnen
max Windgeschwindigkeit	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).

Die Entwicklung der europäischen Regionalnetze

Eine Dokumentation von Erhard Schwarz Teil 5



DM 8,50 ÖS 72,- SFr 8,50 B 9318E ISSN 0931 4733 13. Jahrgang Nr. 86

TELE satellit

EUROPE'S SATELLITE MAGAZINE 3/93

Microelectronic Neuhaus

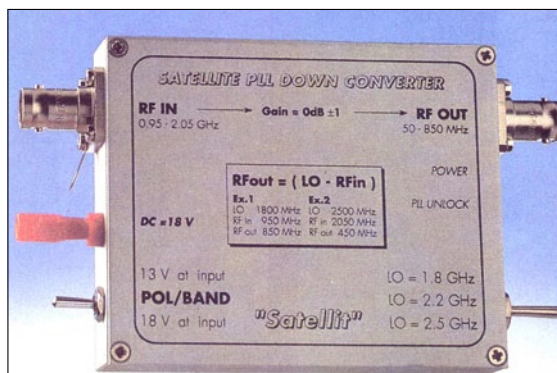
SATELLITENTECHNIK AUS THÜRINGEN



BLAUPUNKT: FLACHANTENNE A60-F
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GERÄTE VORSTELLUNG

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Philips Consumer Electronics



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PROGRAMM
JETZT ANFORDERN.

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Stereo Satellitenempfänger & Antennenpositionierer



Optimale Qualität, schönes Design, Spitzenleistung und preisgünstig. Der EchoStar SR-700 bietet Ihnen alles, was Sie von der neuesten Ausführung aus der EchoStar Produktreihe erwarten. Die Bedienung des EchoStar SR-700 ist ganz leicht. Die Fernbedienung ermöglicht es Ihnen, einen der 65 vorgeprogrammierten Ton- oder Fernsehkanäle auszuwählen oder neu zu programmieren.

Dank seines hervorragenden Designs und niedrigen Preises ist der EchoStar SR-700 ein Spitzenreiter auf dem gegenwärtigen, wettbewerbsorientierten Markt. In Verbindung mit dem EchoStar AP-700 Antennenpositionierer bietet sich Ihnen eine kostengünstige Lösung für den Empfang von mehr als 200 Fernseh- und Radioprogrammen.

Für eine Demonstration setzen Sie sich noch heute mit der EchoStar Verkaufsstelle in Ihrer Nähe in Verbindung.

ECHOSPHERE CORPORATION
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Fax: 0211-134978

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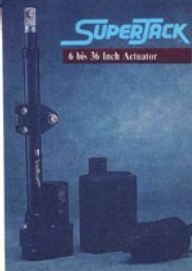
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Maspro
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ASTRA - Damit die Perspektiven von morgen schon heute Messthemata sind.

Wer Marken schafft, der schafft auch Märkte: ASTRA als bedeutendes europäisches Satellitensystem hat Potentiale erschlossen, die noch viele Entwicklungsmöglichkeiten bieten. Und das ASTRA-Satellitensystem wird 1993 noch attraktiver. Denn mit dem dritten Satelliten ASTRA 1C stehen dann Kanäle für 48 Fernseh- und noch mehr Radioprogramme bereit. Hier liegen Chancen für Fachhandel und Fachhandwerk, Chancen für Sie.

Kommen Sie zu unserem Messestand und sprechen Sie mit uns. Über aktuelle Entwicklungen und Perspektiven im Einzel- und Gemeinschaftsempfang. Wir freuen uns auf Ihren Besuch.



CeBIT'93
HANNOVER
24. — 31. 03. 1993

ASTRA ist ein eingetragenes Warenzeichen der Société Européenne des Satellites.





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 Sat-

coDX 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 mostly in English
www.freeinternetvcanada.ca

WebTV mostly in English
www.playon.tv
www.ustvnow.com
www.habu.tv
www.watchustvoverseas.com
www.tvandvideoguide.com

WebTV mostly in English
www.europa-network.com
www.whatsonthebox.net
www.tvcatchup.com

WebTV mostly in French
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www.hubb-tv.com
www.monvpn.com
www.jcvpn.com

WebTV mostly in Spanish
www.teledirecto.es
www.tutelevisiononline.com

WebTV mostly in Portuguese
www.tvportugalhd.com
www.tvtuga.com

WebTV mostly in Brazilian
www.canaistv.net
www.radios.com.br
www.assistirtvonlinegratis.tv

WebTV Genre Listings:

www.thefirstrow.eu
www.livetv.ru/en/

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WORLD



WebTV Channel Listings:

www.surfmusic.de/surftv.htm
www.glotzdirekt.de
www.witv.com
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www.onlinetv.com
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www.lookfortv.com
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www.viewmy.tv
www.livestation.com
www.freeetv.com
www.watchfomny.com
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
Kyrgyzstan
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

