The World's Largest Digital TV Trade Magazine
since 1981

TELE audiovision

Satellite
Smart TV
IP/WebTV
Streaming

B 9318 E

INTERNATIONAL 01-02 2013

Company Report

HORIZON

Paul Pickering Has Been Successfully Manufacturing Digital TV Meters for More Than 10 Years

Test Report

SATSON

Stefaan Cornelis Has the Perfect Product for HDTV Distribution

Test Report

KWS VAROS 109

TELE audiovision AWARD 01-02/2013

The Super Meter

Company Report

COSMOSAT

Ricardo Installs the Largest Satellite Dishes in Buenos Aires

Test Report

TENOW

James Liu has the PC Solution for Every DVB-C Viewer

Test Report

SKYWORTH HTA6

High Quality in a Small Package: HDTV Receiver for Terrestrial Signals

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

DVB-S FTA SDS-552ANP

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- NIT Network Search compliant

DVB-T2 HDT-129N

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- 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

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

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Dear Readers,

There's an important reason why Smartphones, Tablets and Laptops are so popular these days and this reason is often overlooked: all of these devices can be used with hardly any need for cables. You have to connect them to recharge the battery but otherwise they are wireless products. Wireless basically means no local connection required; you can take your Tablet with you wherever you go and watch videos or TV.

What does this have to do with digital TV receivers? It's exactly the opposite of wireless: they are devices that have to be connected with every conceivable cable and because of this they are fixed in place wherever they're set up and have to stay there. And this is no longer a modern way to do things. We live in a wireless age and as TV watchers we therefore have come to expect our receivers to be wireless as well.

But this changeover is not instantaneous. A digital TV receiver requires a connection to an antenna, whether it's a satellite dish, a terrestrial antenna or a connection to a cable network. And then the TV has to be connected to the receiver and let's not forget the hard drive so that programs can be recorded and of course the Internet connection for web-based TV. And what about the power plug? Those are a lot of cables; how are they supposed to be eliminated?

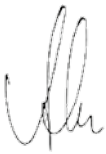
Technical solutions to eliminate some of the cables already exist. In this issue we are introducing a product that can wirelessly transmit HDMI signals. This eliminates one cable and permits TV reception in your home on multiple TVs or tablets instead of only that one TV in the living room. Further technical developments can only mean that the remaining cables can also be eliminated such that only the power cable is left (and this could also be replaced with wireless battery charging stations).

Cables do not need to be in a home anymore. The technology to carry all of the signals wirelessly already exists and the popularity of all the Smartphones (keyword iPhone, iPad) proves that users don't want to fight anymore with cables and plugs. The devices should switch between each other and link to each other by themselves.

And this brings us to another subject: the wireless connection of audio and video also falls under the heading of TELE-audiovision. And that's exactly why we changed the title of this magazine from TELE-satellite to TELE-audiovision.

If you recall, the new title is a throwback to the beginning when this magazine was founded in 1981: back then it was also called TELE-audiovision; only later on was the name changed to TELE-satellite. Back then TELE referred to the long-distance reception of audio (radio) and video (TV). Long-distance reception is always wireless and in this way the TELE in TELE-audiovision can be interpreted in a new way: it's not only wireless audio and video reception over long distances, but now also over very short distances within the confines of your own home.

The future is wireless.



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TELE-satellite was established in 1981 and today is the oldest, largest and most-read digital tv trade magazine in the world. TELE-satellite is seen by more than 350,000 digital tv professionals around the world and is available both in printed form and online.
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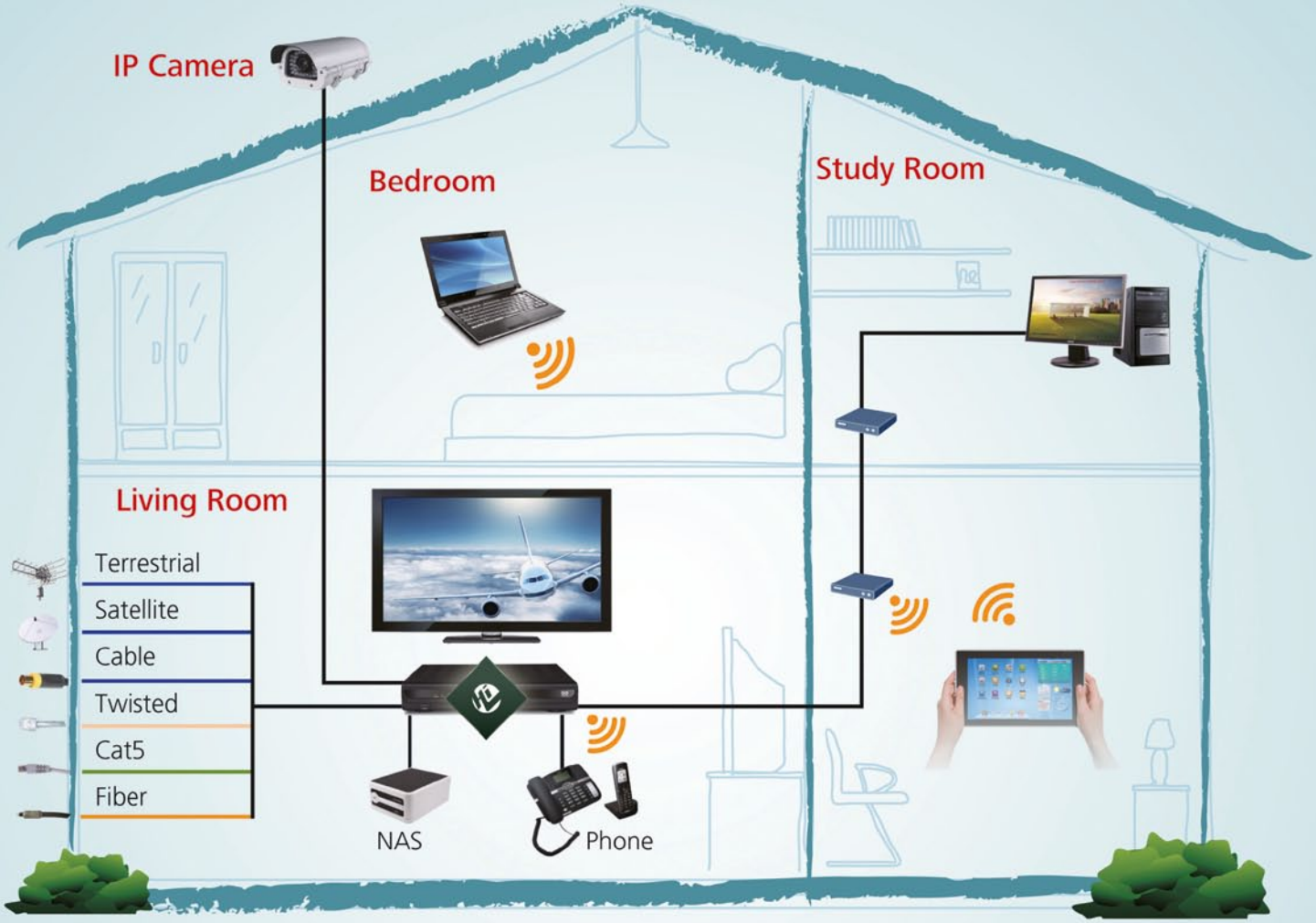
Hisilicon

Home network SoCs and Solutions



Hisilicon STB SoC Key Features

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- Linux/Android 4.0
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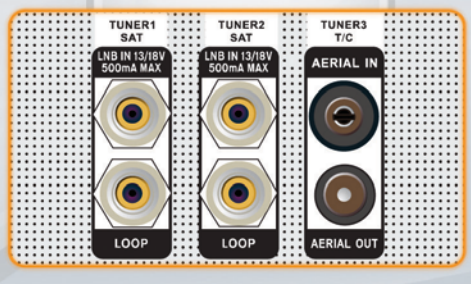

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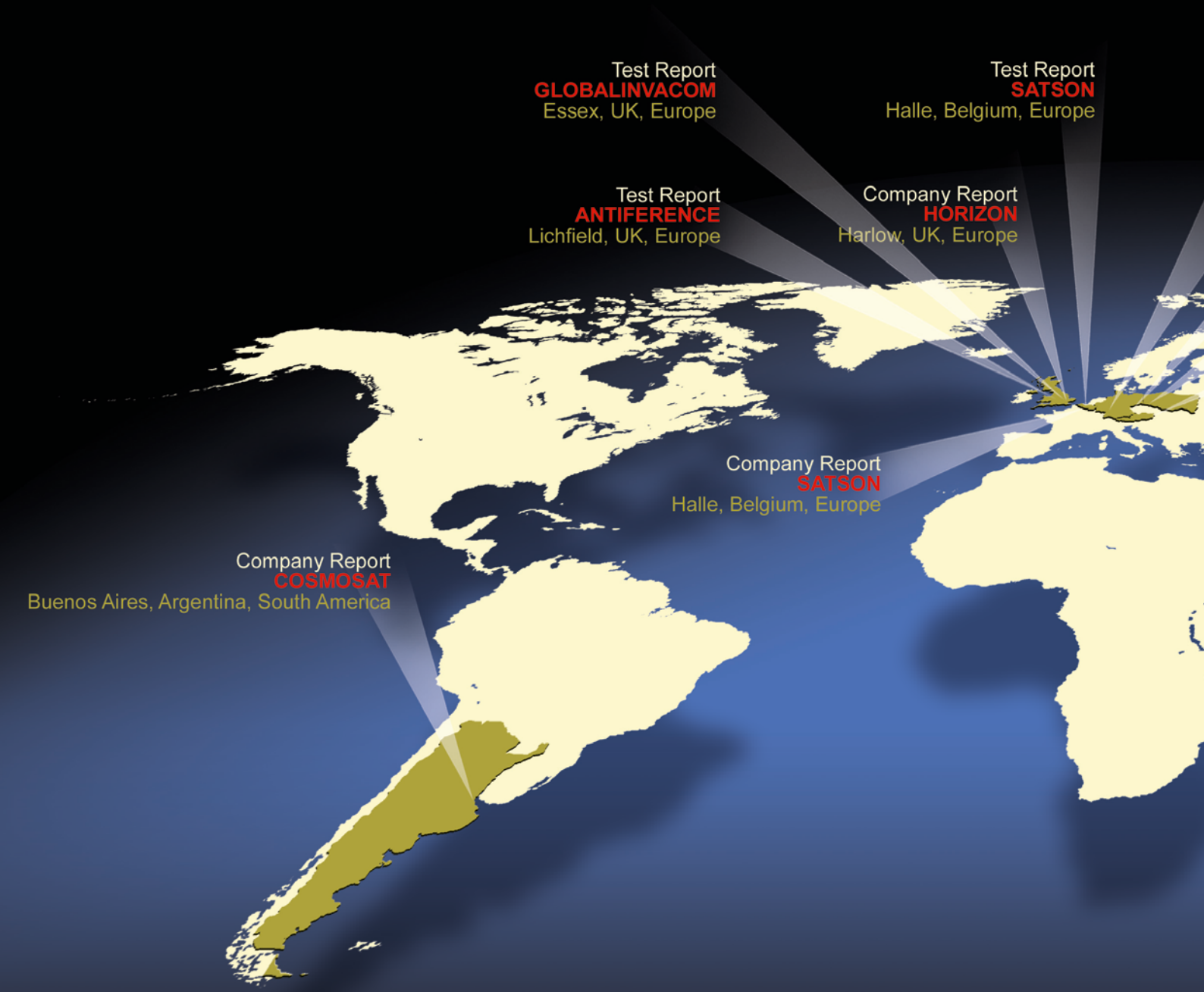

01-02/2013

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

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CREATING EASY LIFE

Smart Center Box

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

Products & Technologies

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

Company Profile

Established in 1998, Sichuan Changhong Network Technologies Co.,Ltd is now one of the largest professional STB suppliers in China. With the experienced R&D team and qualified project management, Changhong Network provides the consumers with leading products and technical solutions...

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MHEG-5 opentv NDS Core mhp

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HS1C HD DVB-S/S2

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HTA5 HD DVB-T

MPEG4, 1080p, PVR/Timeshift, Mediaplayer

HS15 HD DVB-S/S2

CI+、Conax CAS、LAN、MP4 1080p、PVR、Timeshift

HTJ2 HD DVB-T

MP4、1080p、Conax CAS、PVR/Timeshift、Mediaplayer

HTP1 HD DVB-T/T2

T/T2、MP4、1080p PVR/Timeshift、Powerful Mediaplayer

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INNOVATION TELE audiovision AWARD MAGAZINE

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

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JIUZHOU DTP2100
Cutting-edge receiver thanks to Android operating system

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KWS VAROS 109

- *very fast spectrum analysis*
- *(almost) all transponders worldwide pre-programmed*
- *high resistance against short circuits during connection and disconnection*
- *huge plus for installers: log function for the measurement protocol*
- *unique SCR and JESS compatibility*

KWS ELECTRONIC
HIGH FREQUENCY TEST EQUIPMENT
SAT-RF [GHz] 10.846
KuL
22.08.12 17:09
BAT
DVB-S2
locked
SR 23000
CR=8/9 QPSK
LEVEL[dBµ
Video: Total 4
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2 BBC One HD
3*ITV1 HD
4 6945
72.5
LBE
CBER
ER[dB]
6.4
PSI extraction ready!
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P4 V/Lo
Ilnb [mA] 140
VAROS 109
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CHARGE
ANALYZ
MODE
LNB
OSD/VID
1
2 abc
3 def
4 ghi
5 jkl
6 mno
7 pqrs
8 tuv
9 wxyz
ESC
0
ENTER
SCAN
SAVE
RECALL
AV SET

The Smallest KWS Meter Comes with a Huge Range of Features

KWS Electronics is a traditional company that has been in the business of producing top-notch professional antenna measurement technology for 35 years. Their meters of the AMA and VAROS ranges are a by-word for ultimate measuring precision and with the VAROS 109 KWS is offering a handheld meter for professional installers for the first time.

Those in the know will confirm it: Every time an antenna installer arrives at a customer's place with a KWS meter in hand there is a sigh of relief. Even many laymen show confidence in KWS technology, and consequently also in a technician who uses such equipment, since they can expect first-rate service in such a case.

This is also the reason why many installation businesses not only advertise their range of services, but also the fact that they rely on KWS equipment. After all, not all installers can afford those meters since quality never comes cheap and top-notch meters carry a hefty price tag.

This is exactly where the brand new KWS VAROS 109 comes into play – never before was it possible to get hold of a genuine KWS meter at such an attractive price. And it's true, the recommended retail price of this measuring device is interesting enough for many amateur satellite DXers among the TELE-satellite readership as well. So keep your eyes glued to this report!

Every time an established manufacturer throws a so-called beginner's model onto the market we start hunting for features and functions which presumably were deleted from the specifications list in order to be able to keep the price as low as intended. If you are as wary as we are, we can assure you that the KWS VAROS 109 is an absolutely excellent meter for satellite installers that offers all functions you will need! No compromise here.

The KWS VAROS 109 arrived at our test center in a plain looking cardboard box. Out of that box came a bright-coloured hard case with robust locking flaps and a carrying handle in the blue colour associated with the KWS brand. This case is small, quite lightweight and very robust, so that the meter will be protected even at those rough and dirty construction sites.

Inside the case there is the KWS VAROS 109 itself, a charger, a miniature USB memory stick as well as a DIN-A5-sized printed manual. We noticed two things right away: The cable that is shipped with the meter in the bright KWS blue must be one of the best satellite cables that ever made it to our test center. It can easily be attached to an F-plug, is easy to bend and lead around corner yet sports a diameter of 7 mm. This alone is proof enough that we're talking about a top-notch manufacturer here, and about a first-rate product.

The second item we immediately fell in love with was the USB memory stick that comes with the package. It is used for data storage and almost all it consists of is the plug itself. Once it is hooked up to the meter it protrudes only a few millimeters from the device. This way users can get going right after unpacking and don't need to purchase additional equipment before starting their first installation job. If our opinion is anything to go by, this is how it should always be.

The fact that KWS supplies a printed manual is somewhat out of the ordinary too these days. In most cases, manufacturers provide a PDF manual for printing at home or for reading on the PC, but KWS begs to make a difference and we can only applaud that effort. Even though the KWS VAROS 109 is almost self-explanatory and thus very easy to use, the comprehensive manual includes a lot of useful information and also discusses features and functions many users would not consider in the first place.

The KWS VAROS 109 meter itself comes in a green and grey protective bag made of hard-wearing nylon. The screen and all buttons are additionally protected by a transparent plastic foil, which means the meter will easily survive dirt, dust and

TELE audiovision AWARD 01-02/2013

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

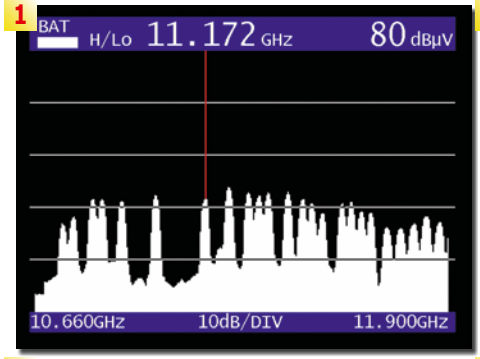
www.TELE-audiovision.com/13/01/kws

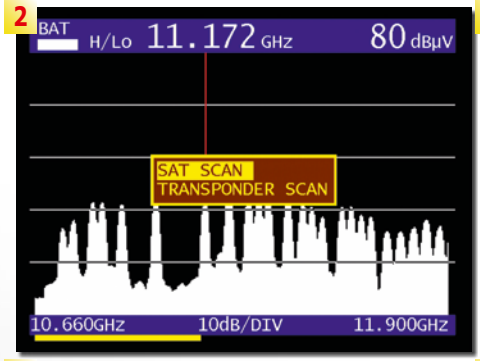
KWS ELECTRONIC
HIGH FREQUENCY TEST EQUIPMENT

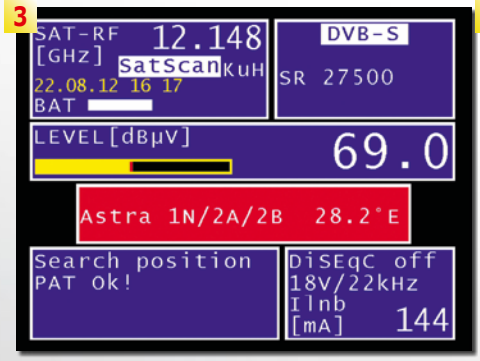
The KWS VAROS 109 in action on our roof: It's small, lightweight and convenient to carry along. It helps installers finish their job faster, and we too were able to correctly align a motor-controlled antenna as well as our C band antenna without suffering from neck pain the next day. We give top marks to the display, which is perfectly readable even in direct sunlight.

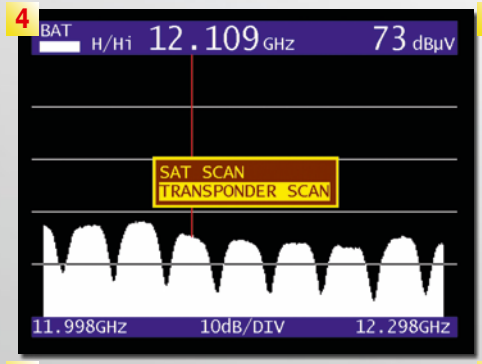
splashes of water in everyday use. This all adds up to show that the meter is designed for day-to-day installation jobs up on the roof or out at construction sites. The carrying strap of the bag can be adjusted in length so that the device can be carried on the shoulder or around the neck, and if you lean the meter against your stomach you can even use it hands-free.

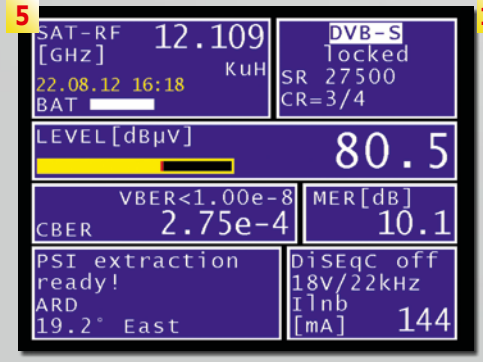
The nylon bag is designed in a way that leaves only the HF input (designed to accept F plugs) accessible from the outside. In addition, the external power pack can be attached through a small

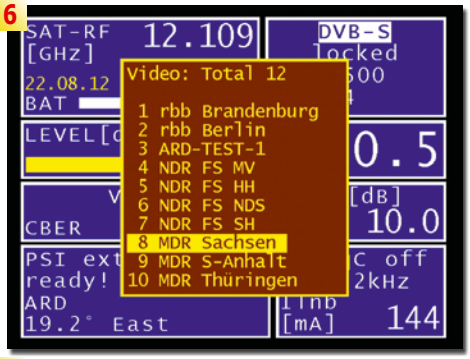


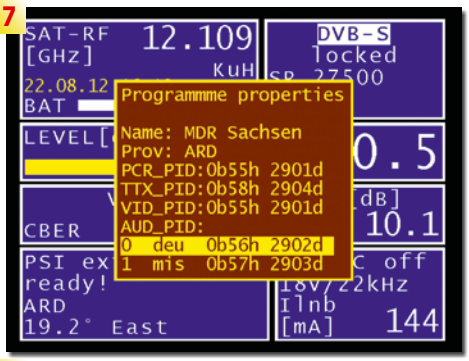


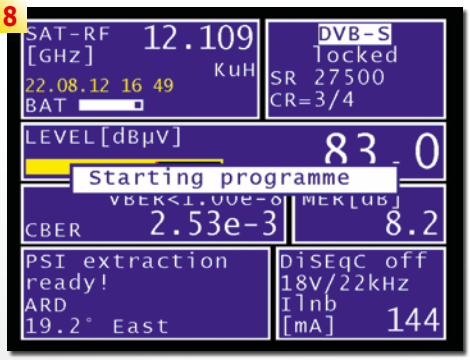


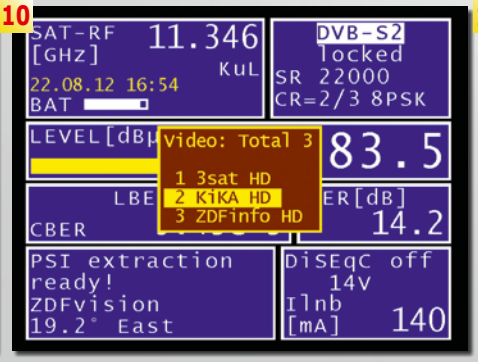


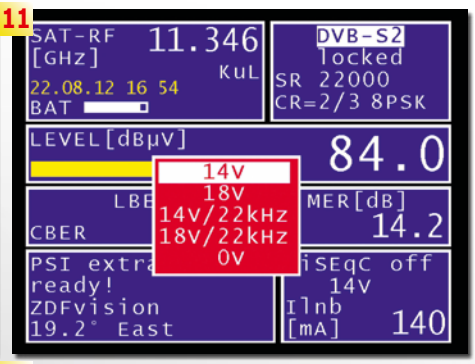


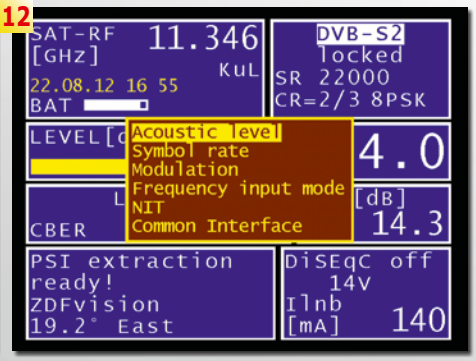












1. Any frequency can be selected with the marker in the very responsive spectrum display.

2. Using the SAT SCAN feature the meter can automatically identify the active satellite thanks to the NIT function.

3. After only a few seconds the name of the current satellite can be read on the display.

4. From one of the two enlarged spectrum presentations a transponder search can be launched right away from the position of the marker.

5. The KWS VAROS 109 automatically finds out all reception parameters and shows the measurement results once the signal is locked.

6. In addition, the channel list of the active transponder can be called up.

7. The PIDs of the selected channel are also available on the screen.

8. When the PIDs are shown and you press ENTER once more instead of the ESC or OSD/VID buttons the MPEG decoder is activated.

9. The KWS VAROS 109 is capable of playing back MPEG2 and MPEG4 video plus audio. What's more, information such as video resolution can be presented in a dedicated window.