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Dominant System per Country

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DTMB
V: H.264
A: MPEG-4 AAC
China*
HongKong

ISDB
V: MPEG-2
A: MPEG-2 AAC
Japan

* some
V: MPEG2



		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)



- 003.1 East ▶ C-Band: RASCOM QAF 1R - Africa
- 003.1 East ▶ RASCOM QAF 1R - Africa
- 003.1 East ▶ EUTELSAT 3C - Europe
- 003.1 East ▶ C-Band: EUTELSAT 3A - EUROPE
- 004.9 East ▶ ASTRA 4A - Europe
- 004.9 East ▶ SES 5 - Europe, AFRICA
- 007.0 East ▶ EUTELSAT 7A - Europe, Africa
- 009.0 East ▶ EUTELSAT 9A - Europe
- 009.0 East ▶ EUTELSAT KA-SAT 9A - Ireland
- 010.0 East ▶ EUTELSAT 10A - Europe
- 010.0 East ▶ C-Band: EUTELSAT 10A - Global
- 013.0 East ▶ EUTELSAT HOTBIRD 13A,13B,13C - Europe, Middle East
- 016.0 East ▶ EUTELSAT 16A - Europe, Africa
- 017.0 East ▶ AMOS 5 - North Africa, Middle East
- 017.0 East ▶ C-Band: AMOS 5 - Africa, Middle East
- 019.2 East ▶ ASTRA 1KR,1L,1M,2C - Europe
- 020.0 East ▶ C-Band: ARABSAT 5C - Africa, Middle East
- 021.6 East ▶ EUTELSAT 21B - Europe, Asia, West Africa
- 023.3 East ▶ ASTRA 3B,1D - Europe
- 025.5 East ▶ EUTELSAT 25A - Europe, Asia
- 026.0 East ▶ BADR 4,5,6 - North Africa, Middle East
- 028.2 East ▶ EUTELSAT 28A, ASTRA 1N,2A,2B,2F - Europe
- 030.5 East ▶ ARABSAT 5A - Middle East
- 030.5 East ▶ C-Band: ARABSAT 5A - Asia, Middle East
- 031.5 East ▶ ASTRA 1G - Europe
- 033.0 East ▶ EUTELSAT 33A - Europe
- 033.0 East ▶ INELSAT 28 - Africa
- 034.0 East ▶ ARABSAT 2B - Middle East
- 036.0 East ▶ EUTELSAT 36A,36B - Europe, South Africa, Asia, Russia
- 038.0 East ▶ PAKSAT 1R - Pakistan, North India
- 038.0 East ▶ C-Band: PAKSAT 1R - Pakistan, India, Middle East, Africa
- 039.0 East ▶ HELLAS SAT 2 - Europe, Middle East, Asia
- 042.0 East ▶ TURKSAT 2A,3A - Europe, Russia
- 045.0 East ▶ INTELSAT 12 - India, South Africa, Middle East, Europe
- 049.0 East ▶ C-Band: YAMAL 202 - Global
- 050.5 East ▶ NSS 5 - Global
- 050.5 East ▶ C-Band: NSS 5 - Global
- 052.5 East ▶ YAHSA 1A - Europe, Middle East, Africa
- 053.0 East ▶ EXPRESS AM22 - Europe, Middle East, North India
- 055.0 East ▶ GSAT-8,ASTRA 1F - Russia
- 056.0 East ▶ BONUM 1 - East Russia
- 057.0 East ▶ NSS 12 - Europe, Russia, Africa, India
- 057.0 East ▶ C-Band: NSS 12 - Europe, Russia, Africa, India, Global
- 060.0 East ▶ INTELSAT 904 - Europe
- 060.0 East ▶ C-Band: INTELSAT 904 - Europe, Africa, Global
- 062.0 East ▶ INTELSAT 902 - Europe, Middle East
- 062.0 East ▶ C-Band: INTELSAT 902 - Europe, China, Australia, South Africa, Global
- 064.2 East ▶ C-Band: INTELSAT 906 - Europe, Africa, South India, Global
- 066.0 East ▶ INTELSAT 17 - Europe, Russia
- 068.5 East ▶ INTELSAT 7 - South Africa
- 068.5 East ▶ INTELSAT 20 - Africa, Europe, Middle East
- 068.5 East ▶ C-Band: INTELSAT 20 - Global
- 070.5 East ▶ EUTELSAT 70A - Europe, Middle East, India
- 072.1 East ▶ INTELSAT 22 - Middle East, Africa
- 074.0 East ▶ INSAT 4CR - India
- 074.0 East ▶ C-Band: INSAT 3C - India
- 075.0 East ▶ ABS-1 - Europe, Asia, Middle East
- 075.0 East ▶ C-Band: ABS-1 - Global
- 076.5 East ▶ APSTAR 7 - China
- 076.5 East ▶ C-Band: APSTAR 7 - Global
- 078.5 East ▶ THAICOM 5 - Thailand
- 078.5 East ▶ C-Band: THAICOM 5 - India, China, Thailand, Global
- 080.0 East ▶ C-Band: EXPRESS MD1 - Russia, North India
- 080.0 East ▶ EXPRESS AM2 - Russia, North India
- 083.0 East ▶ INSAT 4A - India
- 083.0 East ▶ C-Band: INSAT 4A - India, Middle East
- 085.0 East ▶ INTELSAT 15 - Middle East
- 085.0 East ▶ HORIZONS 2 - Russia
- 086.5 East ▶ KAZSAT 2 - Russia
- 087.5 East ▶ C-Band: CHINASAT 5A - China, India, Middle East
- 088.0 East ▶ ST 2 - India, Malaysia
- 088.0 East ▶ C-Band: ST 2 - India, Thailand
- 090.0 East ▶ YAMAL 201 - Russia, North India
- 090.0 East ▶ C-Band: YAMAL 201 - Russia, North India
- 091.5 East ▶ MEASAT 3 - Malaysia, South Asia
- 091.5 East ▶ C-Band: MEASAT 3 - Global, Thailand, Australia, East Asia
- 091.5 East ▶ MEASAT 3A - Malaysia, South Asia
- 091.5 East ▶ C-Band: MEASAT 3A - Global
- 092.2 East ▶ CHINASAT 9 - China
- 093.5 East ▶ INSAT 3A,4B - India
- 093.5 East ▶ C-Band: INSAT 3A,4B - India, Middle East
- 095.0 East ▶ NSS 6 - India, Middle East, South Africa, North East Asia, Australia
- 096.5 East ▶ C-Band: EXPRESS AM 33 - Asia, Russia, China
- 100.5 East ▶ ASIASAT 5 - East Asia, India, Middle East, Thailand
- 100.5 East ▶ C-Band: ASIASAT 5 - Global
- 103.0 East ▶ C-Band: EXPRESS A2 - Russia, China
- 105.5 East ▶ ASIASAT 3S - East Asia, South Asia, Australia
- 105.5 East ▶ C-Band: ASIASAT 3S - Global
- 108.2 East ▶ NSS 11 - South Asia, North East Asia, China
- 108.2 East ▶ C-Band: TELKOM 1 - Indonesia
- 108.2 East ▶ SES 7 - South Asia, Australia
- 110.0 East ▶ BSAT 3A,2C,3C N-SAT 110,JCSAT 110R - Japan
- 110.5 East ▶ C-Band: CHINASAT 10 - China, Asia Pacific
- 113.0 East ▶ KOREASAT 5 - South Korea, North East Asia
- 113.0 East ▶ C-Band: PALAPA D - Asia, Australia
- 115.5 East ▶ C-Band: CHINASAT 6B - Global
- 116.0 East ▶ ABS 7 - South Korea
- 116.0 East ▶ KOREASAT 6 - South Korea
- 118.0 East ▶ C-Band: TELKOM 2 - Global
- 122.0 East ▶ ASIASAT 4 - East Asia, Australia
- 122.0 East ▶ C-Band: ASIASAT 4 - Global
- 124.0 East ▶ JCSAT 4A - Japan
- 125.0 East ▶ C-Band: CHINASAT 6A - China
- 128.0 East ▶ JCSAT 3A - Japan
- 128.0 East ▶ C-Band: JCSAT 3A - Asia
- 132.0 East ▶ VINASAT 1 - Vietnam
- 132.0 East ▶ C-Band: VINASAT 1 - Asia, Australia
- 132.0 East ▶ JCSAT 5A - Japan
- 134.0 East ▶ APSTAR 6 - China
- 134.0 East ▶ C-Band: APSTAR 6 - Asia, Australia
- 138.0 East ▶ TELSTAR 18 - India, China
- 138.0 East ▶ C-Band: TELSTAR 18 - Asia, Australia
- 140.0 East ▶ EXPRESS AM3 - Russia, China
- 140.0 East ▶ C-Band: EXPRESS AM3 - Russia, China
- 144.0 East ▶ SUPERBIRD C2 - Japan
- 152.0 East ▶ OPTUS D2 - Australia, New Zealand
- 154.0 East ▶ JCSAT 2A - Japan
- 154.0 East ▶ C-Band: JCSAT 2A - Asia&Oceania&Hawaii
- 156.0 East ▶ OPTUS C1,D3 - Australia, New Zealand
- 160.0 East ▶ OPTUS D1 - Australia, New Zealand
- 162.0 East ▶ SUPERBIRD B2 - Japan
- 164.0 East ▶ OPTUS B3 - Asia
- 166.0 East ▶ INTELSAT 8 - Australia, New Zealand, North East Asia
- 166.0 East ▶ C-Band: INTELSAT 8 - Australia
- 169.0 East ▶ C-Band: INTELSAT 8 - Pacific
- 172.0 East ▶ EUTELSAT 172A - South Pacific, South East Pacific
- 172.0 East ▶ C-Band: EUTELSAT 172A - Pacific
- 180.0 East ▶ INTELSAT 18 - Australia, Pacific
- 180.0 East ▶ C-Band: INTELSAT 18 - Pacific