10. Operating the meter is a very straightforward and user-friendly affair. All required transponders can be checked quickly and intuitively.

11. The required polarisation can be selected with the LNB button.

12. While a measurement is being performed it is possible to activate additional features such as an audio signal changing its pitch according to the signal level. This allows antenna alignment without having to keep an eye on the meter at all times.

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opening on the bottom side. The USB and DVI inputs are positioned on the upper side and protected by a Velcro cloth strip which can easily be opened and closed again. While it may appear a little peculiar that the KWS VAROS 109 comes with a DVI output as opposed to the HDMI output offered by most competing products, this turns out to be not such a bad idea after all: If you need

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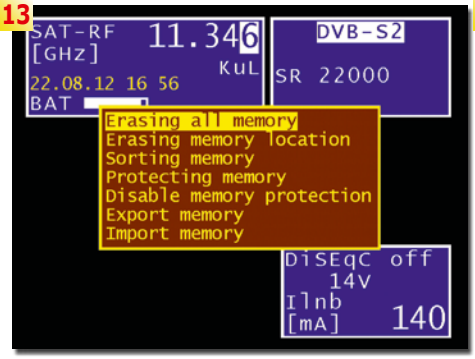

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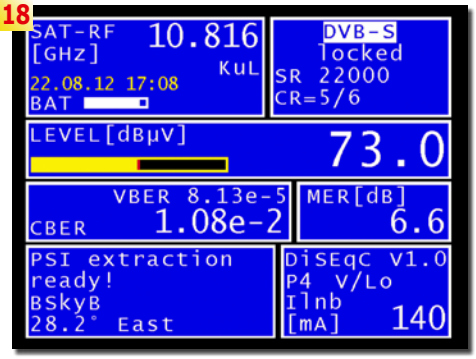

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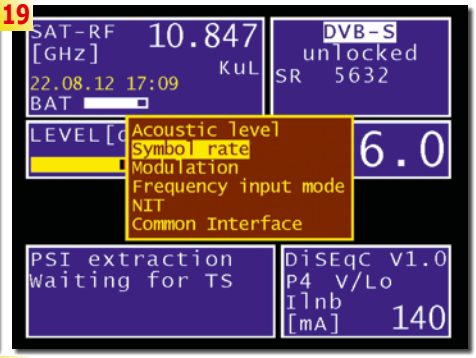

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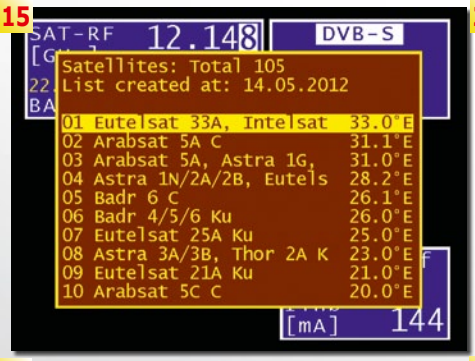

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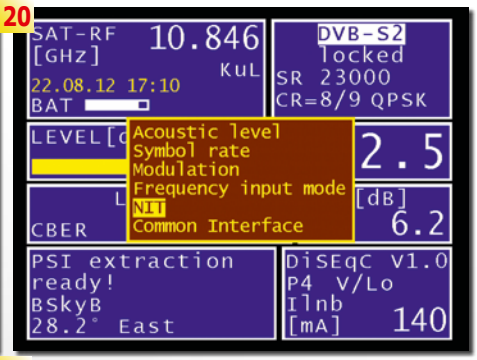

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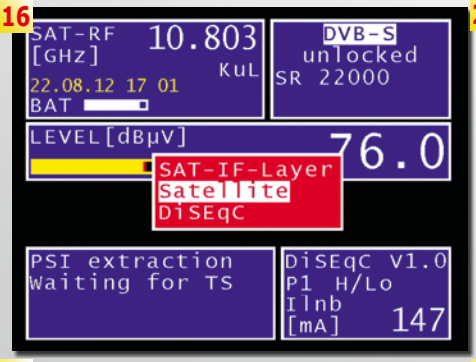

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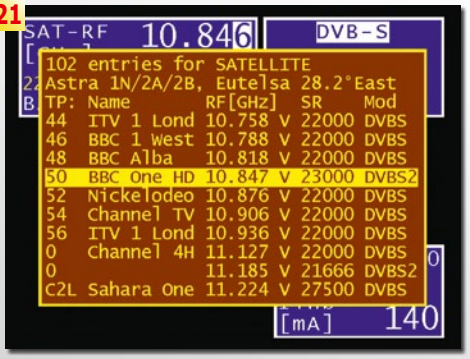

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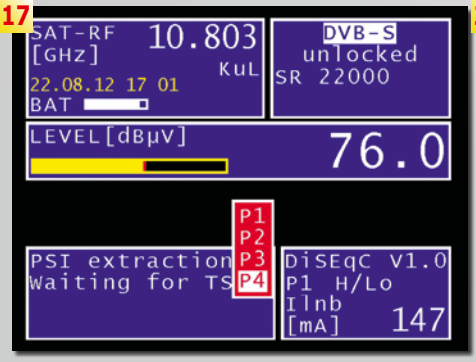

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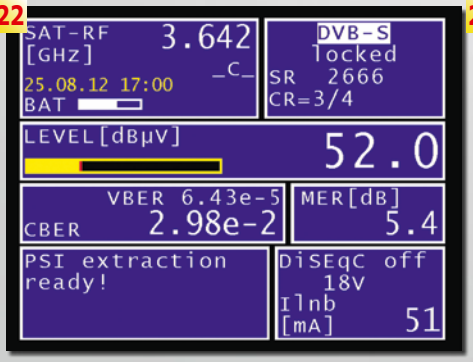

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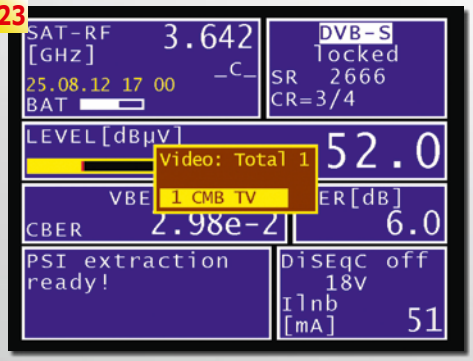


13. Obviously the KWS VAROS 109 comes with an internal memory. Up to 100 transponder entries can be stored, with the log function calling up an entry from the memory and saving the measurement result as an XML file to the USB storage medium.

14. All parameters can be adjusted in the main menu. Even though this gives you almost endless possibilities, the menu structure is very user-friendly and does not require consultation of the manual.

15. No compromise as far as the internal transponder list is concerned. KWS Electronic has supplied its KWS VAROS 109 with a complete transponder list for all satellites wordwide. This way installers will be able to meet all customer demands without having to research specific transponder data on the Internet beforehand.

16-17. DiSEqC is implemented in an exemplary way. In the DiSEqC menu you first select the required operating mode, with the second menu item changing according to the initial selection. In the example shown we have selected DiSEqC 1.0 and the second menu item correctly offers satellites 1 to 4 for selection.

18. When we test products, we test them real hard. This time we tried to challenge the meter's tuner with reception of ASTRA 28.2E using a much too small 60 cm flat antenna. Albeit, the tuner seemed to be happy with that and presented flawless video even with this very weak signal, characterised by a VBER of 1e-3 and a MER of 5.8 dB.

19. The BBC HD transponder uses a somewhat unfamiliar symbol rate of 23000. In order to save time this symbol rate can be added directly to a list of up to five symbol rates. The KWS VAROS 109 can then lock the signal more quickly since it does not have to try out all possible symbol rates one after the other.

20. If you're not quite sure which satellite you are currently receiving you can always count on the NIT function of the KWS VAROS 109. It works wonders and after a very short while will not only show you the name of the satellite but also all additional content of the NIT.

21. Rather than selecting a transponder by manually entering the frequency or by using the marker it is of course also possible to select it right from the internal transponder list. A real treat: Each transponder entry comes with the name of the most important channel next to it, so that you can find out more easily which transponder to choose.

22. Apart from the Ku band the KWS VAROS 109 is a valuable tool for the C band as well. Shown here is a measurement of NSS806 at 40.5W. There is only borderline reception of the 3,642GHz transponder, which means the BER and MER values are extremely bad.

23. Even though, the meter is capable of showing the channel. For C band reception and antenna sizes of 2 m and over it is paramount for the tuner to reliably process borderline signals as well without freezing. The KWS VAROS 109 turned out to be a brilliant performer and so we had our Mesh antenna aligned towards 40.5W after only a short time and were able to receive channels from South America.

to attach a HDMI device it is possible to use an inexpensive DVI-HDMI adapter, but if you prefer to use a standard computer monitor you will soon discover the DVI socket's worth, as PC monitors are way less expensive than TV panels.

The meter sports a metallic grey colour with green rubber protection on the sides. The front panel features a 5.7-inch high-resolution colour TFT display which offers excellent readability even in direct sunlight.

Right below the display there is the keyboard consisting of four arrow keys (Up, Down, Left, Right), a numeric pad right in the centre complete with the ENTER and ESC buttons, as well as four keys each to the left and right of the numeric key pad.

The function keys on the left side are:

- **ANALYZ**: Calls up the spectrum analyser.
- **MODE**: Calls up various special functions. This is a designation typical of KWS meters and if you have used a KWS meter before you'll be familiar with this feature.
- **LNB**: Different LNB configurations can be adjusted with this button, plus the DiSEqC features can be accessed from here as well.
- **OSD/VID**: This function key switches between measuring mode and MPEG decoder, which can process MPEG-2 and MPEG-4 transmissions.

The function keys on the right side are:

- **SCAN**: Various search functions and the transponder list for all satellites around the world are activated with this key.
- **SAVE**: Saves the active transponder.
- **RECALL**: Calls up a saved transponder.
- **AV SET**: Calls up audio and video settings.

In the upper right corner of the meter there is the On/Off switch. Press it and it only takes five seconds for the device to power up and become fully operational. This is a truly remarkable achievement, and together with battery power for 3.5 hours of continuous operation you definitely get your money's worth. Knowing that the KWS VAROS 109 will be ready in a few seconds will invariably result in switching off the meter every time it is not in use for a few minutes, thus further increasing battery time.

Catching a glimpse of our test center. KWS meters have longer service life than most other signal analysers, which is why the KWS VAROS 109 did not only have to prove its worth against currently offered competitors, but also against older professional KWS meters of the AMA series. All our comparisons showed that the KWS VAROS 109 passed with flying colours. Another bonus: If you've ever worked with a KWS meter before you'll never want to change your ways again.

You need to fasten the screws of the antenna on the pole before performing the next signal measurement? Turn your meter off! Screws are tight? Turn it on again and after five seconds you're ready to rock! We have seen many meters that seem to be taking forever to power up, and in those cases you probably keep them switched on all the time only to find out that once your lunch break is over you're out of power.

The KWS VAROS 109 is different, and even the specified battery life of 3.5 hours is not merely a theoretical indication, but a result we easily achieved during our test. We worked with the meter long and hard, often for hours on end, and we can happily confirm this more than pleasing battery capacity.

If you've ever worked with the larger KWS meters of the VAROS series you'll notice that the KWS VAROS 109 can be operated in exactly the same way so that installers knowing how to make full use of a VAROS 306 don't need to re-familiarise themselves with this new KWS meter. There are only two aspects

that differentiate the VAROS 109 from the VAROS 306: The new meter is designed for satellite signals only (that is to say, the DVB-S and DVB-S2 modulations) and it comes as a small handheld device. Other than that, all functions and features are available with the small meter as well, and they can be used just like with the VAROS 306. For aligning a satellite antenna the spectrum analyser function is the best starting point. Long before a usable signal brings up video or audio the spectrum will indicate whether or not you're on the right track. Once you get the knack of it you'll be able to identify a particular satellite simply based on its characteristic spectrum pattern. But even if you don't, there's no need to worry since the KWS VAROS 109 naturally comes with an NIT function that will quickly and reliably recognise the active satellite you're currently pointing to.

The spectrum analyser implemented in the KWS VAROS 109 was able to win us over right away. Even though it is a fully digital analyser it still provides a real-time presentation of the current spectrum. The refresh rate for the entire frequency space is approximately one second, which means the spectrum display will keep pace even with faster antenna movements.

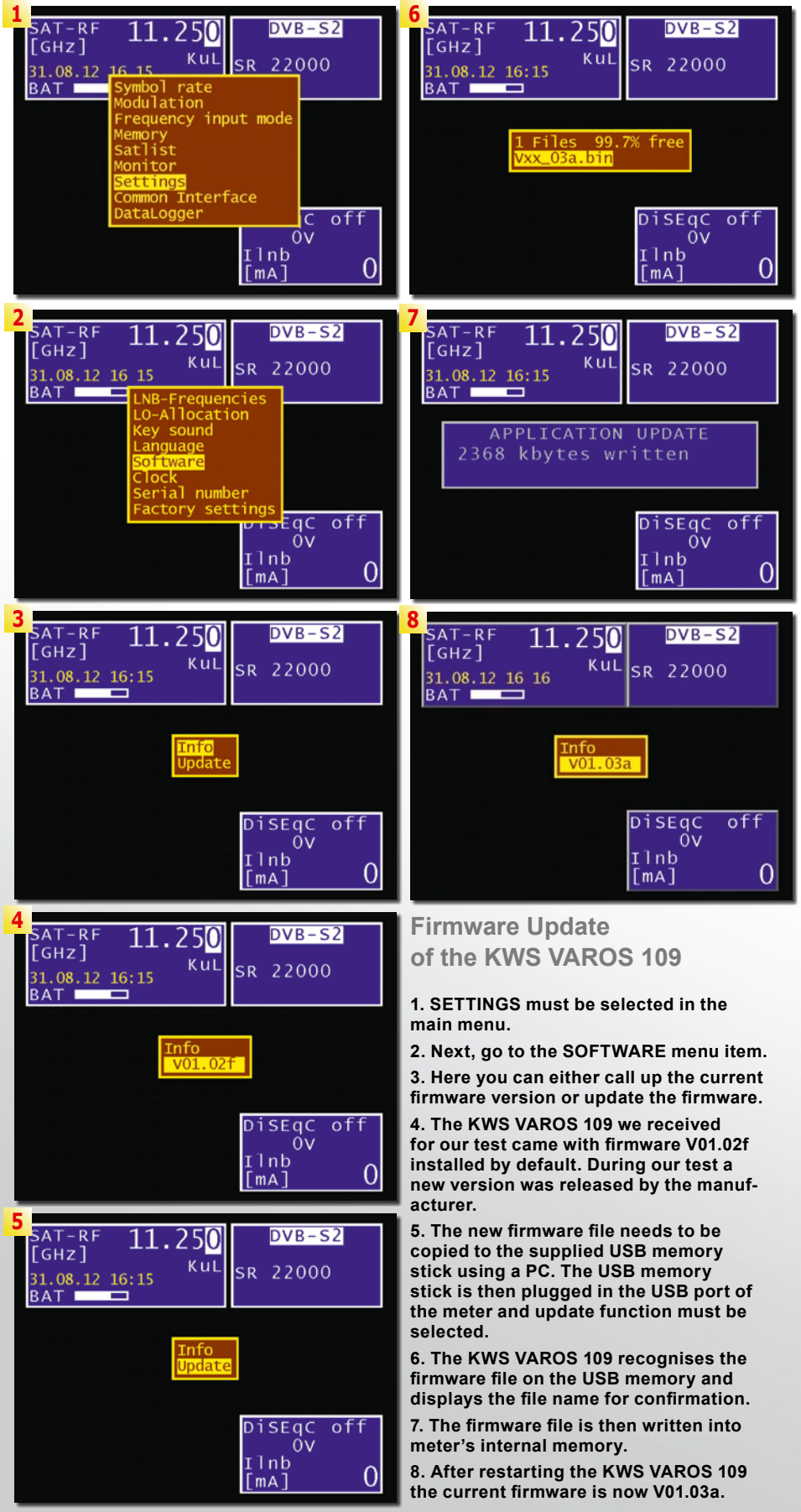
One of the benefits of a digital analyser is that it is possible to move a red marker using the Left/Right buttons with the effect that the corresponding frequency will be given out together with the signal level. Whenever you're in one of the enlarged spans the marker frequency can be used as the starting point for a signal scan without having to key in additional parameters. A touch of the ENTER button is all it takes.

This turned out to work absolutely flawlessly and for installers it is thus possible to select and analyse a transponder without additional preparation. While this is a single feature among many, it alone should make the KWS VAROS 109 the meter of choice for many professionals. After all, time is money, and the less hassle with a meter, the more business on any given day. What's more, DXers will also be delighted by that feature since it allows detection of feed frequencies in the spectrum, which in turn can be scanned and evaluated without mincing matters.

According to the manufacturer, the KWS VAROS 109 will happily process symbol rates from 2 to 45 MSym/s, and our test lent proof to that assertion. The meter is therefore perfectly suitable to deal with more exotic transponders and their frequently low symbol rates as well.

Professional installers will truly appreciate that the KWS VAROS 109 comes with a list of five pre-defined symbol rates that can be freely edited. These can be used to speed up an automatic search, even though it has to be mentioned that the meter can also determine the actual symbol rate all by itself. Just be prepared that the search then takes a little bit longer.

As the KWS VAROS 109 sports an almost complete transponder list for all satellite positions worldwide, manual detection should not be required all too frequently anyway. Instead, you can simply pick your desired transponder



Firmware Update of the KWS VAROS 109

1. SETTINGS must be selected in the main menu.

2. Next, go to the SOFTWARE menu item.

3. Here you can either call up the current firmware version or update the firmware.

4. The KWS VAROS 109 we received for our test came with firmware V01.02f installed by default. During our test a new version was released by the manufacturer.

5. The new firmware file needs to be copied to the supplied USB memory stick using a PC. The USB memory stick is then plugged in the USB port of the meter and update function must be selected.

6. The KWS VAROS 109 recognises the firmware file on the USB memory and displays the file name for confirmation.

7. The firmware file is then written into meter's internal memory.

8. After restarting the KWS VAROS 109 the current firmware is now V01.03a.

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from the transponder list. And this is how it works: Select a satellite first, followed by the transponder on that satellite. Even though more than one hundred satellites are pre-stored complete with all corresponding transponders, the smart user interface nonetheless makes for a very swift selection process.

As always, it's the little things that make life so much easier for users: If you want to look at another transponder on the same satellite that satellite is already highlighted in the satellite list, as well as the currently selected transponder. So if you need to check various transponders of the same orbital position you need not go through the entire list again and again. Once again, time is money, especially if you use the meter professionally. In addition, the transponder list also shows the name of the first channel that is transmitted on that transponder, so that finding the right transponder on the list is more or less child's play. This is a truly unique feature and one that makes us wonder how installers could ever have done without.

Once a signal is locked the measurement screen gives out all required information without users having to switch between screen modes. Thanks to the high-resolution display the following measurement parameters can be presented simultaneously in a total of seven clearly structured display windows:

- Frequency window
Frequency
LNB type (Ku or C, for example)
Date and time
Battery status

- Parameter window
Modulation (DVB-S or DVB-S2)
Symbol rate
CR (code rate)

- Signal level window
Signal level (dBµV) as numeric value and as signal bar with peak memory function

– Bit error window
VBER (after VITERBI error correction)
CBER (before VITERBI error correction)

- MER window
MER (Modulation/error ratio)

- MPEG window
NIT information: name of satellite and provider

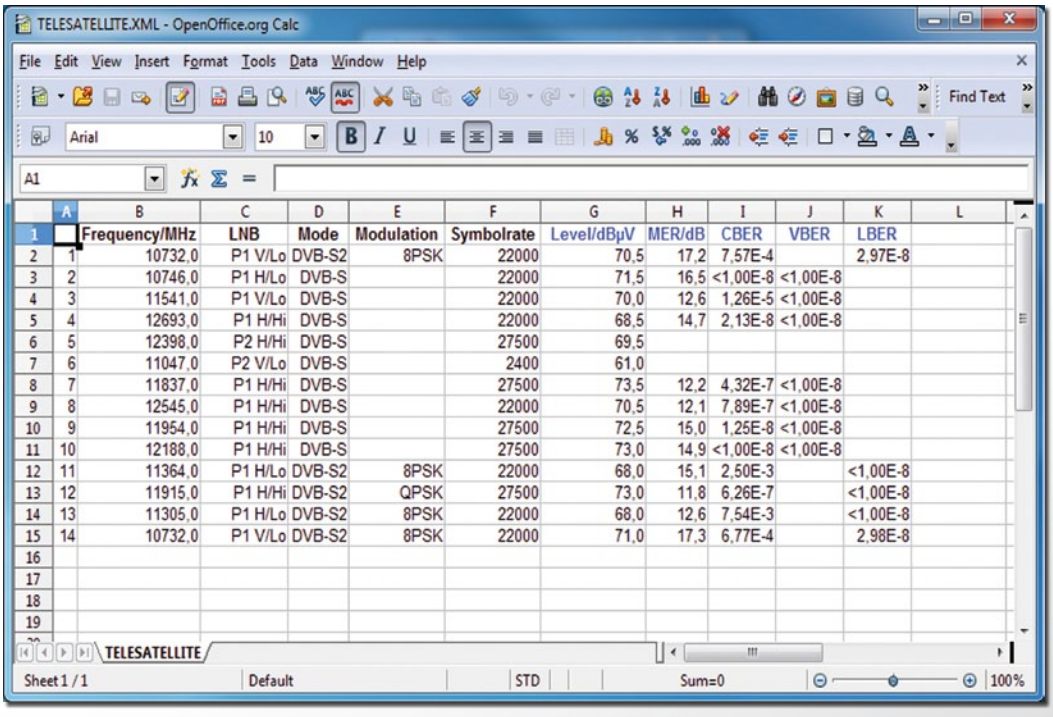
- LNB window
LNB information: DiSEqC, polarisation power intake of the reception system (LNB, rotor, switches, etc.)

Using the OSD/VID button it is then possible to call up the channel list of the currently measured transponder. The Up/Down buttons are used to navigate within the list and the selected channel can be watched after a touch of the ENTER button. In addition to the live video the meter can also insert additional information such as channel bandwidth and resolution. Even the MPEG colour subsampling rate is shown as an extra bonus, making the KWS VAROS 109 all the more appealing to professionals and DXers alike.

Like other meters of the VAROS series, this handheld meter cannot present a constellation diagram. As far as the DVB-S and DVB-S2 modulations are concerned, this is not such a tragic loss since the BER and MER parameters already give a clear indication of whether or not a signal is OK.

Once again KWS clearly shows that it is a manufacturer with valuable expertise, since it only implements those features in the KWS VAROS 109 that are actually required for installers of satellite dishes. Incidentally, during our extensive test we did not think of a single feature or function we would

■ The results of the Data Logger are saved on the USB stick in XML. This file can be opened in Microsoft Excel or OpenOffice Calc. This makes it easy for any installer to adjust the data in a personalized form and according to their own company rules.



	A	B	C	D	E	F	G	H	I	J	K	L
1		Frequency/MHz	LNB	Mode	Modulation	Symbolrate	Level/dBµV	MER/dB	CBER	VBER	LBER	
2	1	10732,0	P1 V/Lo	DVB-S2	8PSK	22000	70,5	17,2	7,57E-4		2,97E-8	
3	2	10746,0	P1 H/Lo	DVB-S		22000	71,5	16,5	<1,00E-8	<1,00E-8		
4	3	11541,0	P1 V/Lo	DVB-S		22000	70,0	12,6	1,26E-5	<1,00E-8		
5	4	12693,0	P1 H/Hi	DVB-S		22000	68,5	14,7	2,13E-8	<1,00E-8		
6	5	12398,0	P2 H/Hi	DVB-S		27500	69,5					
7	6	11047,0	P2 V/Lo	DVB-S		2400	61,0					
8	7	11837,0	P1 H/Hi	DVB-S		27500	73,5	12,2	4,32E-7	<1,00E-8		
9	8	12545,0	P1 H/Hi	DVB-S		22000	70,5	12,1	7,89E-7	<1,00E-8		
10	9	11954,0	P1 H/Hi	DVB-S		27500	72,5	15,0	1,25E-8	<1,00E-8		
11	10	12188,0	P1 H/Hi	DVB-S		27500	73,0	14,9	<1,00E-8	<1,00E-8		
12	11	11364,0	P1 H/Lo	DVB-S2	8PSK	22000	68,0	15,1	2,50E-3		<1,00E-8	
13	12	11915,0	P1 H/Hi	DVB-S2	QPSK	27500	73,0	11,8	6,26E-7		<1,00E-8	
14	13	11305,0	P1 H/Lo	DVB-S2	8PSK	22000	68,0	12,6	7,54E-3		<1,00E-8	
15	14	10732,0	P1 V/Lo	DVB-S2	8PSK	22000	71,0	17,3	6,77E-4		2,98E-8	
16												
17												
18												
19												

have liked to see and which the meter did not provide. Quite the opposite was true and once we had completed our test the KWS VAROS 109 was designated our new reference meter for satellite signals.

Need we say more? Obviously, we did not just accept the measurement results given out by this handheld meter as matters of fact. Far from it – we checked all values against those indicated by other reference meters in our test center. Among those was a tried-and-tested KWS AMA 210S as well as a KWS AMA 218S, both of which provide excellent measurements even after almost 20 years of service. Using the same meters over such a long timespan is only possible thanks to KWS designing all its products with a long service life in mind. Thanks to DVB and MPEG upgrades our 'old' KWS meters are still popular and have lost nothing of their initial appeal. The KWS VAROS 109 allows firmware upgrades via the supplied USB memory stick, with new software being released on the KWS website. We were even able to try that out ourselves since a new firmware release was published during our test. Not surprisingly, the software update was accomplished completely hassle-free.

The KWS VAROS 109 passed the comparison test with flying colours. We actually believe that in everyday

use the measuring precision is even better than specified by the manufacturer. This might be intended by KWS in order to differentiate this VAROS meter from its own top-notch AMA series – at least as far as the written specifications are concerned. (Table)

In general, an accurate BER measurement will suffice for precise antenna alignment. This parameter indicates the bit error rate, which means it tells you how frequently a bit error occurs in the data stream. If the BER value is low, this means the VITERBI error correction routine will be able to automatically correct the signal. The MER, on the other hand, shows the modulation/error ratio. Here, the higher the value, the more exactly all symbols fall into the corresponding squares.

For maintenance and error diagnosis it is particularly important to measure BER and MER simultaneously. This is because there may be a high MER value (which is a good thing) and still an increased bit error rate (not a good thing). Oxidised cables or a faulty F plug may be to blame for such a situation. The KWS VAROS 109 is able to indicate the BER as CBER and VBER. CBER is short for channel bit error rate and shows the bit error rate before VITERBI error correction. Values ranging from 1e-5 to 1e-6 are good, but with a value of 1e-4 and above you should expect reception problems.

VBER, on the other hand, indicates the bit error rate after VITERBI error correction and here you should always get a value of 1e-8 or below, which means one bit error per 108 bits. This target value makes sure you have some leeway for reliable reception in bad weather. In addition to that, the KWS VAROS 109 can also measure the power intake at the HF input, which is important for making sure the tuner of a satellite receiver is not put under more strain than it can safely handle. You should definitely keep an eye on power intake whenver you do not only use an LNB but also multi-switches or even one or several DiSEqC motors.

It goes without saying that we always put our meters to a thorough test, sparing neither effort nor expense. This time, the KWS VAROS 109 had to prove its worth with the following tasks:

1) Re-alignment of our antenna array.

Some time ago we installed a small antenna array made up of four flat antennas which we use for many of our product tests as it allows us to work with four different satellite positions. All four flat antennas are mounted on a single pole using vertical pipes, and the whole set-up can easily be transported and put on any hard surface without additional mounting requirements. For us, this is an extremely convenient solution in our daily routine, as we can move or store the entire array without changing the position of the individual antennas whatsoever.

Meter	Signal level dBµV)	VBER
KWS VAROS 109	82.0dB	<1.00e-8
KWS AMA 210S	81.5dB	<1.00e-8
KWS AMA 218S	81 dB	<1.00e-8

Table – Comparison measurement: Astra 19.2E - 11.066 MHz, vertical, 22000, 5/6

It allows us to test and evaluate different receivers and satellite-related products without occupying a lot of floor surface – something that is in scare supply anyway in most test centers. What's more, we don't have to install and dismount the antennas for each test. We noticed, however, that even with the best of intentions the antennas had become slightly misaligned after several months. What better way to re-adjust them than with the KWS VAROS 109 handheld meter?

To that end, we first connected the meter to the 4/1 DiSEqC multi-switch of the antenna array using the supplied blue measuring cable. Aligning all four antennas with the help of the KWS VAROS 109 turned out to be fun. All we did was select DiSEqC 1.0 in the LNB menu and the meter then allowed us right away to directly address each of the four signal inputs. Using the spectrum analyser function one antenna after the other could be fine-tuned.

Since we were dealing with 60 cm flat antennas, however, we tried to really max out on their reception capabilities so that it would also become possible to receive the UK beam of ASTRA 1N 28.2E at our location. In northern Portugal we would normally require at least a 100 cm antenna (with 120 cm being recommended) to even think about reception, according to the operator's footprint map. With our newly aligned antenna a mere 60 cm is seemingly enough, provided the weather is kind to us. Signals from that beam are of particular importance to us since we are always for the lookout for borderline signals that we use to put new receivers to the acid test, so to speak.

It took us less than 15 minutes to align all four antennas for optimum reception (28.2E, 19.2E, 13.0E and 30.0W). During the process, we were thoroughly impressed by how easy and convenient an aid the KWS VAROS 109 turned out to be. Thanks to the measurement

SCR and JESS with the KWS VAROS 109

1. In DiSEqC settings the SCR (Unicable) and JESS options are available as well.

2. In a unicable set-up the frequencies of all user bands can be individually determined, and the KWS VAROS 109 is capable of storing various memory banks. This way user bands need not be set up from scratch for every new measurement.

3. With SCR up to eight outlets can be provided with signals from up to two satellite positions. The centre frequency of each user band can be set individually to avoid interference.

4. Using the numeric key pad you can enter the centre frequency easily and conveniently while in the background the spectrum of the corresponding user band is presented in real-time.

5. The KWS VAROS 109 even supports the extended SCR standard by the name of JESS (Jultec Enhanced Stacking System), which can distribute up to four satellite positions to up to 16 users along a single cable.

6. Setting up a JESS installation is similar to SCR, with the exception that up to 16 user bands can be created, instead of eight for SCR.

7. Here, too, it is of course possible to individually adjust the centre frequency of each user band.

8. As an alternative, the KWS VAROS 109 is able to determine all user bands automatically with a frequency scan. This is extremely helpful when re-aligning an antenna, since this way the centre frequencies of the individual user bands are pre-defined automatically.

9. No JESS converter box was installed in this set-up, which prompted the meter to give out an alert.

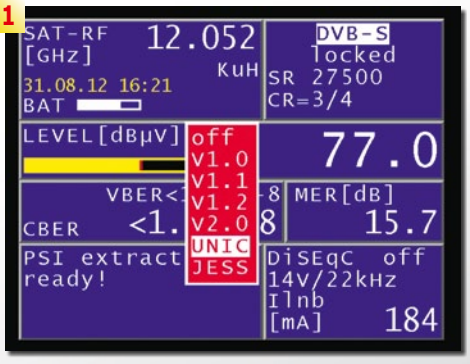
10. Due to the missing JESS converter the meter could not detect any user bands either. While this is an obvious flaw in this specific installation, the same error could also occur due to interference caused by the cable.

11. JESS can receive and distribute signals from up to four satellites, and if you're serious about your business you should make a point of checking each position. With the KWS VAROS 109 this does not turn into a waste of time, as there is a dedicated menu for switching between those positions quickly and easily.

12. An additional bonus is hidden behind the Prog.Tool menu item: The KWS VAROS 109 is capable of programming SCR and JESS antenna outlets. With single-cable set-ups this is particularly important for making sure users cannot mess up the entire system when they change the LNB settings of their receiver.

13. Thanks to a clearly laid-out table it is possible to individually program each antenna outlet. The configuration parameters can even be read out and written back so that you can easily gain an overview of the complete set-up and make sure users do not interfere with each other.

1



screen showing all parameters simultaneously you only need to press a few buttons to switch between analyser, measurement and MPEG display and to enter all required data.

What's more, all commands are executed in a breeze and we never noticed any lag or waiting periods. Thanks to the swift reaction to all user inputs a job can be completed efficiently and without wasting time. The KWS VAROS 109 accomplished mission one to our utmost satisfaction.

2) Correct alignment of a motor-controlled antenna.

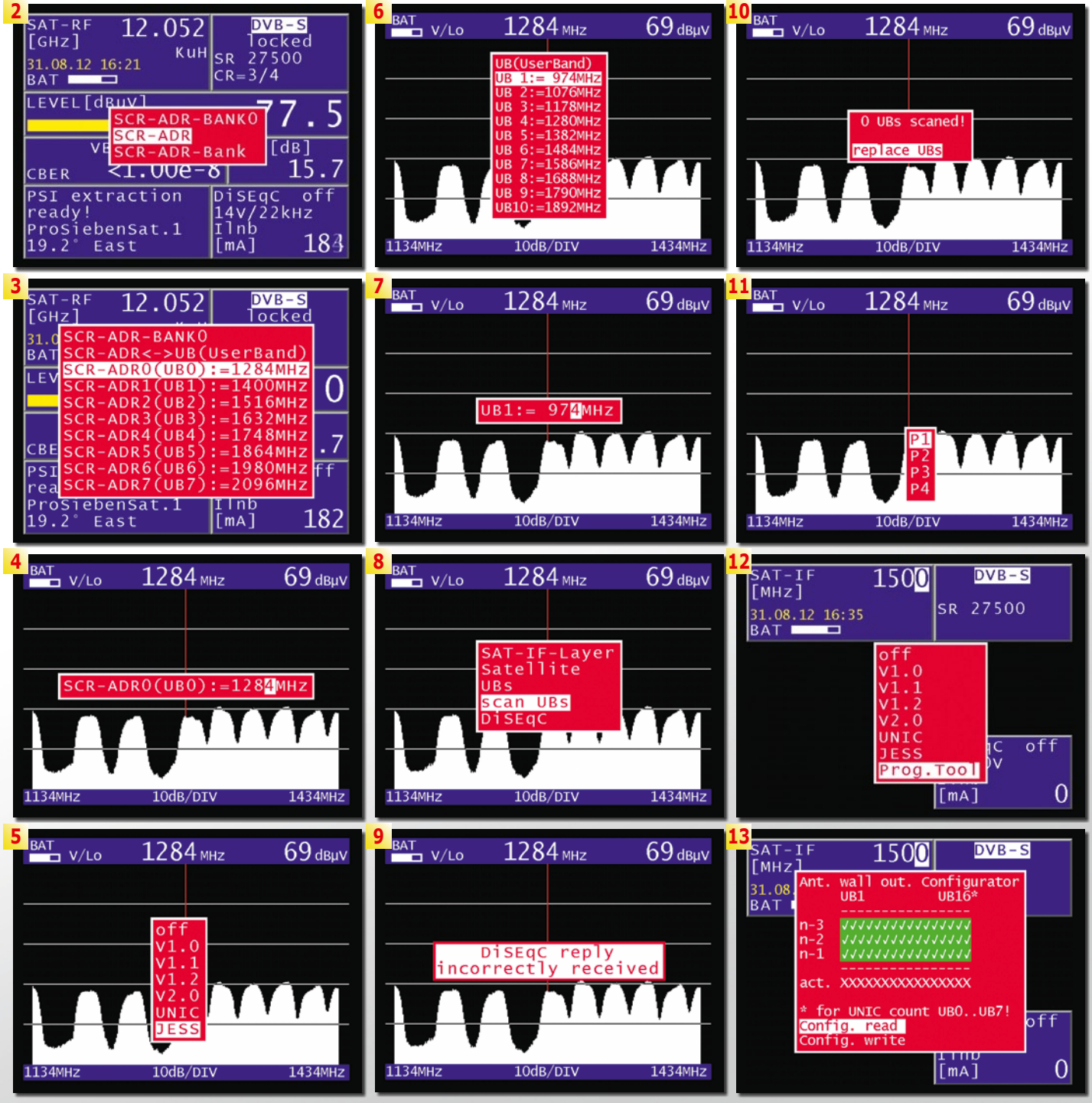
We wanted to find out how quickly an antenna with DiSEqC 1.2 motor could be aligned. While many meters boast DiSEqC 1.2 support, this feature is all too often implemented in a less than perfect way, to put it mildly. After all, what use is DiSEqC 1.2 if you cannot monitor the spectrum display in real-time while moving the antenna manually using DiSEqC 1.2 positioning?

Once again the KWS VAROS 109 did not fail to impress us, and it behaves just like you'd expect from a top-notch meter. Go to the LNB menu, set DiSEqC 1.2 and use the POSITIONER option which gives you the following commands:

- Drive
- Limit east
- Limit west
- Limits off
- Save
- Go to

When in Drive mode you can tap on the Left or Right button to initiate a short antenna movement to the East or West. If you keep the button pressed the antenna will move continuously.

The spectrum is available in real-time throughout the process, something that is extremely helpful. It allows you to conveniently move to various satellite positions and to save them in the DiSEqC motor. You may also want to remember the following hint: If the intention is to perfectly align a motor-controlled antenna we save a satellite position in the easternmost limit, the westernmost limit as well right in the middle of the arc. This way we can easily move



to each of those positions using the 'Go to' functions if we need to check and evaluate the antenna alignment.

Once those satellite positions are precisely aligned we manually visit each orbital position from East to West and save them in the DiSEqC motor. To that end we draw up a list with the satellites that correspond to each of the saved positions. The NIT function of the KWS VAROS 109 offers excellent assistance for that task, as we don't always know right away which satellite we are currently receiving, especially if we're targeting more exotic birds.

We also appreciated the straightforward implementation of the Limit function. All you need to do is go to the limit positions and use the 'Limit East' or 'Limit West' function – that's it. Thanks to the smart implementation of all required DiSEqC 1.2 functions in the KWS VAROS 109 the alignment of motor-controlled antennas has finally lost its sting.

Our only suggestion for improvement concerns the DiSEqC 1.2 memory positions, which are numbered from 0 to 99. With the currently available firmware these memory positions can only be accessed using the Up/Down buttons. Wouldn't it be nice to simply enter a number for calling up the corresponding position? But then again, we cannot be full of praise only and have to find something to criticise after all. And if truth be told, there are very few occasions that you have to deal with more than 30 satellite positions, and anything below that can easily be found by scrolling up and down the list. So if you think of getting this KWS meter, don't let us spoil that idea…

3) Alignment of a 2.4m C band mesh antenna.

For this test we wanted to re-align our C band antenna to a new satellite position. Currently it points to 37.5W and its new target position should be NSS-806 at 40.5W. While this satellite predominantly serves South America its East-Hemi C-Band Beam can also be received in Europe with the right equipment and antenna size.

If you have ever tried to set up and correctly align a C band antenna you will know that it requires better skills and equipment than Ku band antennas. There is an obvious reason for that: C band antennas focus any radiation more precisely which means that even small imperfections will impair reliable reception. In addition, there's the LNB which also has to be mounted with increased precision for C band reception. And we're not only talking about skew here. We've even had cases when the material of the dielectric was the deciding factor whether or not a usable signal came in.

But let's take one step at a time. Before we can even contemplate the dielectric we first have to modify the antenna pole so that we can point the antenna further to the west.

So off comes the antenna, which of course means that its initial alignment towards 37.5W becomes history in a matter of seconds. And this

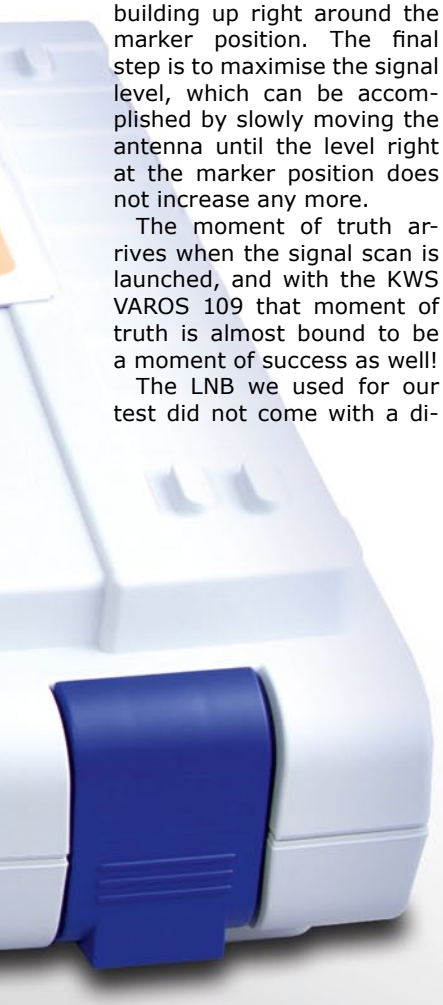
in turn implies that we'll have to re-align the antenna again after re-mounting it on the pole. We honestly could not have asked for better conditions for determining the KWS VAROS 109's worth in the C band.

As always, the accuracy and response of the spectrum display make or break such a mission, and thanks to the fast KWS VAROS 109 the C band all of a sudden does not feel like uncharted territory any longer. Incidentally, we did not even have to consult the manual or look up the transponders of NSS-806 on the Internet: The handheld KWS meter comes with a list of virtually all transponders of virtually all satellites worldwide and so all we had to do was find NSS-806 on the list and then select a transponder with a high symbol rate.

Obviously the meter put out an alert saying that no signal is locked, but once we changed back to spectrum mode the marker was spot on the appropriate frequency. We could then easily identify the satellite by a signal level building up right around the marker position. The final step is to maximise the signal level, which can be accomplished by slowly moving the antenna until the level right at the marker position does not increase any more.

The moment of truth arrives when the signal scan is launched, and with the KWS VAROS 109 that moment of truth is almost bound to be a moment of success as well!

The LNB we used for our test did not come with a dielectric, so we tried out a few materials to improve reception. The underlying reason is that the NSS-806 transmits its signals with circular polarisation.



Regular readers know that we never run away from experiments and with the fast reaction times of the KWS VAROS 109 we almost wished those experiments would go on forever. The meter could not care less when a signal was temporarily interrupted because we put our hand between LNB and antenna, or when we tried a useless dielectric – as soon as an active signal arrived at the meter's input socket again that signal was locked right away for analysis.

The built-in tuner has excellent reception qualities and was able to also lock very weak signals. We found that the threshold of the KWS VAROS 109 is definitely lower than that of other meters we use, and installers working with tricky signals will attach particular value to that benefit.

Time and again we even went so far as to unplug a cable without turning off the meter, and to plug it in again – regardless of the consequences and causing a number of short circuits along the way. Once again, the KWS VAROS 109 did not take offence and even refrained from giving out warning messages. It just continued its job as soon as a valid signal was available again. One thing is for sure: DXers will definitely appreciate the excellent assistance the KWS VAROS 109 can provide with the correct alignment of large antennas.

And if all of the above still does not leave you yearning for the new KWS handheld meter, there is one more feature that should finally tip the scales: These days an increasing number of cable subscribers want to switch to satellite TV, since in markets like Germany satellite television offers much better free-to-air variety and in general also better video quality. Another aspect that makes the switch worthwhile is that you don't need a subscription and you can reduce your monthly bills – as opposed to cable TV. Yet, all that glitters is not gold and in many buildings it is either not possible or not allowed to replace old cabling and add new cables.

Incidentally, the distribution infrastructure for cable TV follows different rules than for satellite reception, which places much higher demands. It is only since very recently that single-cable solutions for satellite TV have hit the market and gained some prominence. Systems such as SCR and JESS can make use of an existing internal cable

TV distribution system for satellite TV, and more and more owners of detached houses will also realise the advantages of single-cable systems in the long term. In theory it is possible to provide satellite TV to every single room of a home, since with SCR and JESS signals can be carried over a single cable distribution system. SCR allows distribution of signals from two different satellite positions to a total of eight independent outlets, and JESS even has capacity for up to four satellite positions and up to 16 independent outlets. Each outlet (user) is assigned a dedicated frequency which carries the transponder that is required for the selected channels. Special DiSEqC commands are used by the single-cable converter to select the appropriate transponder and send it to the correct outlet using the pre-assigned frequency for that particular outlet. While the whole set-up is not as complicated as it appears at first sight, there still is some installation and programming work to be done for a reliable single-cable solution. A powerful meter is an absolute 'must have' for such jobs, and the price you pay for professional equipment will soon turn out to be money well spent.

The KWS VAROS 109 is one such professional meter, designed for professional installers, and as such it is compatible with SCR and JESS installations. And when we say it is compatible this is only half the truth.

While most professional meters are capable of evaluating an SCR distribution system by presenting the frequency ranges of each user (also called user bands) in the spectrum display, the KWS VAROS 109 goes the extra mile: It can be individually configured for each SCR solution, that is to say the centre frequency to be used for each outlet can be specified and it is even possible to save a number of different SCR/JESS configurations right in the meter. Installers looking after several different systems will save valuable time by not having to enter the same parameters again and again. What's more, the KWS VAROS 109 is able to identify the user bands all by itself by carrying out a short-time scan and determining the centre frequencies created by the converter for each user band.

With JESS distributing up to four satellite positions via up to 16 user bands the converter has to change the required transponder frequency to the centre frequency of each corresponding user band. This in turn means that receivers must send a JESS command to the converter with information about the required transponder frequency and then negotiate the corresponding centre frequency of the user band.

Each new channel selection triggers the entire chain of JESS commands and negotiations, and with up to 16 receivers on a single line data traffic may become so dense that accidents can occur. It is therefore paramount for an SCR or JESS installation to be correctly set up and thoroughly evaluated.

Special antenna sockets are used for SCR and JESS signal distributions that make sure users cannot unwittingly change any settings and interfere with other users. Each of those sockets is programmed by the installer with the centre frequency corresponding to the user in question so that they cannot mess up the SCR or JESS system when they make changes in their receiver's installation menu (LNB settings, etc.).

The KWS VAROS 109 can be used to program the SSD6 series of antenna sockets by Axing, or Jultec's JAP series, which is a unique sell-

ing proposition in the meter market. We don't know of any other meter that can be used for evaluating, programming and documenting SCR and JESS systems the way the KWS VAROS 109 does. KWS has truly gone out of its way to whizz up a meter that meets all requirements, and then some…

And the list goes on: A logging function is extremely important with professional meters. After all, many customers want to see in writing what state their reception system is in and demand a printed log report.

As it is frequently necessary to measure the signal parameters of the same transponder at various antenna outlets throughout a building, a top-notch meter must be able to do such repetitive jobs automatically. How does the KWS VAROS 109 fare in that regard? Well, installers can easily add any transponder to the internal memory of the KWS VAROS 109. The memory can store a total of 99 transponders and the list can be sorted according to frequency, range or satellite if required. In addition, each memory position can be locked so that it cannot be deleted accidentally.

Whenever a series of measurements is to be performed on a reception system the installer only has to call up the data logger, enter the start and end positions in the tuning memory and the KWS VAROS 109 will automatically measure the selected transponder. An XML file is created for each measurement series. The files can then be opened and worked with on any PC using Microsoft Excel or OpenOffice Calc. We believe it's a smart move by KWS to use an open file format for log files as this allows for much more versatile data processing.

Installers dealing mainly with satellite reception now don't have an excuse any longer for not using a professional meter by KWS. The VAROS 109 is a fully-fledged meter, but with a price tag that is as small as its size. If you're an experienced DXer or even a hobby installer without your own business you should also give this new offering by KWS some serious consideration.

Many companies already use KWS meters of the AMA or VAROS ranges, and even they have good reason to equip their installers with the new KWS VAROS 109 handheld meter for their daily routines. Its small dimensions coupled with low weight and long battery life make it an ideal companion for installation jobs.

The meter offers all features and functions required for installation, maintenance and fault clearance and once you start using it you'll never want to give it away again. Not only does it provide measurements with utmost precision, it is also extremely easy and convenient to use.

So can it be true that for once we have nothing to criticise? If you press us really hard, there is actually one issue that we have: The nylon bag and – even more importantly – the hard case don't show a huge KWS logo. This is a shame, since customers won't know right away that their installation job will be performed by a professional with the best equipment available.