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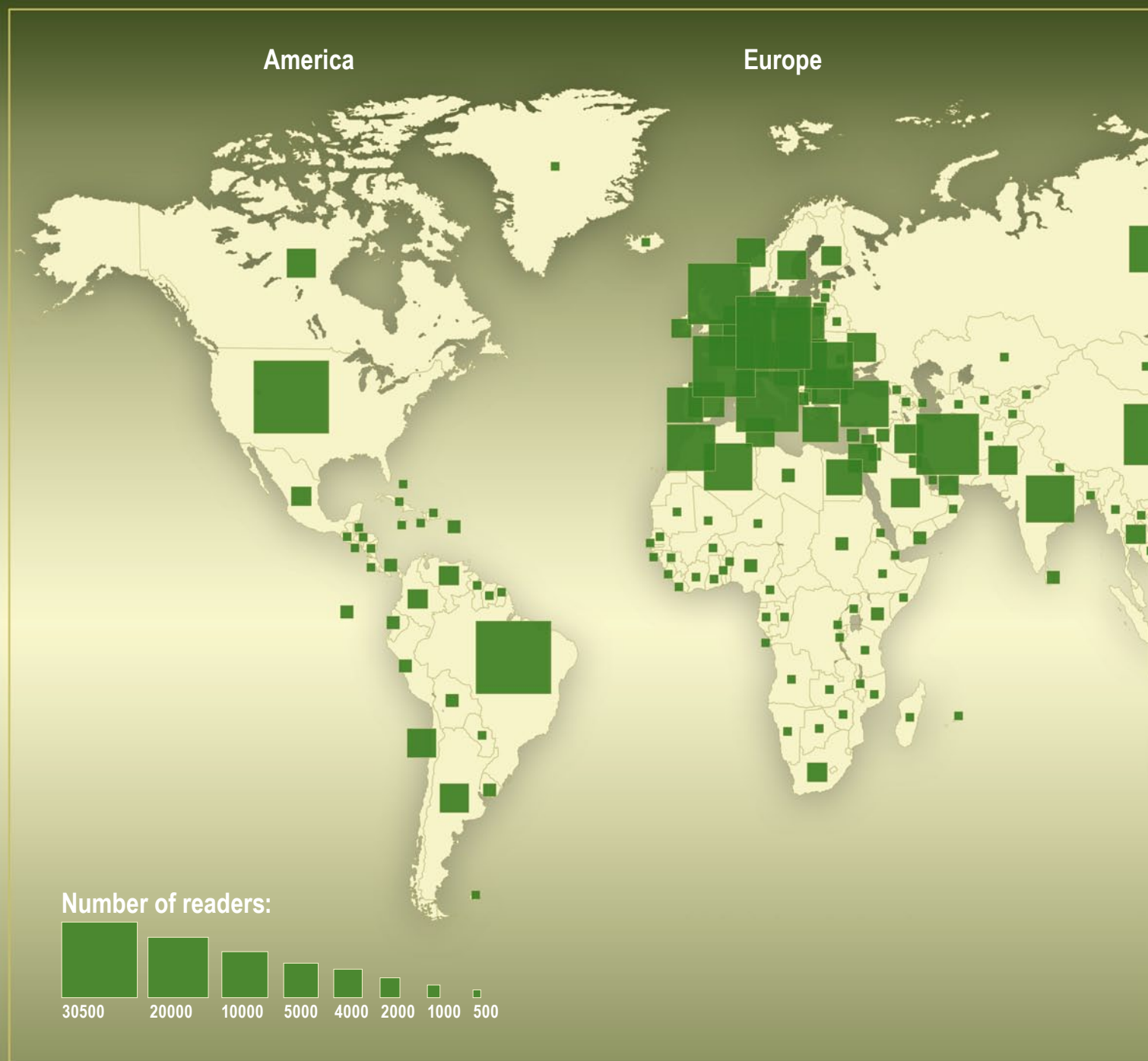
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Asia



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

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#	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

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11 - 13 March 2013

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12 - 14 March 2013

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