Expert Opinion

Vitor Martins Augusto
TELE-audiovision
Test Center
Portugal

+
- Easy and quick operation
- Light weight
- Great screen, readable even under direct sun light
- Very accurate
- Very responsive
- Pre-programmed transponder list for all relevant satellites

–
- None

TECHNICAL DATA

Manufacturer	KWS-Electronic GmbH, Tattenhausen Sportplatzstrasse 1 83109 Großkarolinenfeld, Germany
Website	www.kws-electronic.de
Email	info@kws-electronic.de
Tel	+49-8067-9037-0
Model	KWS VAROS 109
Function	Handheld Signal Analyzer with Spectrum
Frequency range	910 – 2150 MHz
Modes	DVB-S, DVB-S2
Input	via keyboard
Monitor	5,7" Color-TFT, VGA Resolution
Menue Languages	English, French, German, Italian
HF Input	F-Plug / 75 Ohm (IEC 60169-24)
Input Attenuator	0 – 30 dB in 4 dB increments
Level Measurement	30 – 100 dBµV
Measuring accuracy	±2,0 dB at 20° C ±2,5 dB at 0° C – 40° C
Acoustic level indicator	yes
DVB-S	QPSK-Demodulator (according ETS 300421)
Symbolrates	2 – 45 Msym/s
Measuring parameters	(according ETR 290)
VBER	10-2 bis 10-8 (after Viterbi)
CBER	10-2 bis 10-8 (before Viterbi)
MER	2 – 20 dB resolution 0.1 dB
DVB-S2	QPSK/8PSK-Demodulator (according ETS 302307)
Symbolrates	2 – 45 Msym/s
Measuring parameters	(according ETR 290)
VBER	10-1 bis 10-8 (after LDPC)
CBER	10-2 bis 10-8 (before LDPC)
MER	1 – 20 dB resolution 0.1 dB
Video	MPEG-2 (ISO/IEC 13818-2)
Audio	MPEG-2 (ISO/IEC 13818-3)
Stereo	Dolby Digital AC-3, Dolby Digital Plus,
AAC	MPEG-2 AAC (ISO/IEC 13818-7),
AAC	MPEG-4 AAC (ISO/IEC 14496-3)
CI (Common Interface)	yes
DataLogger	XML on USB stick
Interfaces	DVI, USB-A
Memory	99
Power to LNB	14 V/18 V, < 500 mA (short circuit-proof)
Power Meter	0 – 500 mA at 1 mA
External Power	11 – 15 V DC max. 2,5 A
Battery	Li-Ion-Battery Pack 7,2V / 6,6Ah
Operating Time	approx 3.5 hours, automatic shutdown
EMV	according to EN 61000-6-2 and EN 61000-6-3
Dimensions	W 164 mm, H 266 mm, D 70 mm
Weight	approx 1.3 kg including battery

NDS3995 DVB-S2 HD IRD

New design IRD with video monitor LCD equipped on the front panel

Key Features

- Support DVB-C/DVB-S/ DVB-S2/DVB-T/ ISDB-T RF Input
- Support 1 RF, 1 ASI, and 1 IP (100M) input
- Support 2 channels ASI output and MPTS/32 SPTS IP output
- Support tuner pass through to ASI output
- Multiple Video and Audio format output
- Support H.264 and MPEG2 decoding
- Unicast and multicast support
- Support NMS over SNMP
- LCD display on the front panel

NDS3402-D DVB-S2 Modulator

High performance modulator developed according to DVB-S2 (EN302307) standard

Key Features

- Fully compliant with DVB-S2(EN302307) and DVB-S (EN300421) standard
- Four ASI inputs supporting hot backup
- Supporting BISS scrambling mode
- Supporting local and remote control
- 10MHz outer reference clock input
- Output frequency range: 950~2150MHz
- Support IP signal input

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

Skyworth HTA6

- ***Simple Minimal Design***
- ***Uses an external power supply***
- ***Very stable software***
- ***Exceptional EPG presentation***
- ***Specialty is the ability to blend in subtitles***

DVB-T2 in an Elegant Package

The new HTA6 DVB-T receiver from Skyworth can be found in a 19 x 11.5 x 4cm sized chassis made out of glossy black plastic with edges that are elegantly rounded off. On the front panel you'll find a USB 2.0 interface, a slot for the integrated card reader as well as three buttons (On/Off, Ch+ and Ch-).

And it's precisely this simple design that that we liked so much; who really uses a four-digit segmented display? Skyworth even came up with an interesting solution to display the operational state of the receiver: An LED positioned behind the On/Off button shines green when the receiver is operational and red when it's in standby.

At first glance the rear panel of the HTA6 appears somewhat limited yet it does come with all the necessary connections. And these include a tuner input with looped-through output, an HDMI jack, three RCA jacks for stereo audio and CVBS video as well as a port to plug in the external 12V power supply.

Thanks to the fact that Skyworth chose to use an external power supply, the receiver itself is not only suitable for use while camping or even in a car, its heat output it very low allowing it to be easily placed in any TV setup or in any living room cabinet.

The remote control supplied by the manufacturer is nicely organized and easy to read. The pressure points of the buttons are relatively comfortable; the buttons themselves are rather small but it won't take long to get used to them. Overall, there's nothing to complain about with the workmanship of the HTA6 – typical from Skyworth.

The Skyworth HTA6 belongs to that group of receivers that come with a practical installation assistant; it's just another plus point in our overall rating.

Before the user can put the receiver to work, selections need to be made for OSD language, receiver location, picture display as well as voltage selection for the antenna.

The submenu Picture Display includes 4:3 and 16:9 formats although the resolution of the video signal via HDMI cannot be changed from here.

To finish off the initial installation, the user is asked to perform an automatic channel scan across the entire frequency band. Here at our test location in Vienna, Austria, the HTA6 needed three minutes to complete this task and thereby managed to find every available channel in DVB-T as well as the test channel in DVB-T2.

And just like in any of our other tests, we couldn't resist taking a closer look at the receiver's main menu before going on to actual TV reception.

The Main Menu is divided into seven submenus starting with 'Program'. Here the user can set up the channel list as desired; channels can be deleted, moved, locked with a PIN code, renamed or skipped over. Channels can also be moved into one

TELE audiovision AWARD 01-02/2013

Skyworth HTA6
A solid receiver for HDTV via a terrestrial antenna

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

Hybrid OTT BOX+DVB-S2/T2/C

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

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HD DVB-S2

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

HD DVB-T

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

Website: www.sowell-tech.com Email: info@sowell-tech.com Tel: +86-755-26526837 Fax: +86-755-26526909

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of four Favorites lists. Even the automatic sorting of the channel list is possible here.

If you go to the 'Picture' submenu, that's where you'll find the ability to change the resolution of the HDMI video signal, something we couldn't do earlier in the initial installation. The available choices are 576i, 576p, 720p, 1080i as well as 1080p 50/60 Hz. In other words, the receiver is best suited for use with HDTV reception and is also ready for the future thanks to its 1080p full HD support.

Although hardly ever used, the picture standard can be switched from PAL to NTSC and back again if needed. You can also adjust the OSD transparency to your needs.

Hidden behind the 'Channel Search' menu are all the channel scan options. In addition to the automatic channel scan across the entire frequency range, the receiver can also handle a manual scan using the channel number or channel frequency. Immediately after entering in these values, the signal strength and quality are shown on two large bar graphs; this allows the user to confirm even before a channel scan that an active frequency has been selected.

Regarding setting the time, Skyworth came up with an interesting idea: in addition to the standard way of selecting the local time difference to GMT, the user can also simply select their location from a list and the receiver will then automatically adjust for that time zone.

Skyworth also included an on/off timer so that the receiver can be programmed to automatically turn on and off at specified times.

On top of all the different settings capabilities, Skyworth also included child protection through the age feature in the EPG, the ability to do a factory reset and also language selection for audio, subtitles and the OSD.

OK, we spent enough time discussing all the different settings that the HTA6 has; it's time to let the receiver do what it was meant to do: and that is TV reception.

As we would expect from Skyworth, there were no issues and it provided excellent picture and audio quality. Even the roughly one second channel switching time from one frequency to another was nothing to complain about and should even make a couch potato happy.

A push of the OK button displays the channel list.

1. Installation assistant
2. Automatic channel scam – thanks to DVB-T2 compatibility, HD channels in H.264/MPEG-4 can also be played back without any problems
3. With the help of the colored function buttons the channel list can be customized to your personal tastes
4. Channels can be easily renamed
5. The exceptionally clear and nicely designed EPG
6. Picture settings
7. Manual channel scan – the bar graphs at the bottom instantly let the user know if a valid frequency has been entered
8. Local time settings, and, if needed, also with the help of your location setting
9. Various language and audio settings
10. System settings
11. USB settings
12. Music, pictures and videos can be played back through the HTA6
13. Audio playback of an M4A file
14. Playback of a DivX HD Video
15. Playback of a Flash Video

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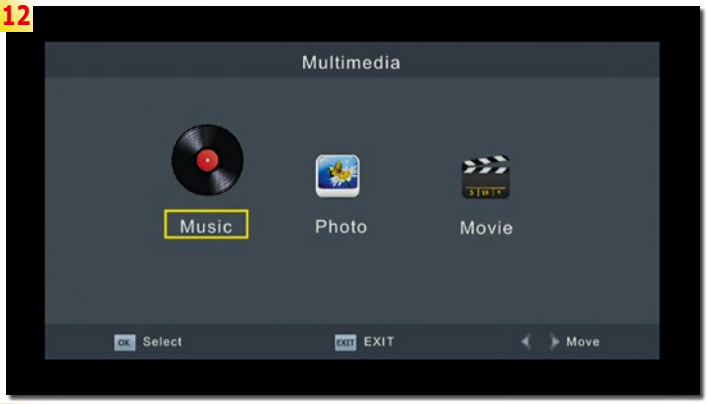

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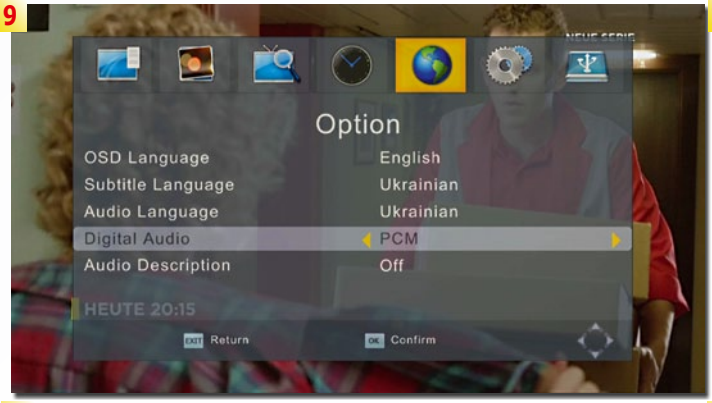

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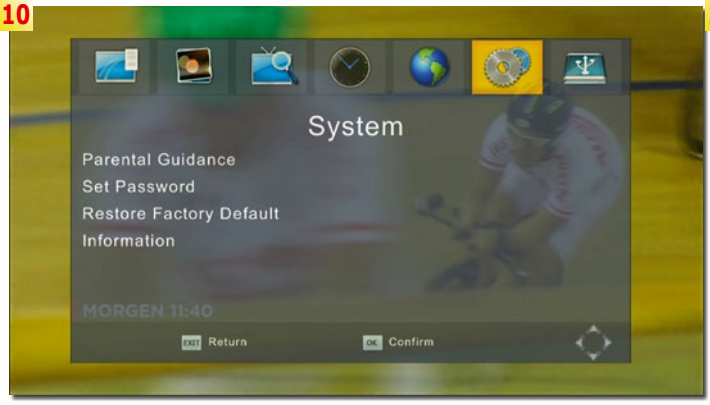

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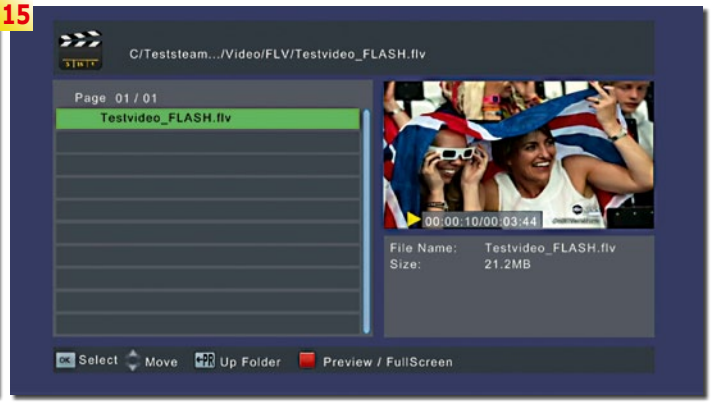

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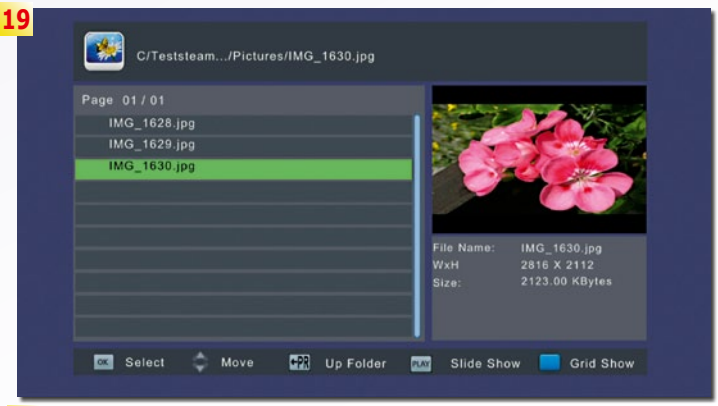

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Here the user can easily switch between TV and radio reception using the left/right arrow buttons on the remote control. The FAV button opens up a list containing the channels that were previously marked as Favorites while the red function button lets you search for specific channels.

In our tests the HTA6 was easily able to handle any of the received streams in either DVB-T or DVB-T2. It was also quite happy with the H.264/MPEG-4 format for optimal use of bandwidth in DVB-T2.

As long as the programming provider supplies EPG data, it is shown by the HTA6 in a clear and easy to understand Info bar for the current and upcoming programs with every channel change. If more detailed information is needed, simply press the 'i' button on the remote control to access the expanded EPG.

We also liked a particular feature of the Info bar in which a row of dots indicates graphically to the user how long a program has already run and how much time is left for that program.

Even the Electronic Program Guide (EPG) is a highlight from Skyworth in that it is presented in a clear and organized fashion. It is always displayed for one channel and divided into two sections. On the left side are the individual programming entries while on the right side you'll find the associated detailed information.

With the help of the colored function buttons on the remote control you can easily page through all of the content. Timer entries can also be set up in the EPG so that you won't have to worry about missing your favorite program; they can be stored on an external storage device connected via the USB 2.0 port.

With the help of dedicated buttons on the remote control for audio language and subtitles, the associated settings can be adjusted while the receiver is in operation. There's also an integrated teletext decoder and although the technology is rather old, its pages are still a popular source of information.

Did you ever get annoyed at the occasional small size of the subtitle text? Well, Skyworth even thought of this problem: the HTA6 has the ability to change the text size, text color and background color of the subtitles. We found that to be extraordinary!

There are hardly any digital receivers out there today that don't come with multimedia features and the Skyworth HTA6 with its USB 2.0 interface is no exception. We appreciated all the different audio and video formats that the HTA6 can handle, specifically, AAC, M4A, MP3 and WMA for audio as well as AVCHD, DivX SD/HD, Flash, MOV, MP4 SD/HD, MPEG and TS for video.

This receiver not only lets you enjoy music, but you can also view the latest Internet videos in full-screen mode on your TV. At the same time, a picture viewer

16. Playback of an MOV Video

17. Playback of an MP4 Video in HD quality

18. Playback of a TS video stream

19. Picture viewer

20. Thanks to the grid view, multiple photos can be shown side-by-side

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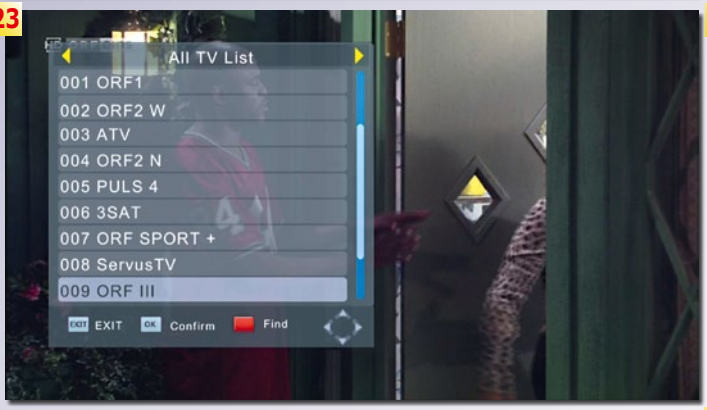

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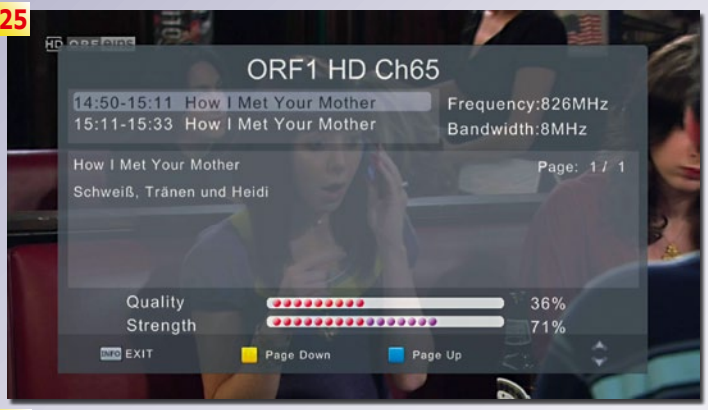

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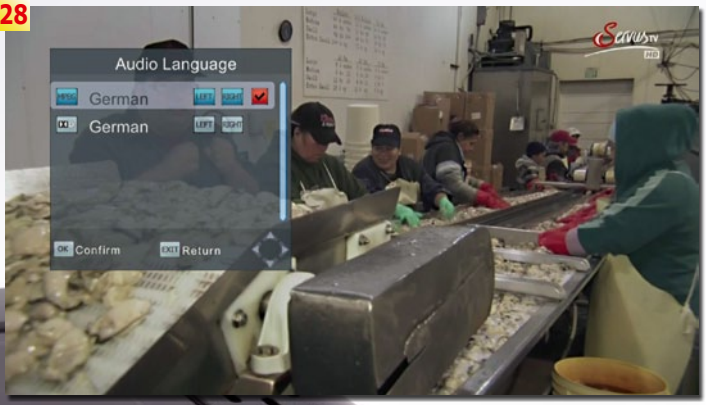


21. The display time and the switchover mode can be individually set for a slideshow
22. Subtitles can be displayed in three different font sizes and in user-selectable colors
23. Channel list
24. The red function button can be used to search for a specific channel
25. A push of the 'i' button on the remote control displays expanded information on the current channel
26. Info bar with the EPG data from the current and upcoming program
27. Teletext
28. Selection of the desired audio track
29. Favorites list
30. Selection of the desired subtitles

has become standard and Skyworth also included this function in the HTA6.

Pictures stored on a USB storage device can be displayed one-at-a-time, in slideshow format with adjustable display time, at random or in a grid format. Skyworth even thought about a zoom function and maintaining the aspect ration. Regardless if it's pictures from your most recent vacation, a kid's birthday party or some other event, the HTA6 will let you show them off to your friends and family conveniently and comfortably from your living room couch on your TV.

The HTA6 from Skyworth is a solid receiver that has no problems handling DVB-T and DVB-T2 signals. It therefore lets you enjoy high-resolution TV from a terrestrial antenna.

The OSD is clear and easy-to-follow, the operation of the receiver is intuitive and the housing was very tastefully designed. We here at TELE-audiovision like this box and feel it is worthy of a recommendation.

Expert Opinion

Thomas Haring
TELE-audiovision Test Center Austria

+ **An elegant housing, a clear OSD as well as simple and logical operation highlight this receiver. Its menu operation should not be a problem for anyone. The software proved to be stable during our tests and didn't present any problems. The video and audio output via HDMI is very good and thanks to the external 12V power supply, the receiver would be perfect for use in your back yard or while camping.**

– **The remote control is somewhat small but you'd eventually get used to it.**

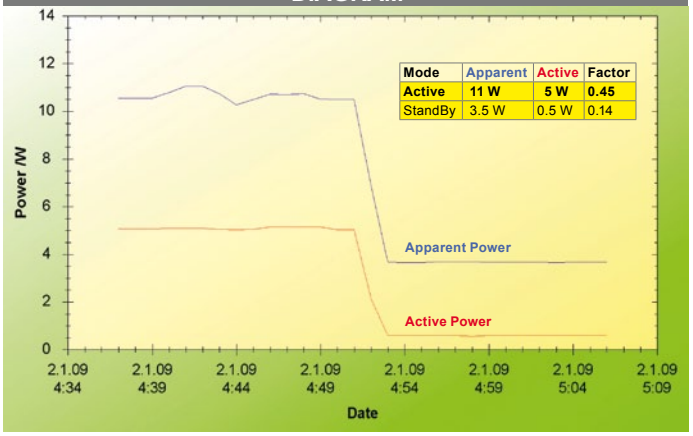
TECHNICAL DATA

Manufacturer	Shenzhen Skyworth Digital Technology CO., LTD.
Email sales	miaodan@skyworth.com
Internet	www.skyworthdigital.com
Model	HTA6
Function	DVB-T/DVB-T2 Receiver
Input frequency	VHF (177.5-226.5 MHz) UHF (474-858 MHz)
EPG	yes
Supported standards	DVB-T, DVB-T2
Video resolution	576i, 576p, 720p, 1080i, 1080p 50/60 Hz
RS232	no
Ethernet	no
USB 2.0	yes
HDTV	yes
MPEG4/H.264	yes
Internal Smarrcard Reader	yes
Power supply	12V DC

MORE ABOUT THIS COMPANY

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

ENERGY DIAGRAM



The first 15 minutes active operation with channel surfing and multimedia playback; the second 15 minutes Standby

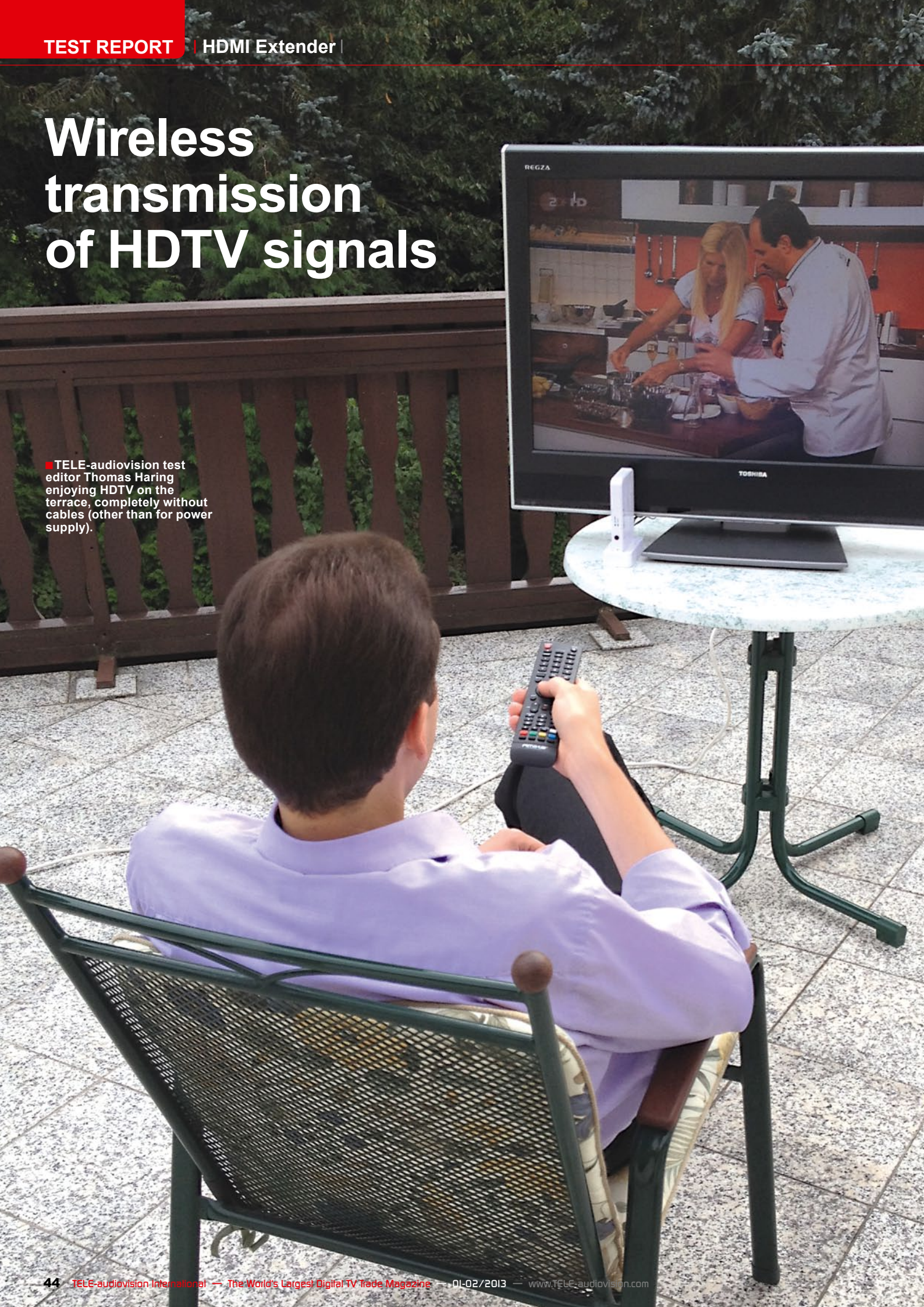
Wireless HDMI
Receiver
NETWORK
VIDEO

Antiference

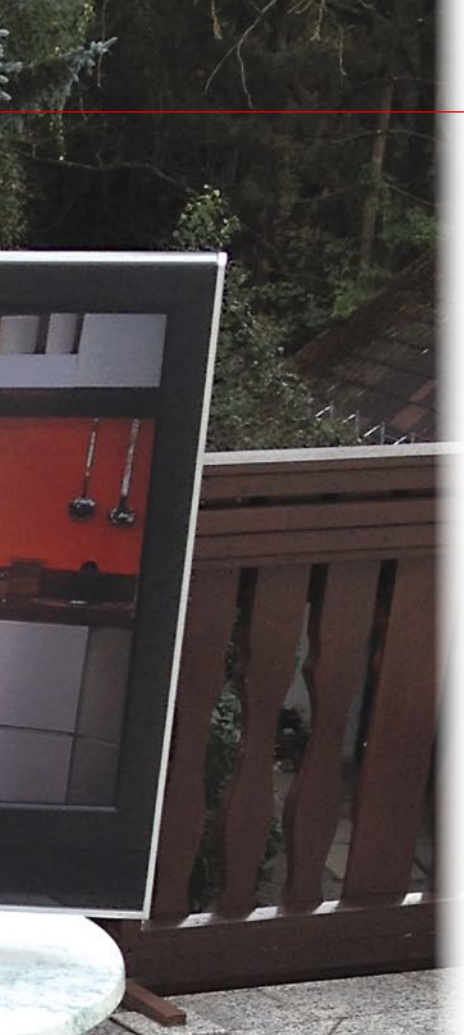
Antiference Wireless HDMI Extender

- *supports HDMI 1.3 and HDCP 1.2 for all HDMI compatible TV panels*
- *wireless transmission of HDTV up to 30 m*
- *perfect video quality – no difference to connection with HDMI cable*
- *even transmits infrared commands sent from the remote control to a connected receiver*
- *thanks to integrated EDID protocol video resolution is negotiated automatically between devices*

Wireless transmission of HDTV signals



■ TELE-audiovision test editor Thomas Haring enjoying HDTV on the terrace, completely without cables (other than for power supply).



We're all faced with a similar scenario: UHF modulators, coax cables, RCA cables, analog transmitters and so on are just some ways for an average user to hook up an additional TV in the bedroom, terrace or garden to an existing pay TV receiver, DVD player, satellite receiver or games console in the living room.

The list could go on forever, and every single option comes with a major drawback – full HD transmission with up to 1920x1080 pixels is not possible without using a cable-bound route. So up until now pay TV providers have been taking our money every month, yet the only place where we could actually enjoy their HDTV offering has been the living room.

While some providers offer a second receiver and smartcard for a single subscription, this of course comes at a price and further stretches the family budget. It gets even more complicated if we decide to watch the latest movie out in the garden on a warm summer night, since we also have to think about signal distribution in the first place. As long as we're happy with terrestrial TV this is a problem that can easily be solved, but what about satellite TV? Do we really want to roll out thick coax cables all over the place?

Well, we don't need to any longer! This test report will introduce you to the Wireless HDMI Extender from Antiference.

When we first heard about a new solution for wireless transmission of 1080p signals we were a bit sceptical, to put it mildly. Is current consumer technology capable of such a highly loaded mission at all? There was only one way to find out – get the system and give it a try!

Antiference's Wireless HDMI Extender consists of two modules, which take care of transmission and reception. As far as appearance goes, they look like your average Ethernet switch. This is hardly surprising given their size, which is 148 x 98 x18 mm and thus could easily be mistaken for a network hub.

In order to make sure the integrated antennas of the two modules can operate at full capacity the manufacturer ships both devices with supporting feet, which not only take care of safely positioning the modules where they are required, but also optimise the transmission and reception quality of the overall system. Apart from all this highly welcome functionality, we did appreciate the

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Antiference Wireless HDMI Extender
Perfect solution for wireless HDTV in your house or apartment

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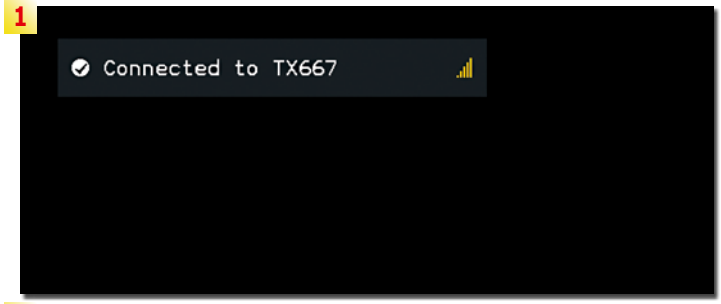

fact that the manufacturer also thought about a smart design for its product. Transmitter, receiver and supporting feet all come with a shiny white surface and create a low-key yet stylish overall appearance.

Both the transmitting and the receiving modules come with two status LEDs indicating an established connection between the modules and a receiver or TV that is connected via HDMI.

Our test showed that a third LED would have been welcome to light up every time the system is connected to the mains and ready to operate. The reason for this is that none of the two LEDs is active unless a connection between the two modules has been established and so you never know whether the system is turned on at all. And while we're at it, a signal bar indicating the signal level at the receiving end would have been very handy as well.

On a truly bright note, the manufacturer treated the reception module to an integrated infrared receiver on the front panel, which means you can use your remote control on the terrace or in the garden the same way you would right in front of the telly in the living room. So not only does the HDTV signal from the receiver travel wirelessly to your TV panel, but commands sent from the remote travel back to the receiver as well – two-way communication at its best.

In order for that to work the Wireless HDMI Extender converts the infrared signal from your remote into a digital signal that is first sent to the transmitting module and then transformed back into an infrared signal which is finally sent to the receiver from there. Sounds complicated, but works wonderfully.

In the outer left corner of both modules you can find a flush mini-switch which can be used as a sort of range extender for the wireless signal (albeit with reduced video signal quality) and for logically linking up two or more modules in the first place in order to get going.

The back panel of both modules sports an HDMI port and a socket for connecting the external 5V power pack. In addition, the transmitting module features a socket for the external infrared transmitter, while the receiving end comes with a mini-USB port.

Antiference ships the system with a concise manual which will tell you everything you need to know to set up the system and which comes with useful illustrations where required. We were absolutely impressed by the build quality of this signal extender, which met all of our – admittedly rather high – demands.

Now that we knew about any nook and cranny of its outside appearance it was time to have a closer look at the technology behind the Wireless HDMI Extender from Antiference.

Transmissions take place in the 5 GHz range, or between 5.1 and 5.9 GHz to be more precise. We find that's a smart choice by the manufacturer, since the overly popular 2.4 GHz range has become a bit crowded with all the countless WiFi routers, analog transmitters, microwaves and other devices in recent years.

1. The receiving module of the Wireless HDMI Extender has successfully established a connection with the transmitting module. An on-screen message confirms this to the user.

2. Wireless transmission of a HDTV signal from a receiver to the TV – thanks to the Wireless HDMI Extender.

3. The receiving module of the Wireless HDMI Extender tries to establish a connection with the transmitting module.

4. The receiving module of the Wireless HDMI Extender has successfully established a connection with the transmitting module. There is, however, no incoming signal at the moment.

5. The receiving module of the Wireless HDMI Extender is currently not logically connected with any transmitting module.

6. HDTV content with a resolution of up to 1080p can easily be transmitted wirelessly.

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The 5 GHz band was only released for public use in 2009 and offers a total of 19 separated channels without overlap (as opposed to merely three 2.4 GHz channels), which can be used by devices such as the Antiference Wireless HDMI Extender. In addition, the higher frequency in combination with improved error correction routines allows for data rates of up to 600 Mbit/s, which also compare extremely favourably to the 54 Mbit/s that can be achieved using the 802.11a standard in the 2.4 GHz range.

The Wireless HDMI Extender itself can deal with resolutions all the way up to 1080p 60 Hz Full HD (which means a maximum of 1920x1080 individual pixels) and supports HDMI 1.3 as well as the HDCP 1.2 protocol for copyright protection. Thanks to also supporting the EDID (Extended Display Identification Data) protocol it is possible for TV panel and receiver to wirelessly arrange for the best possible display resolution and to make sure users can enjoy optimum video quality with the hardware at hand.

The MiMo (multi input/multi output) method is used for signal transmission, which means multiple antennas are built into both the transmitting and receiving modules using a total of four different channels. In addition OFDM (Orthogonal Frequency Division Multiplexing) allows for optimum error correction and limits the risk of outside interference with the signal.

Now that we had run through all the technical specifications, we could hardly wait to see the system at work. To that end, we connected a HDTV satellite receiver to the transmitting module and a 42-inch LED TV to the receiving module.

For our test purposes, both devices were positioned in the same room so we expected a successful transmission at any rate. And so it was: A few moments after we had powered up both modules of the Wireless HDMI extender all LEDs lit up in green to indicate that (a) a connection had been established between the transmitting and the receiving end and (b) a HDTV device was connected to each module. All that was left to do for as was to turn on the TV to witness firsthand how the receiver in one corner of the room provided a crystal clear 1080p signal to the TV panel in the opposite corner of the room completely without a cable.

Since we're talking about strictly digital transmission there is no video noise or similar interference and the wireless signal we received was 100% identical to a signal we would have received with a direct cabled connection between receiver and TV.

Commands sent via infrared from the remote also reached our receiver flawlessly so that in terms of user experience there was no difference whatsoever between our set-up and a conventional installation using cables.

Wireless transmissions from one corner of a room to another are nice and convenient, but hardly a technological breakthrough, so we wanted to find out next how much the distance between transmitting and receiving modules could be increased without compromising signal quality.

In the technical specifications the manufacturer states a maximum of 30 meters, yet does not specify whether this distance refers to indoor or outdoor use. So we were left with no other choice than to find out ourselves.

Using a small LCD TV we moved out into the garden of our editorial offices and mounted the transmitting module on a window facing the garden. The distance between the two modules was 27 meters without any obstruction, and the Wireless HDMI Extender achieved its mission brilliantly. We were able to watch flawless HDTV without any noticeable interference. It was only when we increased the distance to more than 40 meters that the LED indicating a successful connection between the modules stayed dark.

Thus we can confirm that the Antiference Wireless HDMI Extender performs as specified when used outdoors and with optimum positioning of the transmitting module.

What about indoor use? To start with, it all depends on the type of walls within a building, since a thin drywall obviously will let through considerably more signals than a massive wall made of reinforced concrete. The results will invariably differ, but this is not to blame on the

technology used.

In our tests at different locations we achieved a maximum transmission distance of 20 meters across thin partition walls and just a little over 12 meters when the signal had to travel through massive brick walls or reinforced concrete. In actual fact, these results are more than acceptable, but can only be achieved if the transmitting and receiving modules are not physically blocked by other items and if no other devices emitting high electromagnetic radiation (such as WiFi routers in the 5 GHz range, for example) operate in the immediate vicinity of the modules.

Even when the receiving module of the Wireless HDMI Extender does not receive a signal from the transmitting module it still gives out on-screen messages via its HDMI port indicating potential problems. Once a connection has been established the signal strength is given via HDMI.

In our test, however, this signal indicator only showed full strength or no signal, so it was not possible to check how the signal changed with increased distance, for example.

The manual of the Wireless HDMI Extender comes with a hint regarding a built-in range extender function, which can be activated by pressing the button on the front panel of both modules.

Naturally, we wanted to try that out as well, but in our test the range remained unchanged no matter how often or how hard we pressed those buttons. In addition, the expected on-screen message indicating the range extender mode did not pop up either. According to the manual the increased range comes at the cost of decreased video quality, which was another thing we did not notice.

The Wireless HDMI Extender from British company Antiference is an innovative solution we've been waiting for for ages. At long last wireless transmission of HDTV signals for private use has become reality.

Thanks to using 5 GHz technology the system is capable of transmitting high data rates while at the same time being reasonably interference-resistant, not least due to MiMo and the ODFM modulation standard used.

Very good transmission and reception results can be achieved with the Wireless HDMI Extender, both indoors and outdoors, and thanks to loss-free digital transmission the video quality is excellent and just as sharp as with a conventional connection using cables.

Expert Opinion

Thomas Haring
TELE-audiovision
Test Center
Austria

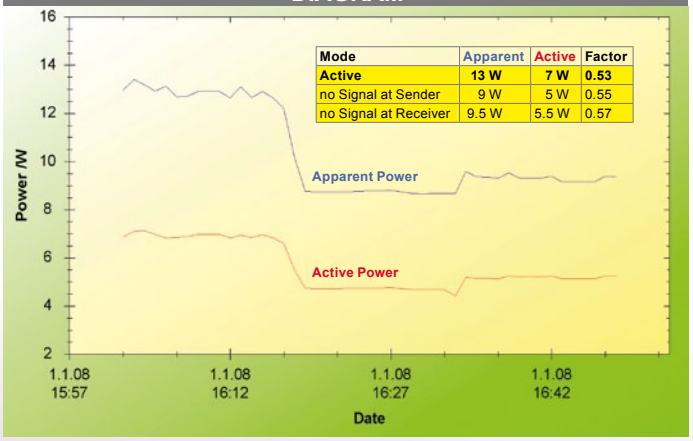
+ **Perfect and loss-free signal transmission within the distance specified by the manufacturer. Fit for future use thanks to 5 GHz frequency range and ready to be used at any location. The Wireless HDMI Extender is extremely easy to set up and use and will add some shine to any TV rack. With its support of HDMI 1.3 and HDCP 1.2 it is compatible with all HDMI devices and with the help of the integrated EDID protocol all connected devices can communicate with each other to negotiate the best possible screen resolution. All this is rounded off by a brilliant infrared receiver in the receiving module which can be used to remotely control any receiver with a conventional 38 kHz IR system in place.**

– **No status LED to indicate power supply, no signal strength indicator on the receiving module. The range extender mode could not be activated. On-screen signal strength display does not give out meaningful values.**

TECHNICAL DATA

Manufacturer	Antiference Limited
Email	sales@antiference.co.uk
Internet	www.antiference.co.uk
Model	Wireless HDMI Extender (5002JH)
Function	Wireless HDMI Transmitter & Receiver
Transmission Frequency	5.1 - 5.9 GHz
Frequency Stability	+/- 4 PPM
Bandwidth	40 MHz
Transmission Power	>= 12dBm
Receiving Sensitivity	<= -75dBm
System Latency	<= 1ms
Sending/Receiving Channels	4 channels for sending, 1 channel for receiving
HD Video Protocol	HDMI 1.3
HD Video Encryption Protocol	HDCP 1.2
RF Communication System	MIMO
Modulation Mode	OFDM
Unobstructed Effective Range	>= 30m
Power Supply	5V
Dimensions	148 x 97 x 18 mm
Operating Temperature	-10°C to 50°C
Operating Humidity	15% to 85% RH

ENERGY DIAGRAM



Active use of transmitting module during the first 15 minutes, followed by 15 minutes measured at the transmitting module without video input signal, and another 15 minutes measured at the receiving module without video input. Power consumption of the receiving module with video output corresponds to the values measured at the transmitting end.

MORE ABOUT THIS COMPANY

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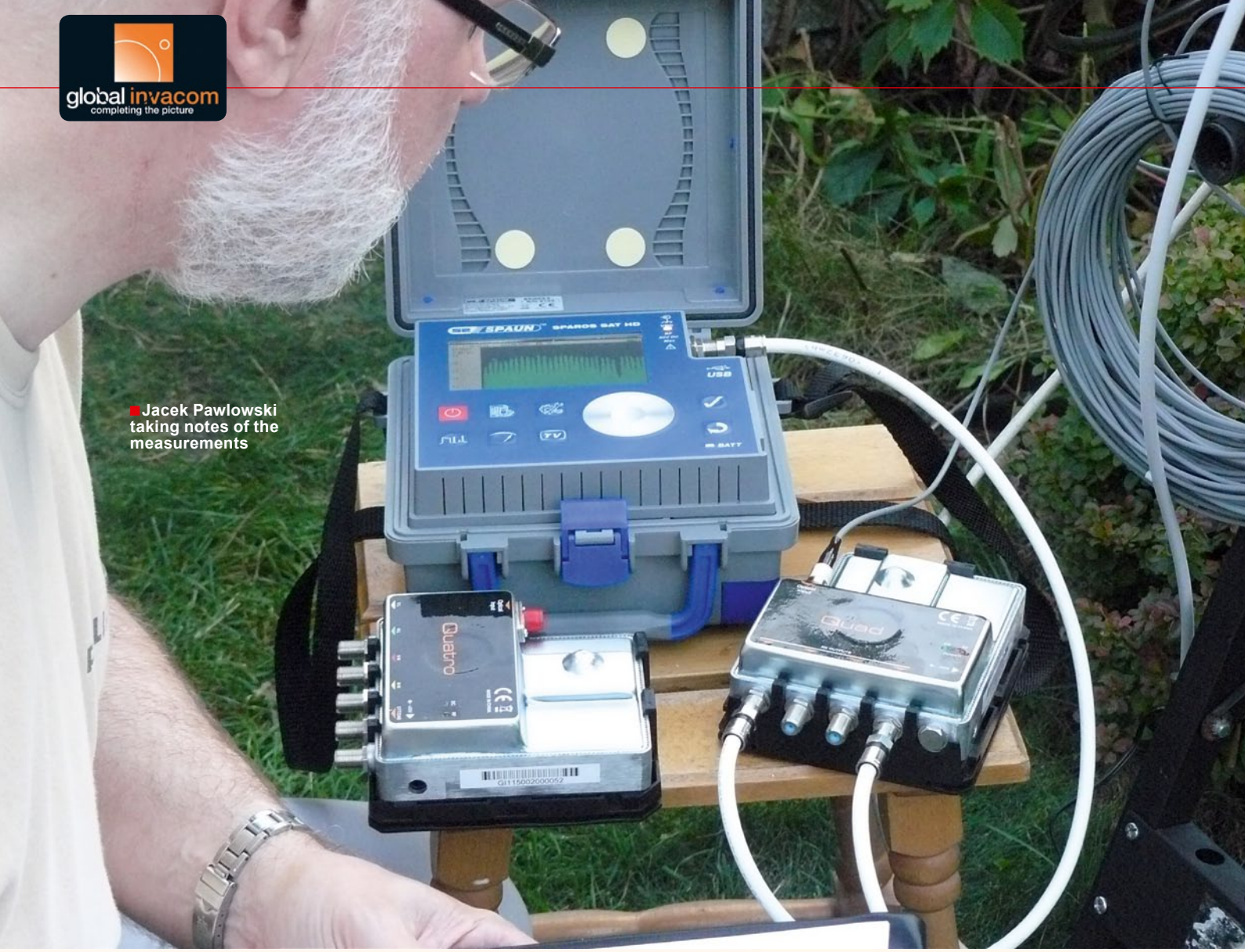
■TELE-audiovision Test Editor Jacek Pawlowski testing the new GTUs from GlobalInvacom

GlobalInvacom GTU QUAD And GTU QUATRO Optical to RF Converters

GlobalInvacom is the very well known company in the field of fiber optics reception systems, consisting of the GlobalInvacom fibre optic LNBs and the corresponding distribution accessories, as fibre optic converters, cables and splitters. TELE-satellite has published a number of test reports dedicated to their products. However, up to now, we were focusing on the satellite TV signal distribution using GlobalInvacom's fibre optic system and ignoring terrestrial TV signals. But nowadays a contemporary TV installation requires both kinds of digital TV signals: satellite and terrestrial. GlobalInvacom even has the right products for this as well! So we set out to give their new DTT enhanced components a closer look.

For our test, we used the FibreIRS ODU32 optical transmitter you already know from our previous reports - our latest test report was published in TELE-satellite 09-10/2012. The new unit, except for accepting the signal from an optical LNB, also allows you to connect DTT/DAB/FM signals from a terrestrial antenna. By writing DTT we mean any standard of terrestrial signal - not only DVB-T or DVB-T2 but as well ATSC, DMBT or ISDB-T - anything in the regular VHF/UHF and FM range. All those signals are converted to light and you can then distribute them in large buildings or wherever you want. But at the other end of an optical fiber network you need a complimentary part: a light-to-RF converter. Instead of testing the already known MDU device we decided to take a closer look at the brand new FibreIRS GTU devices. There are two variants of them: QUAD GTU and QUATRO GTU.

Each GTU device is hidden in a black plastic enclosure. You are supposed to mount the plastic back plate on the wall or other flat surface and it should be mounted indoors in a dry environment. The main device (QUAD or QUATRO



Jacek Pawlowski taking notes of the measurements

converter) is then clicked into place on the back plate. Now comes the time for connecting cables. As could be expected, the GTU device has one optical input with a FC-PC connector.

The QUAD GTU converter has four equivalent outputs. You can connect a suitable triplex (TV, satellite, Radio) wall outlet to each of them. Then, to each socket you can connect a satellite receiver, a TV-set orDAB radio and a FM radio. In other words, the terrestrial band is combined with the satellite IF signal in each output and all you need is a suitable socket to split them for terminal devices.

The QUATRO GTU has five outputs: VL, HL, VH, HH and DTT/DAB. In this case the terrestrial band is separated from the satellite IF signals. The idea here is to connect a suitable multiswitch, which is then fed into satellite receivers. The DTT/DAB output would go directly into a TV-set or DAB/FM radio.

Each GTU unit has an additional DC power socket. This power supply is re-

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quired only if no DC power is provided from a receiver via one of the QUAD/QUATRO outputs. Any DC voltage from 10 V to 20 V is suitable for GTU. The unit consumes about 200 mA DC.

Finally, there are two LED indicators in the GTU: one for showing the presence of DC power, the other one to inform the user that a RF signal is available at the outputs.

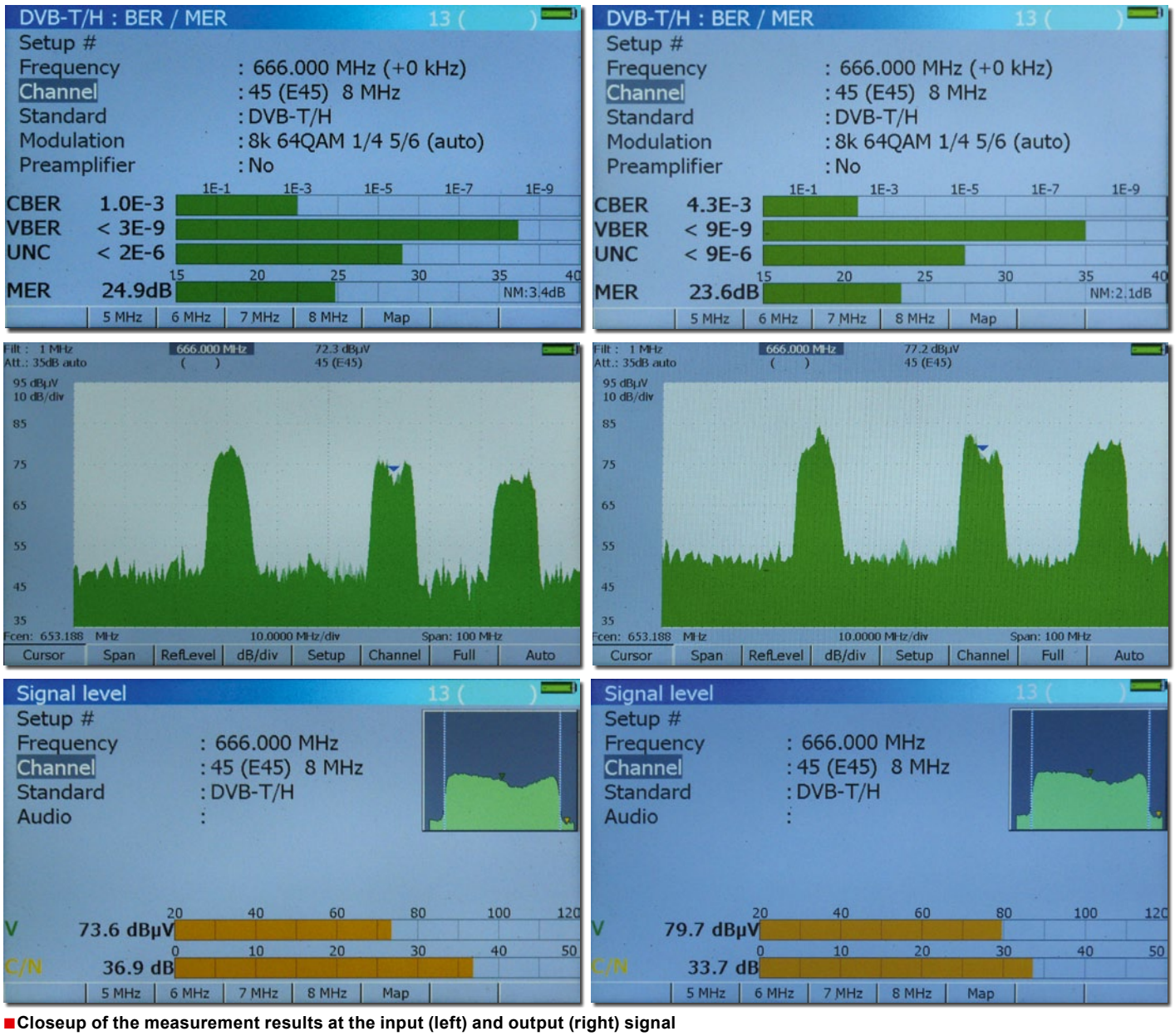
The workmanship of the devices is very good, they are robust and you should not have any problems with the installation if only you comply with the comprehensive "QUAD and QUATRO GTU Installation Guide" available from GlobalInvacom. Among other things, it also explains how to secure fibre optic cable. This is probably the most tricky part for anyone new to fibre optic cabling, so we advice you to read it carefully before the installation.

Before we could measure the performance of the GlobalInvacom system with terrestrial signals we had to build a test setup. First, we connected a terrestrial TV antenna to a DTT headend. The headend's job was to clean the input signal from unwanted components and after this to deliver it to the ODU32 Optical Transmitter. Since our DTT headend was able to manage three frequency channels, we started the test with three DVB-T multiplexes available in our location on these TV channels: 41, 45 and 48. Table 1 lists the parameters of our test signals. (Table 1.)

We connected the output of the DTT headend to the ODU32 Optical Transmitter and the optical output of the ODU32 to the optical input of the QUAD GTU and measured the signal at the input and at the output of the op-

Channel Number	Center Frequency	Channel Bandwidth	DVB-T Modulation Parameters
	MHz	MHz	
41	634	8	8k 64QAM 1/8 3/4
45	666	8	8k 64QAM 1/4 5/6
48	690	8	8k 64QAM 1/8 3/4

Table 1. Test signals



Closeup of the measurement results at the input (left) and output (right) signal

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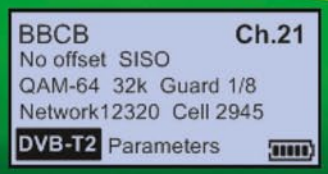
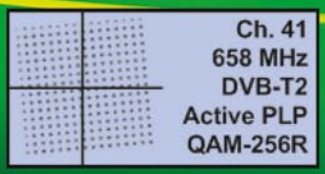
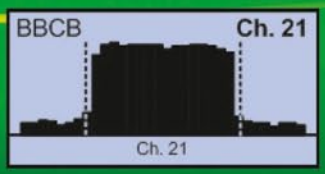
- The HD-T2 utilizes an all new hardware and firmware platform with features not found on a meter of this calibre before and at 1.2 kg it won't break your back or bank balance!
- Horizon has strived to build a cost effective solution for installers that offers real time readings on analogue, digital and now high definition digital DVB-T2. In addition the ability to read DAB/FM signals with full spectrum mode and rotating constellation along with all the tools the installer will need as the new DVB-T2 system becomes live, leads to create a product that offers a broad range of technological features.







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	ODU32 Input			Output 1 of QUAD GTU		
Channel #	Power	C/N	MER	Power	C/N	MER
	dBµV	dB	dB	dBµV	dB	dB
41	75.2	35.8	23.1	79.2	33.4	21.7
45	74.2	36.8	24.7	79.7	33.4	24
48	70.6	33.5	21.7	79.2	33.6	21.6

Table. 2. Input and output of the optical system.

tical system. See the results in Table 2.

The signal at the output was stronger than that at the input and more uniform – we noticed only a 0.5 dB spread. This is the effect of the automatic gain control which is embedded in GTU converters. The carrier-to-noise was also very similar for all three channels. However, we were most interested in the MER readings as this parameters directly reflects signal quality. As you can see in Table 2, MER degradation was very limited despite two conversions: from RF to light and back. Such conversion always deteriorates signal quality but fortunately in the GlobalInvacom system the changes in MER between input and output were really negligent - from 0.1 to 1.4 dB depending on the channel.

Then, we checked if there are any significant differences between the QUAD GTU outputs. See the results in Table 3. Practically all the outputs are identical.

All the measurements so far were made without a satellite signal. It was time to check if adding a satellite signal would have any impact on the terrestrial signal. We connected a GlobalInvacom optical LNB to the ODU32 and checked that the full spectrum of the IF satellite band is available at the outputs of the QUAD GTU. We repeated the measurements of terrestrial channel 45 on all four outputs. Table 4 presents the results. You should compare them with the numbers in Table 3.

Table 4. Results for channel 45 for all four outputs of the QUAD GTU with the presence of satellite signal.

The output power decreased by 10 dB but was till quite high – around 70 dBµV. But we were extremely happy to notice that the MER was unaffected. This means: the terrestrial signal quality was as good as in the test without satellite signal!

The same tests with the QUATRO GTU gave even better results. Without a satellite signal we had a channel power around 80 dBµV, C/N around 34.5 dB and MER around 24.3 and after adding the satellite signal, power decreased only to 75.5 dBµV while C/N and MER remained the same.

The conclusion is: the presence of a satellite signal in the optical system influences only the output power level of terrestrial signals (by 10 dB or 5 dB for QUAD and QUATRO GTU devices respectively) while not degrading their quality and thus not improving terrestrial reception.

Thanks to the DTT headend we were able to check the performance of the GlobalInvacom system for the lowest and highest DTT channels. We simply shifted channel 45 to channel 21 and later to channel 68 (474 and 850 MHz respectively). We got practically the same results as for the channel 45 located in the middle of the UHF band: Power = 79.2 / 76.2 dBµV, C/N = 33.6 / 32.3 dB and MER = 23.9 / 23.5

Before finishing our test, we decided to verify one of GlobalInvacom's recommendations, namely the one for using a DTT processor before injecting a terrestrial signal into the optical system. When we measured the terrestrial signal before the DTT processor and after

Output #	Power	C/N	MER
	dBµV	dB	dB
1	80.7	33.9	23.6
2	80.1	34.2	23.5
3	80.1	34.1	23.5
4	80.5	33.8	23.8

Table 3. Results for channel 45 for all four outputs of QUAD GTU.

Output #	Power	C/N	MER
	dBµV	dB	dB
1	70.9	32.8	23.7
2	70.8	32.6	23.5
3	70.7	32.4	23.5
4	70.5	32.5	23.4

Table 4. Results for channel 45 for all four outputs of the QUAD GTU with the presence of satellite signal.

it, we noticed that the processor degrades MER by a decibel or so. So, perhaps we could get even a better result without using the DTT processor and thus ignoring GlobalInvacom's recommendation? Guess what, we tried it, but no – the results were even worse! Admittedly, without the DTT processor MER at the input to the optical system was better by 1 dB, but at the same time MER at the system output was worse by 0.7 dB.

How to explain this unexpected behaviour? By removing the DTT processor we improved one input parameter (MER) but we degraded the ratio of useful signals to unwanted signals including the noise in the whole terrestrial band. MER measurement is a narrow band technique – only one transmission channel is taken into account. It can not reveal the presence or absence of the signals or strong noise in the neighboring channels.

To sum it up, GlobalInvacom's new QUAD and QUATRO GTUs in combination with their ODU32 Optical transmitter proved to be high performance components oftheir optical distribution system. Despite of two signal conversions: from RF to light and back, signal quality was affected minimally while its power was increased.

To sum it up: GlobalInvacom's fibre optic system is an excellent choice not only for the distribution of satellite signals but also for combined satellite and terrestrial signals via one single fibre optic cable.

Expert Opinion

Jacek Pawlowski
TELE-audiovision
Test Center
Poland

+
- Very good noise performance – signal quality at the output is almost as good as at the input
- Automatic gain control works very well
- All Quad outputs are equally good in performance
- Flat characteristics over the entire UHF frequency band
- Suitable for all standards of terrestrial signals: DTT/DAB/FM

–
- None

TECHNICAL

DATA	
Manufacturer	GlobalInvacom Ltd., Great Britain
Web	www.globalinvacom.com
E-mail	Fibre@globalinvacom.com
Phone	+44-1621-743440
Fax	+44-1621-743676
Model	QUAD GTU and QUATRO GTU
Function	Light-to-RF converters with quad/quatro outputs
Satellite	
Frequency range	950–2150 MHz
Gain variation across band	7 dB
Nominal output level	70 dBµV (QUAD) and 75 dBµV (QUATRO)
Terrestrial band rejection	30 dB
DTT, DAB and FM	
Frequency range for DTT	470-862 MHz
Frequency range for DAB	174-240 MHz
Frequency range for FM	88-108 MHz
Nominal output power	68 dBµV
Gain variation across band	5 dB
Noise figure @ max. gain	6 dB
IF band rejection	20 dB
Optical	
Optical wavelength	1100-1650 nm
Optical power	-15 dBm to 0 dBm
DC	
Voltage	10-20 V
Current consumption max.	220 mA @ 10 V (QUAD) 210 mA @ 10 V (QAUTRO)
Physical	
Dimensions (without plastic)	109 x 136 x 50 mm

MORE ABOUT THIS COMPANY

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

GlobalInvacom Expands Product Palette

DVB-C on the PC – Thanks to TBS

- *at long last: cable TV on the PC or laptop computer*
- *tuner with extremely low threshold*
- *works with many TV applications thanks to BDA drivers*
- *CI available for subscription TV*

TBS-6618
DVB C
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IR
RoHS
Digital Cable Receiver
DVB C
USB2.0
CAM
IR
POWER
MUTE

Now you can receive cable TV on your PC or laptop computer

The TBS 6618 is a PCI-e card with tuner and CI slot for CAMs. The TBS 5680 is an external USB tuner which also features a CI slot and which is part of the QBox product family. Both devices share a rather unique characteristic: They are designed for DVB-C, which stands for digital television distributed via cable networks.

A number or TBS (also known as Tenow) products have been presented in TELE-satellite in recent months and we even ran a company report in TELE-satellite 02-03/2011. The TBS product portfolio comprises all types of PC receivers, such as PC cards with DVB-S/S2 and DVB-T/T2 tuners like the ones we introduced in TELE-satellite 10-11/2011. Among them is the famous TBS 6984 with no less than four tuners. It was with great pleasure that TELE-satellite gave its 'Innovation Award' to this extraordinary product.

TBS is now launching two more PC receivers that can be used to process DVB-C signals on the PC. Many manufacturers turn their cold shoulder to DVB-C as far as PC cards are concerned, and you have to look long and hard to find suitable products at all. But not everybody has access to satellite television and the range of digital terrestrial channels is nothing to write home about in most regions.

Each of the two DVB-C PC receivers arrived at our test center in a neat black cardboard box, complete with a driver CD-ROM, an F-adapter and a remote control. The TBS 6618 comes with an additional IR receiver with standard phone jack. The TBS 5680 USB box has the IR receiver already built into its box and hence does not require an external unit. Instead, we found a USB cable and an external power supply unit in the cardboard box of the TBS 5680.

We started out with the TBS 6618 which we connected to our test center PC. The LGA 775 board we use provided an available PCI-e 1.0 slot. Since all TBS PCI-e cards are compatible with all versions, it does not make a difference which slot you use. Any will do, no matter whether 1x, 4x, 8x or 16x.

Slotting in the card was easy peasy – its measurements fully comply with industry standards and so it fit into the existing slot space nicely. The TBS 6618 draws its entire power from the PCI-e interface, which means no more cables have to be attached.

For all its Windows-based TV cards TBS uses so-called BDA drivers. BDA is short for 'Broadcast Driver Architecture' and has become the Microsoft standard for ATSC and DVB/ISDB video cards. The interface is fully documented and therefore allows both hardware manufacturers and software developers to supply suitable drivers for their products. What's more, programmers of TV applications are able to make sure their software is compatible with different TV cards. TBS customers, in turn, can use their cards with all stand-

TELE audiovision AWARD 01-02/2013

TBS 6618 & TBS 5680
Excellent hardware for watching DVB-C with an extremely sensitive tuner.

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

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www.spaun.com Quality made in Germany

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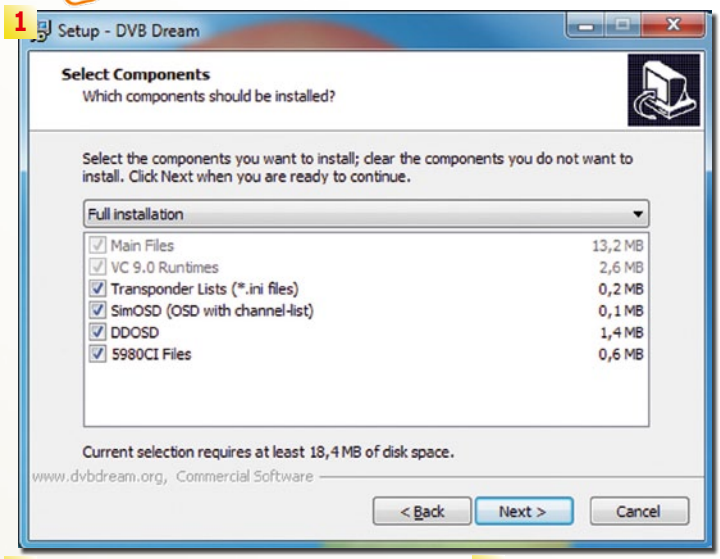
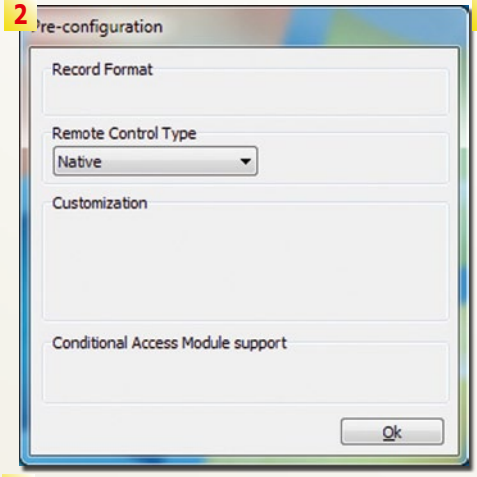
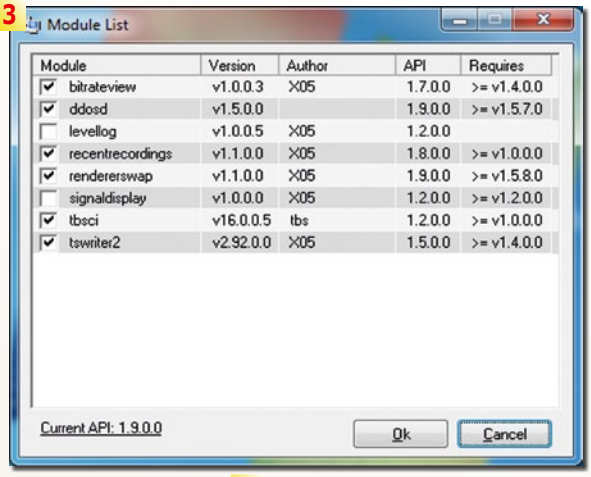
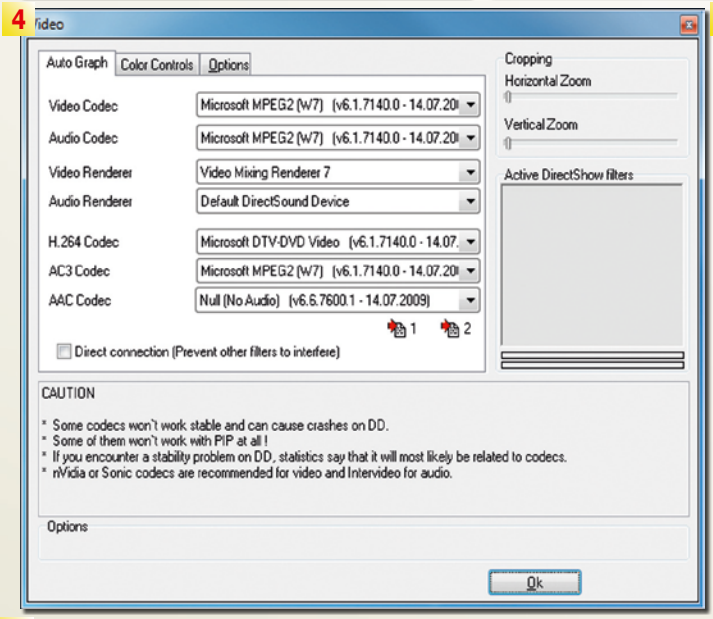
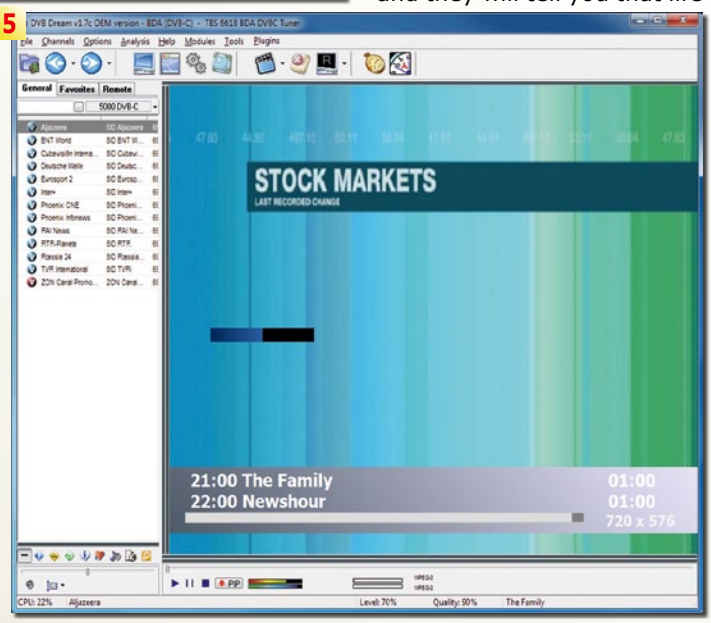
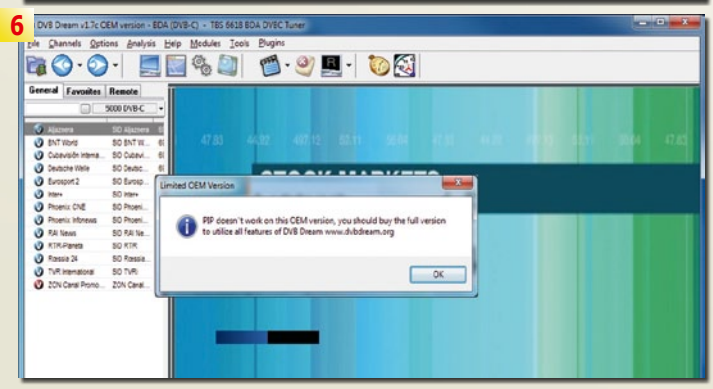












ard TV applications such as DVBViewer or ProgDVB, to give just two examples.

In order to put the TBS 6618 and TBS 5680 to their paces we tried them out with a number of different software suites. We had a go with the TBS 6618 first.

Windows Media Center (WMC) has never gained much ground and we only know a handful of people in Europe who use that software. In our opinion, two crucial limitations are to blame for that:

- Windows Media Center from Microsoft is practically the only TV software not allowing installation of SoftCAM plugins. The obvious result is that pay TV reception is simply not possible. You're left with watching what is available free-to-air.
- WMC tries so hard to create a pleasant user experience it misses out on configuration options to make the software work with a broad range of hardware products. Users are guided through strictly defined installation routines and cannot even freely edit their channel lists.

Those restrictions aside, WMC is a very capable and user-friendly software product than can easily turn any conventional PC into a multimedia box that cannot only present TV channels but play back more or less all media files. It sports an intuitive user-interface and since it comes as part and parcel of any Windows7 operating system you don't have to worry about troublesome installation. Ask any Linux user with VDR and XBMC and they will tell you that life

DVBDream

1. Many optional modules may be selected

2. Though the TBS tuners are shipped with a remote, they don't require remote configuration in the TV application, since the remote buttons are mapped as regular keyboard keys – very clever!

3. DVBDream features so many modules, one is in doubt, which to select...

4. Configuration goes on: what CODECs should be used? A little technical insight is an advantage here.

5. Finally we can enjoy TV with a very clean user interface.

6. Sadly, most of the available buttons refer to the full version of DVBDream and you only gets this message box, stating that the current version is a limited OEM one.

is not always so easy.

The first time you launch WMC you're greeted by the installation wizard. In case you interrupt that process or if WMC was already used before the installation of the TBS 6618 all you need to do is call up TV Configuration under Settings.

On our test PC WMC detected the TBS 6618 DVB-C card right away (as well as a DVB-S2 card that occupied another PCI-e slot) and had us select one of the two available cards to configure and pair with WMC.

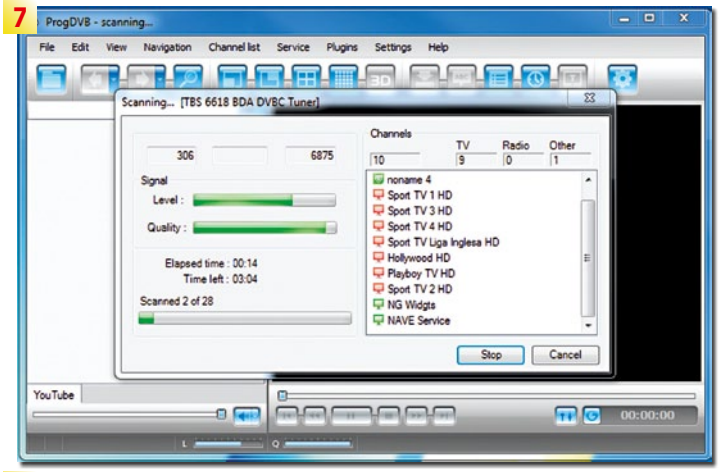
Even users without previous experience need not worry: WMC automatically downloads channel lists from the Internet that correspond to the actual location. This way the channel search that follows is completed much faster.

In our first go, however, we had no such luck and WMC could not find a single channel. Apparently, no transponders were detected for our particular post code.

Of course we did not give up so easily and entered the post code of a major town nearby, instead of our local code. This did the trick and it seemed WMC was able to download transponder data from the Internet. Even though, you need a lot of patience for the channel search that took some 20 minutes in our case.

To be fair, we cannot blame the TBS 6618 for the rather lame performance. With DVB-C each provider uses their own transponder matrix, which means that for a complete channel search all channels of the standardised transponder table have to scanned with all possible parameters: QAM4, QAM8, QAM16, QAM32, QAM64, QAM128, QAM256, and differing symbol rates such as 6100, 6875 or 6900.

Nonetheless, chances are the available channels are not found after all, because some cable providers do not use frequencies that conform to the industry standard. This is why many TV applications come with a stupefying search mode that tries out all possible modulations and symbol rates one after the other for each and every frequency. One notable exception is ProgDVB, and we'll deal with that software a little later.



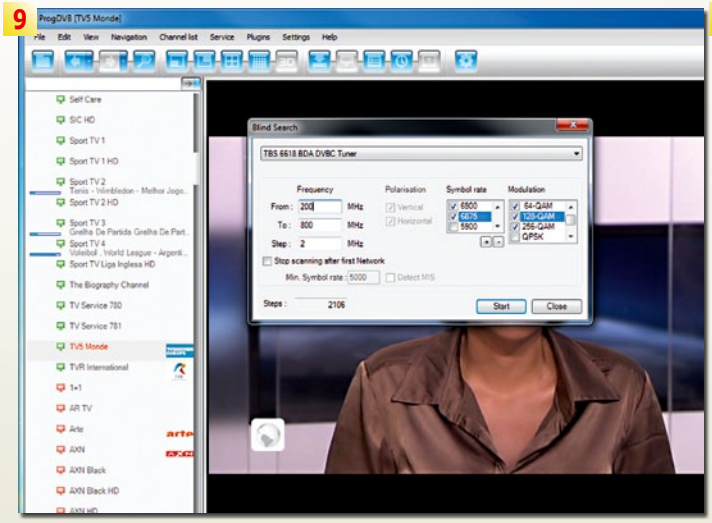
ProgDVB

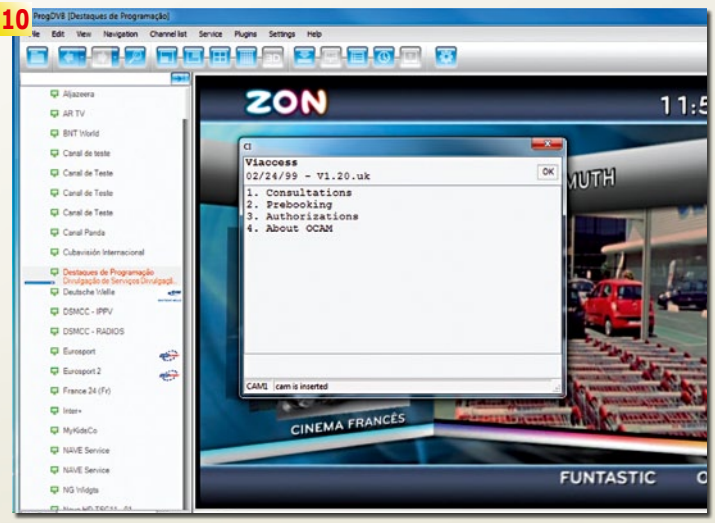
7. Easiest channel scan, even our cable provider was preconfigured!

8. Lots of functionalities in an easy to use interface – ProgDVB matured over its 10 years of existence

9. Just a software blind scan, but still pretty good, in case no pre-defined frequency list is available.

10. CAM's are recognized and supported, thanks to the integraded CI interfacecurrent version is a limited OEM one.





At the end of the second search run WMC once again had not found any channels. This was a clear indication that Microsoft had the US market in mind when implementing DVB-C.

We tried to find the frequency table on our PC – yet, to no avail. We looked for it with Windows Explorer and even with the Registry Editor and could not find anything. Our usual method of last resort is an Internet search, and this finally brought some light into the matter: WMC has all transponder data embedded in DLLs, which means there is no way you can edit these data.

So once again we sifted through the manufacturer's website and finally discovered the DVBLink software, which addresses TV cards directly through their BDA drivers and provides all received streams to other clients by way of virtual satellite TV cards. This is a neat detour around WMC's insufficient support of TV cards. While it took us some time to figure out how this set-up works we simply didn't want to do without this added functionality.

The first step involved installation of DVBLink. For our test we selected the DVBLink Server and DVBLink TVSource components. A total of eight drivers for virtual cards are installed during the installation process.

Next, we had to tackle the DVBLink configuration. The manual that is supplied with the software gives very detailed instructions and you should definitely make a point of giving it a read. The way DVBLink works follows a certain logic that is not so easy to understand without some background information.

For software configuration you need to launch a dedicated application called DVBLink Configuration. You need to select TVSource as source before you can proceed. In the Devices tab you then activate the TBS 6618 before moving to the Headends tab in order to select an appropriate transponder list.

The list on offer is quite huge in comparison with other TV applications we tested, even though for our cable provider (TV Cabo) we could not find an entry. However, we quickly discovered the transponder list directory and simply created a new file for TV Cabo.

This is a self-explanatory procedure and we found it surprising that the new file is automatically added to the list of available entries. This way we could start a channel search right away, without having to re-launch the software. The search was very swift, which is hardly surprising since the transponder list only featured correct parameters which simply had to be scanned.

Back in the main menu of the DVBLink Configuration application we then had to set up the server in the lower tab. To the left you can see all found TV and radio channels, which can be copied into the list to the right. All entries in that list are then made available by the server.

We think this clever layout deserves special praise as it allows selecting individual channels and filtering out pay TV channels or those with unsuitable content.

Next, we had to visit WMC again in order to reconfigure it. This time it detected four new satellite cards, all of which carried the name 'DVBLink Tuner'. The next step involved selecting any of the available satellites, followed by choosing a universal LNB. Given the fact we're talking about DVB-C here, we felt this was a decidedly awkward configuration process and you can imagine our surprise when the signal quality of the selected satellite was finally indicated with 100%.

It was only with the help of the DVBLink manual that we figured out that no additional channel search needs to be performed at this stage. Instead, we had to turn to the Extras menu of WMC, launch the DVBLink plugin and sync the channel list. Lo and behold: At long last WMC rewarded our efforts with a list of DVB-C channels!

Whether or not so much time and effort is worth your while is not for us to decide. One thing is for sure, however: WMC looks simply stunning and once fully set up all members of your family will get the knack of it after only a short time. For us, some of the high points are

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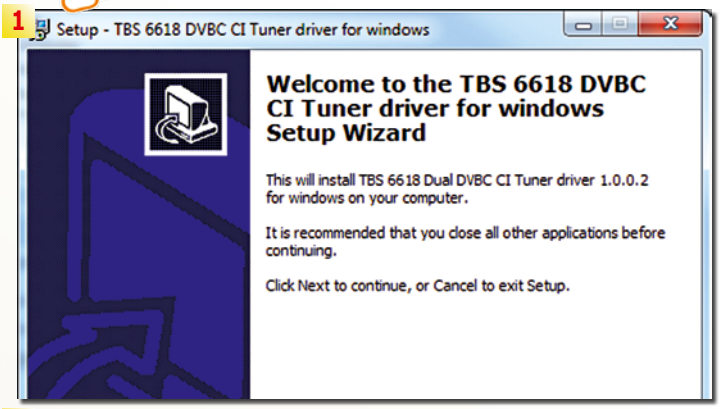
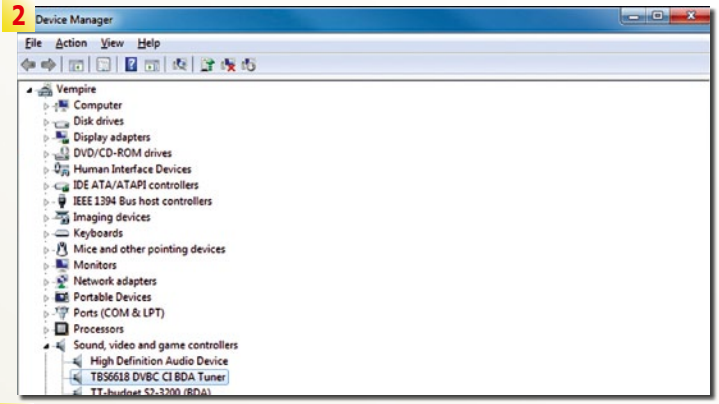
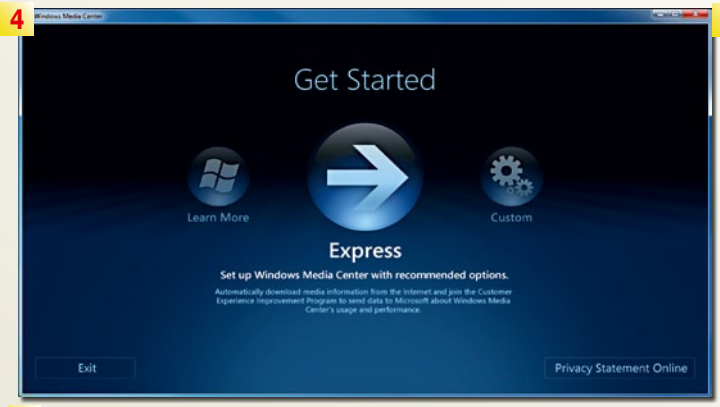






automatic time-shifting and the recording function, both of which seemed to appear out of nowhere just when we needed it. That's what we call a perfect interface between man and machine, and at that point all our configuration troubles seemed like vague memories of a distant past.

Unfortunately, DVBLink stubbornly refused to identify any CAM we threw at it, which is why we could not check whether or not it is generally possible to watch subscription TV with WMC in combination with DVBLink.

Another downer with this solution is the fact that DVBLink does not come free. TBS customers receive a 10% discount off the regular price and the DVBLink software can be evaluated for a period of 20 days before you need to purchase a licence key.

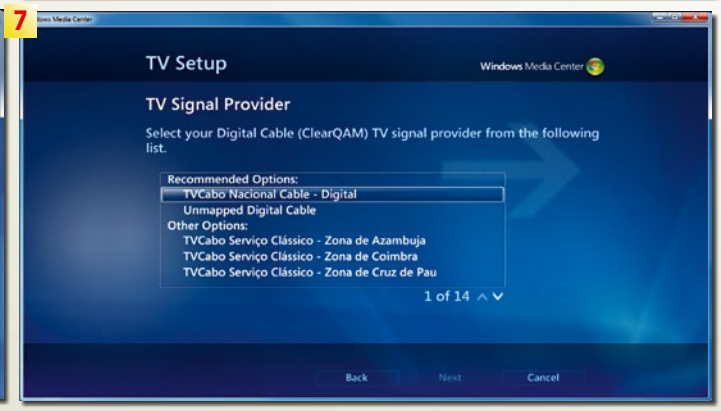
The second software candidate we looked at was DVBDream, which is shipped by TBS as an OEM version on CD-ROM together with the PC cards. During installation and when the application is launched for the first time new users are confronted with a multitude of parameters that need to be adjusted.

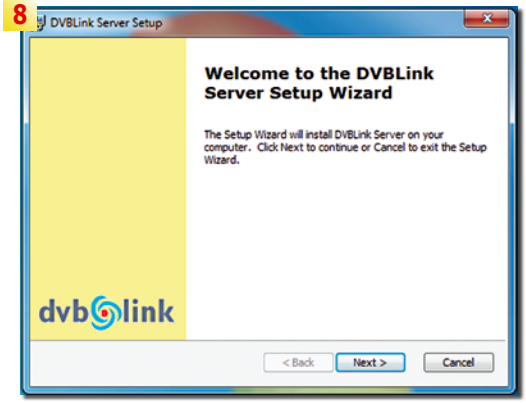
Some of them are ambiguous and so our strategy consisted of clicking OK whenever possible. That turned out to be a worthwhile idea since it led us to the channel search quickly and efficiently.

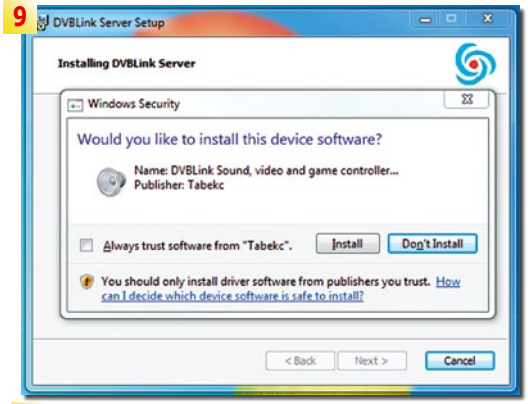
DVBDream comes with a pre-defined transponder list, but it was of no use to us since our cable provider mainly uses a symbol rate of 6875, while all pre-set transponders were set at a symbol rate of 6900. We then tried a manual search at 690 MHz – the frequency of a free-to-air transponder – and the software was able to identify all 14 channels right away.

Inspired by this easy win we added the transponder to the transponder list and initiated another search with network mode activated. We expected DVBDream to read out the network information table that is transmitted on the newly added transponder and to use that data to detect all remaining transponders and channels as well. Albeit, this didn't seem to work and the number of new channels remained at zero.

We approached our cable operator and inquired whether correct NIT information was transmitted at all, but as the test with TSReader (further down in the report) later showed

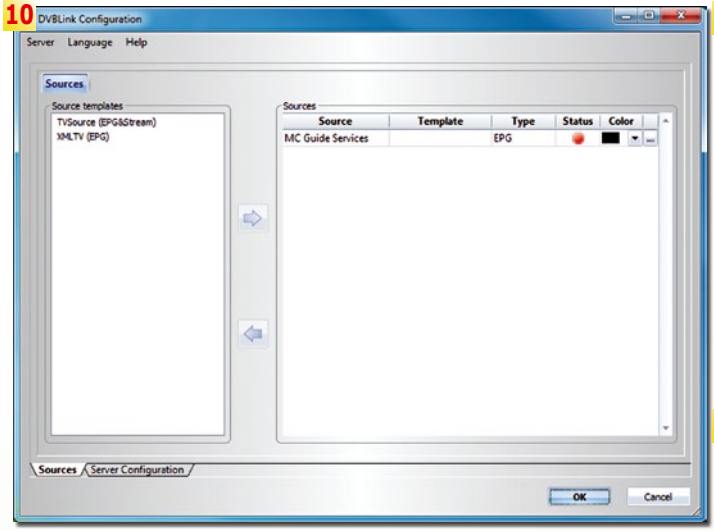


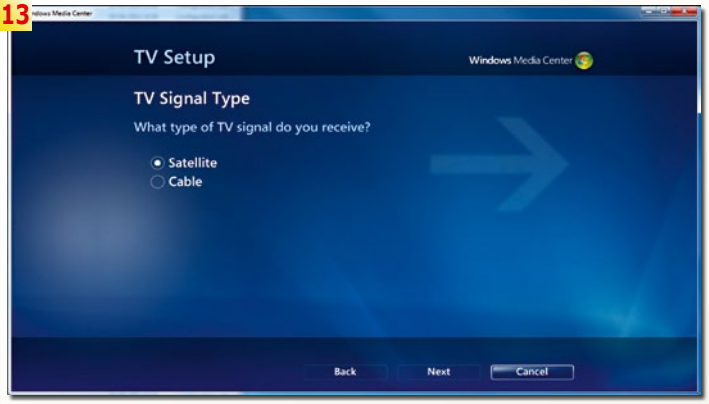


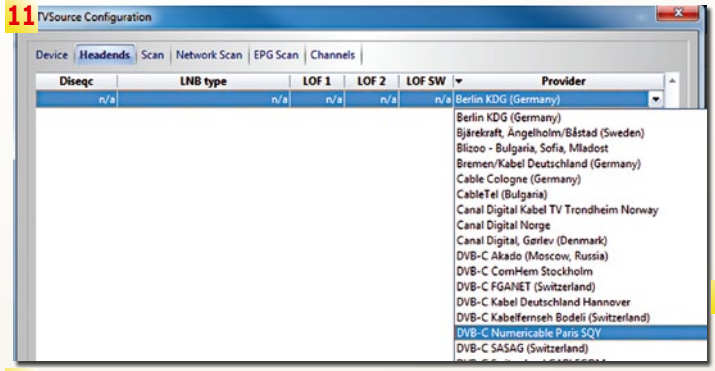


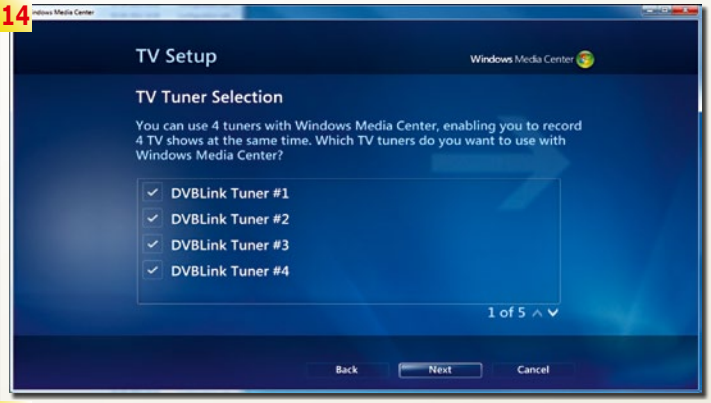
Windows Media Center

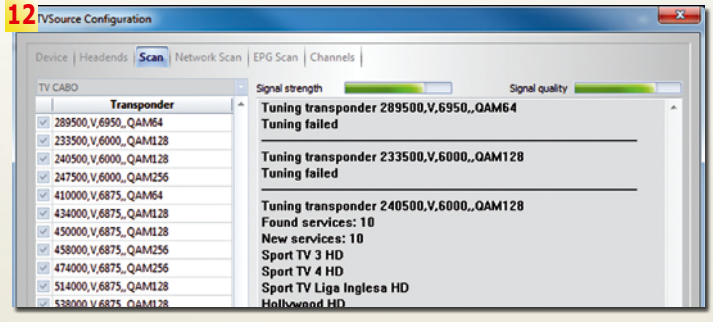
1. Installing the driver is straight forward...
2. After finishing the driver installation without a reboot, the Device Manager lists TBS 6618 as a BDA tuner.
3. Even the start screen of Windows Media Center looks impressive.
4. The user is guided smoothly through all configuration steps.
5. First attempt at configuring the DVB-C card and start a channel scan.
6. But at the end, no channels were found!
7. In a second attempt we chose the post code of the nearest big city and this time we could chose from different cable TV providers.
8. We did another channel scan, which again took almost 15 minutes to complete, only to find out that no channels were found. What was wrong? WMC does not support DVB-C outside the USA properly, so DVBLink fills the niche and provides a virtual DVB-S card for WMC.
9. Drivers for the virtual card are installed automatically.
10. The DVBLink server needs to be configured. This software does not only make WMC work with DVB-C cards. It actually can do much more and acts like a streaming server for many different devices or applications.
11. DVBLink provides many pre-defined frequency lists for DVB-C.
12. The channel scan worked immediately.
13. Despite wanting to configure our DVB-C device, we had to tell WMC that a DVB-S tuner is to be configured. Strange.
14. All four virtual DVBLink tuners appear.
15. Because we are actually using DVB-C, it does not matter what satellite is chosen.

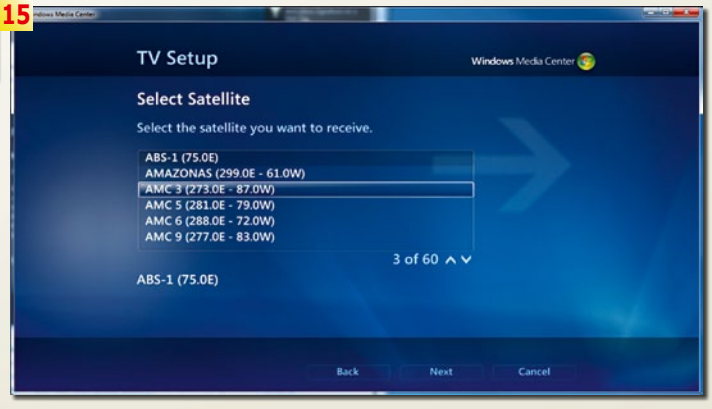












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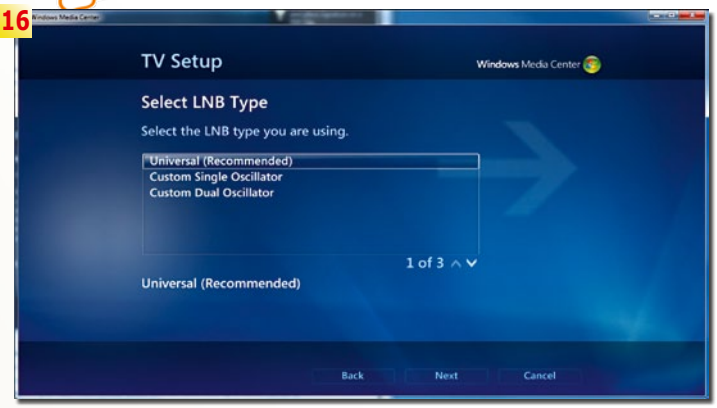

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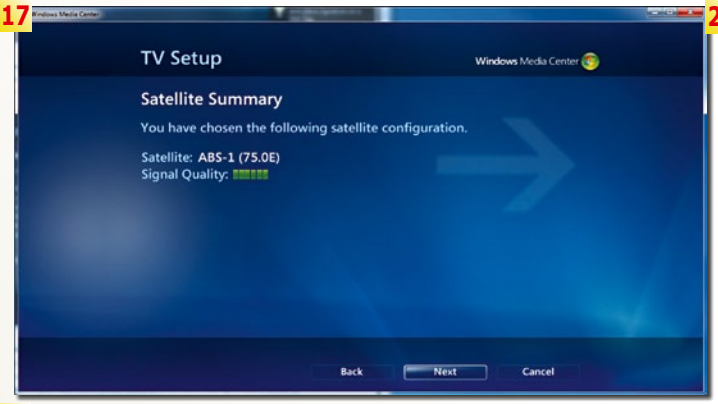

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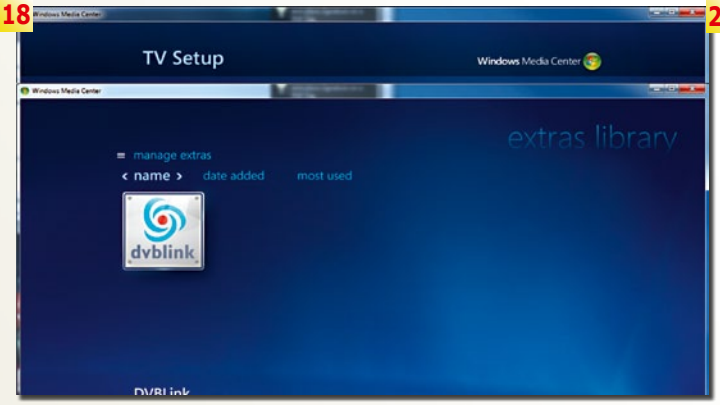

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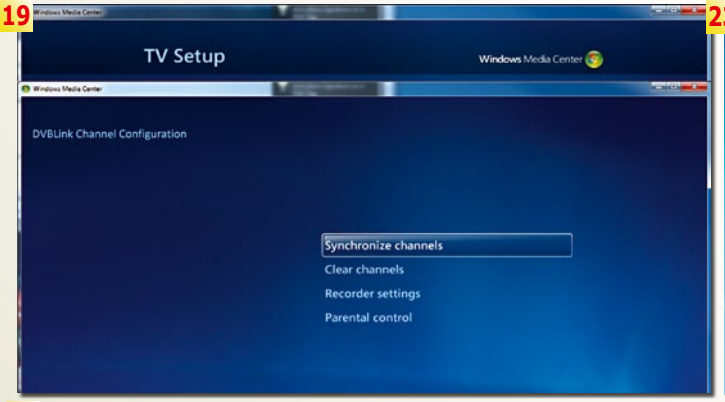

20

Windows Media Center

16. DVBLink recommends that the Universal LNB is selected.

17. And we have signal!

18. DVBLink installs a plug-in in WMC's Extras menu.

19. This is used to synchronize the channels.

20. Finally we can relax and enjoy some TV

21. All functionalities you would expect from a media center are of course available.

22. The timeline lets you go back and forth in the time shift – we never experienced a more comfortable time shift implementation.

23. DVBLink runs in trial mode for 20 days, then you must purchase it. Through TBS you get a 10% discount.

24. Because DVBLink didn't include frequencies for our cable operator, we just created a new text file with the right frequencies. The structure of the file is easy to understand, so this was no big deal.

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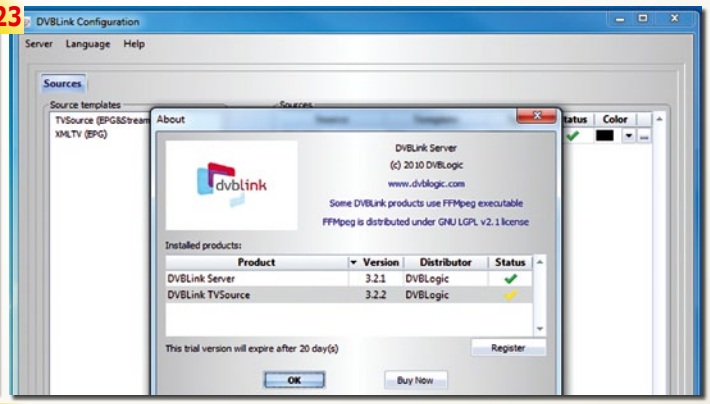

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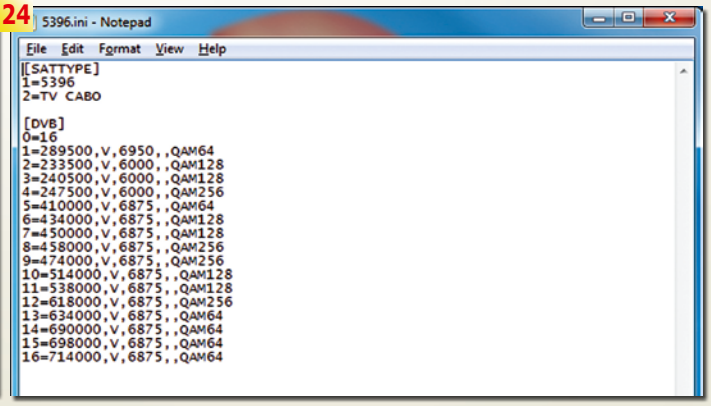

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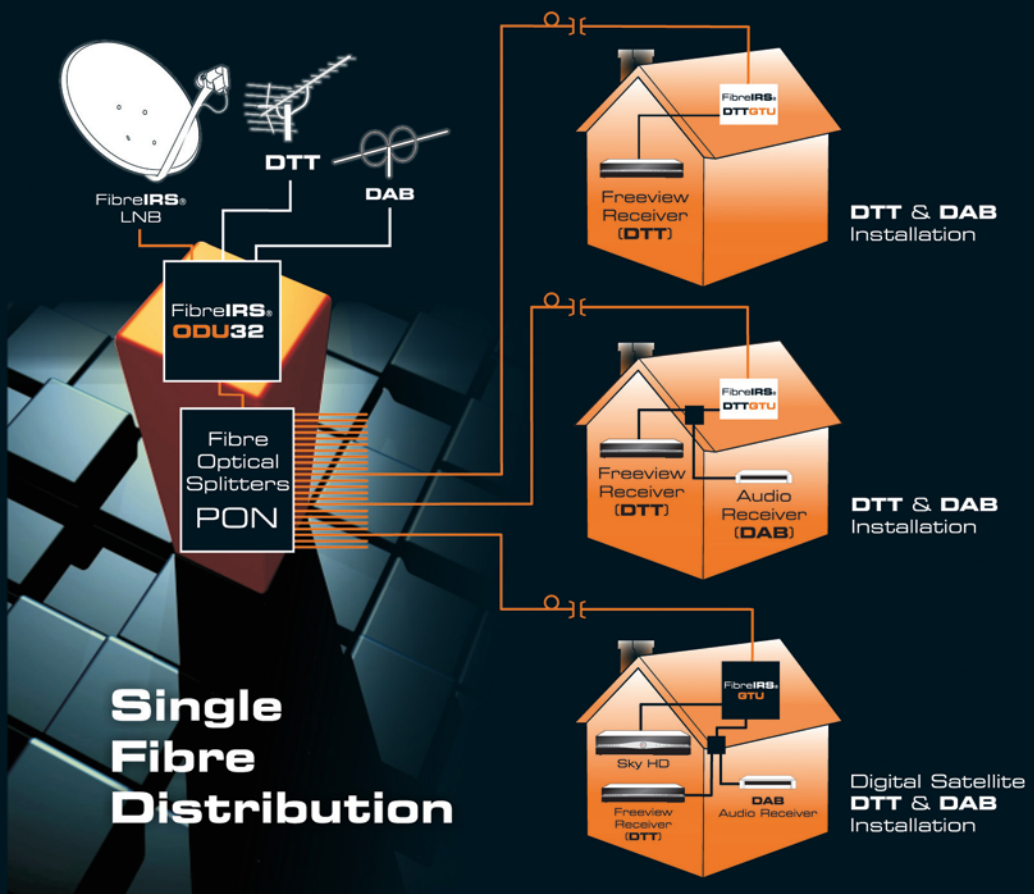

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only DVBDream is to blame for that flaw.

This left us with only one way out to add all channels to the channel list: Start a manual search for every known transponder. While this worked out fine in the end we believe it definitely should not be the way to go.

In its OEM version DVB-Dream comes with extremely reduced functionality. What's worse, all buttons with inactive functions are still displayed and every time you click on one of these an alert window pops up informing you that the function you're looking for is not available. In addition, an earlier test in TELE-satellite 10-11/2011 already demonstrated that the DVBDream software is really made for DVB-S/S2 and therefore is not an ideal match for DVB-C.

Being a professional manufacturer of PC cards, TBS has its own TV software in store as well. It is called TBSViewer and is essentially a customised version of DVBViewer with tailor-made appearance. Plus, it will only work with TBS cards.

The user interface sports a pleasant layout and the channel list is displayed as soon as the cursor approaches the right window frame – this makes for a channel selection that is both convincingly simple and genuinely elegant. The PiP (picture-in-picture) function available in this version is another great feature that allows watching two channels of the same transponder at the same time.

While the pre-set channel list clearly has satellite TV in mind the channel search will also accept DVB-C modulations without further ado.

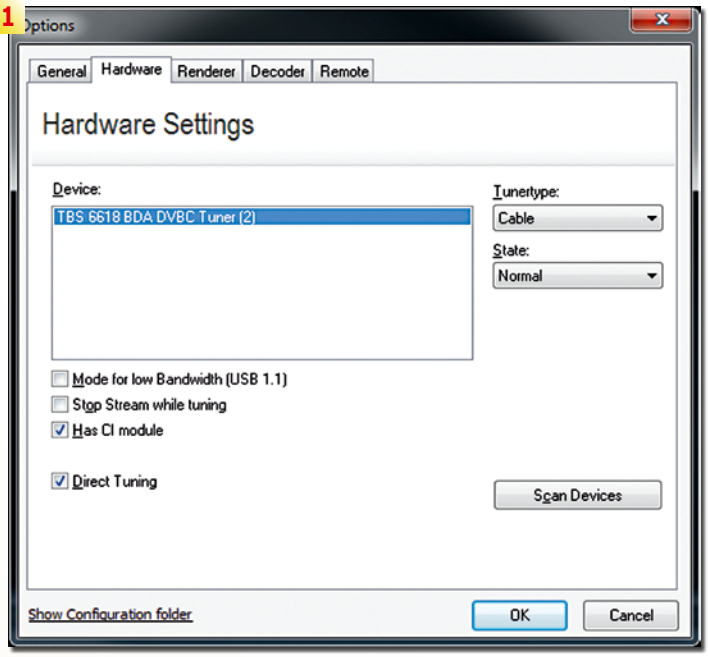
For the first time in our test we seem to have reached common ground: Umpteen different DVB-C transponders are offered, divided up according to countries or modulation types. What's more, new lists can easily be added manually. Then again, network search and blind scan mode are not available.

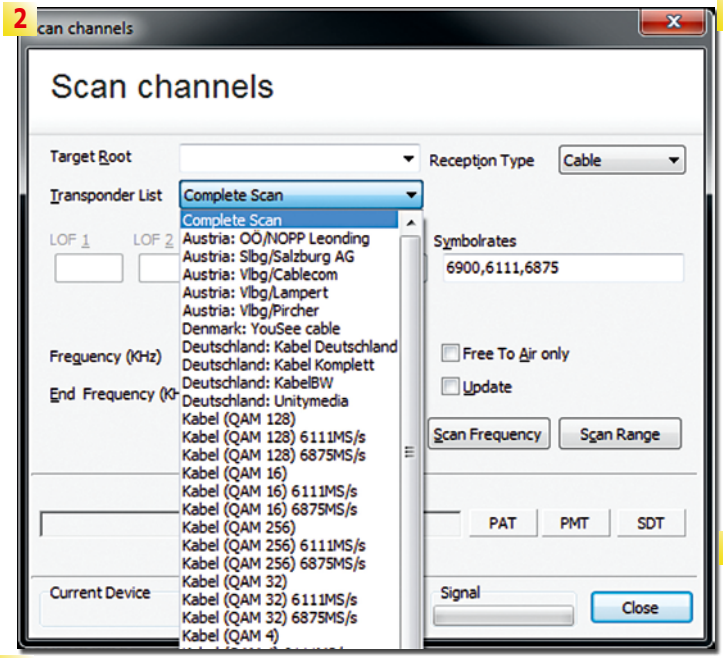
While the TBSViewer software was not included on the CD-ROM that was shipped with the TBS 6618, it was available with the TBS 5680.

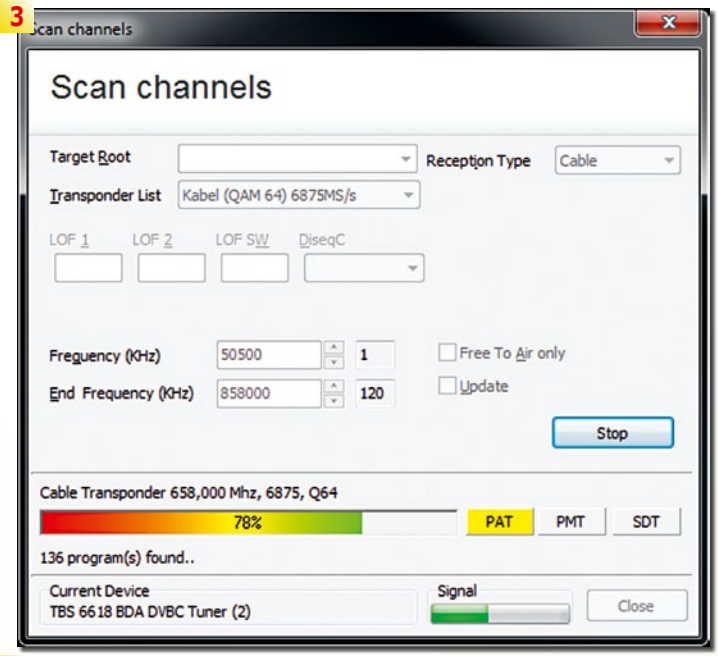
This product also came with the TBSVHID tool that is required for the remote control, as well as a PDF file with an electronic manual. Even if you buy a TBS card that does not come with all the software you're looking for you can always find the missing pieces for download from the TBS website.

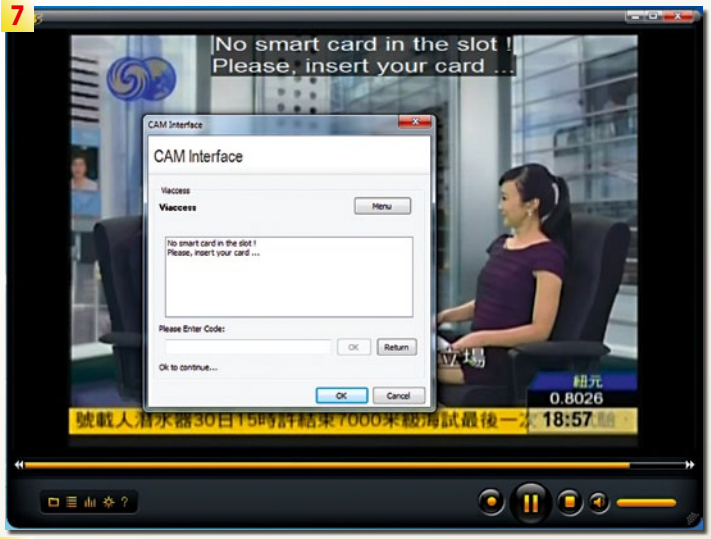
As mentioned above, TBSViewer is an OEM version of DVBViewer, which is why we gave the original DVBViewer application a try as well. It is evident right from the start that this software suite is a well-developed, sophisticated and thought-through solution. All installed TV cards showed up in the hardware options immediately and

1









TBSViewer

1. TBSViewer allows an easy selection of the desired card, in case you have more than one installed.

2. Many pre-defined frequency lists – these allow for a very quick channel scan, as all tuning parameters are known.

3. Scaning all transponders

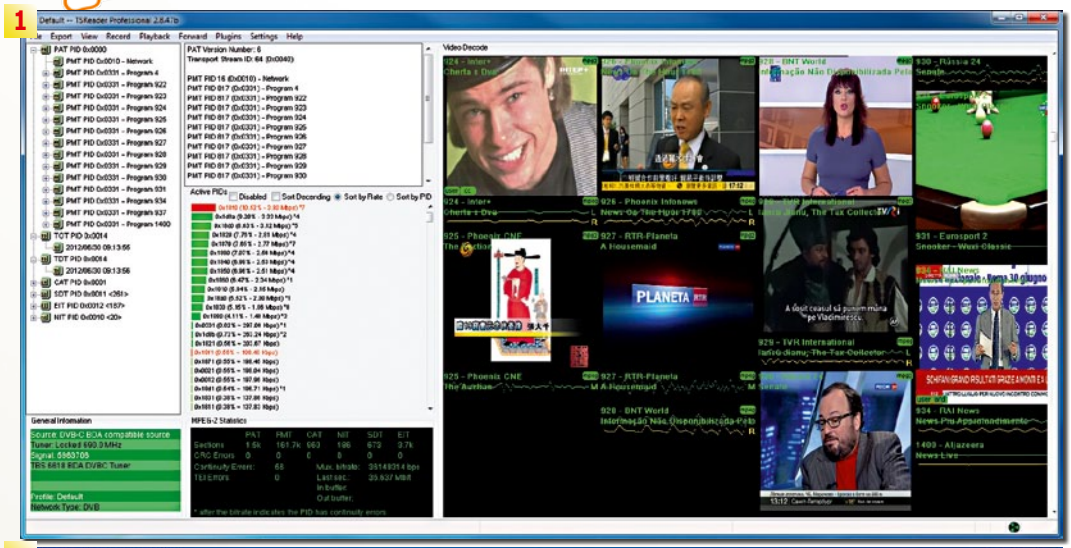
4. Listing all found channels

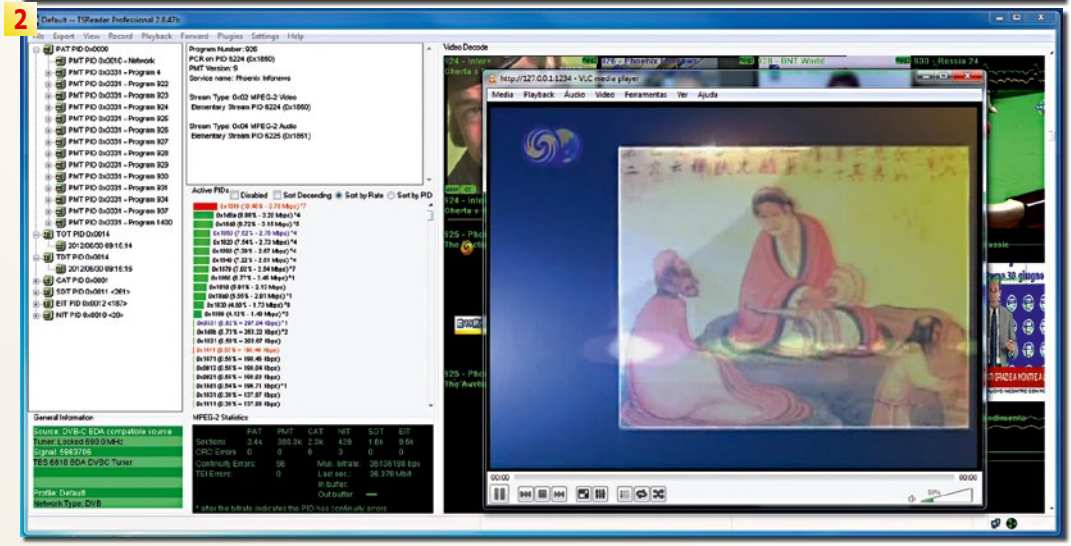
5. Nice and simple interface.

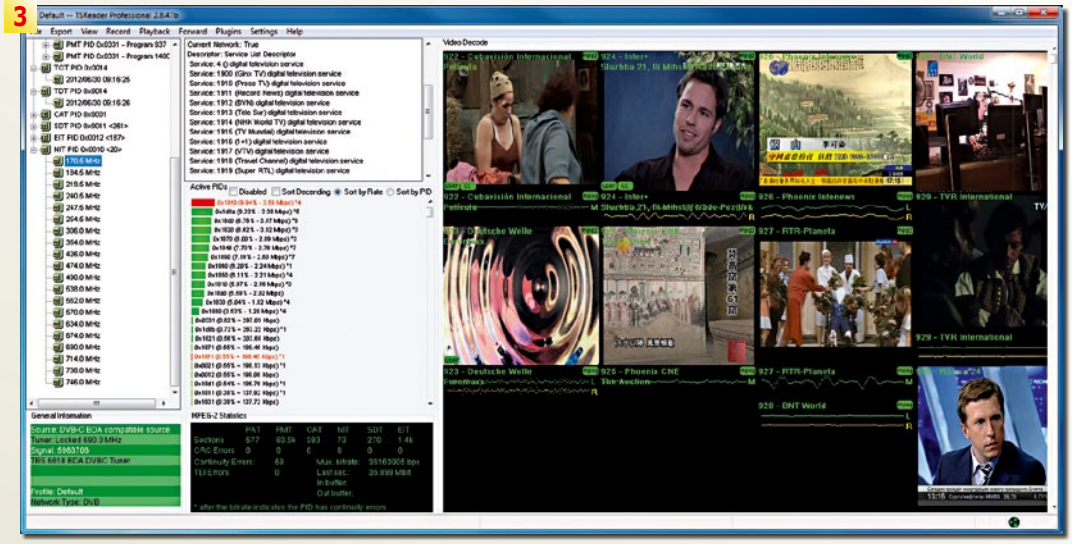
6. Many functions like a full EPG are available in this free software.

7. CAM's are recognized.

8. Amazing for a free TV application: even PiP and EPG can be used







TSReader

1. TSReader fully supports both DVB-C tuners from TBS.

2. Channels can be viewed through streaming to VLC.

3. All details of the transport steam can be analyzed.

4. This transponder features 12 channels!

5. In this chart one can see the signal drop, when our artificial attenuation was activated. The tuner of the TBS 6618 was amazingly able to regain a lock after under one second!

6. Naturally the pictures is full of artefacts – no other DVB-C tuner was ever able to get a lock on such a poor signal, not even our meters

without any additional configuration requirements.

We particularly liked that channel lists can be grouped and linked to a corresponding TV card in case more than one card is connected.

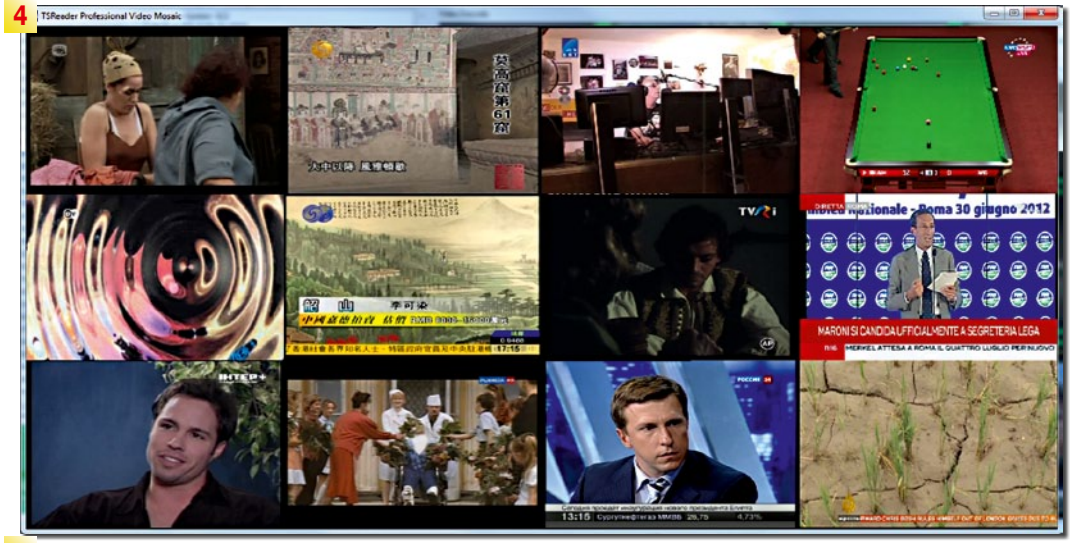
Obviously, DVBViewer works very similar to TBSViewer, but a great deal of additional functions such as a streaming option or distributing the currently received signal to other clients in the home network provide great value for money if you opt for the DVBViewer software that must be purchased.

We found that the software met all our expectations: No matter whether it's EPG, teletext, time-shift viewing or recording, everything performed up to standard. The one thing that could use some improvement was the pre-defined transponder lists, which are rather limited. While this is a problem that can easily be solved, it still tests your patience as you need to perform a search across the entire frequency range and with all modulation types and symbol rates to make sure you don't miss a single channel. This may easily take 10 to 20 minutes, but at least all channels of our cable provider were successfully identified during our test.

One of the most popular TV applications is ProgDVB, which is available in two versions: free and professional. We only looked at the free version and what we found speaks volumes. On the market since 2002, ProgDVB is something like a classic and it's no surprise after ten years of continuous development that this software seems to have more features and functions than you will ever need. But this is only one side of the coin.

What contributes hugely to the enormous popularity of ProgDVB is that it allows developers to program plugins. While it is true that DVBViewer also offers that option, it is only with ProgDVB that programmers are not faced with any restriction whatsoever, which means that SoftCAM plugins can be installed and used as well. This in turn allows watching encrypted channels in connection with a valid smartcard. The free version in itself offers a host of functions, and ProgDVB Pro adds premium features such as picture-in-picture, mosaic screen, recording and streaming.

Here again detecting and integrating the two DVB-C tuners was as easy as A-B-C, and of all tested applications only ProgDVB provided useful transponder lists by default. We even found a dedicated list for TV Cabo, our cable provider in Portugal. This meant the channel search was done with in a breeze, just the way it



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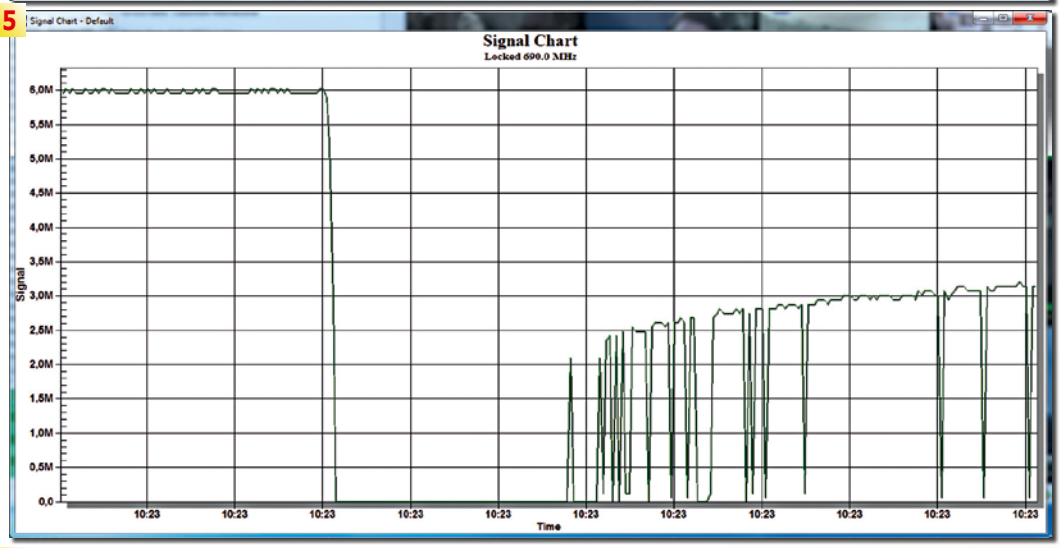

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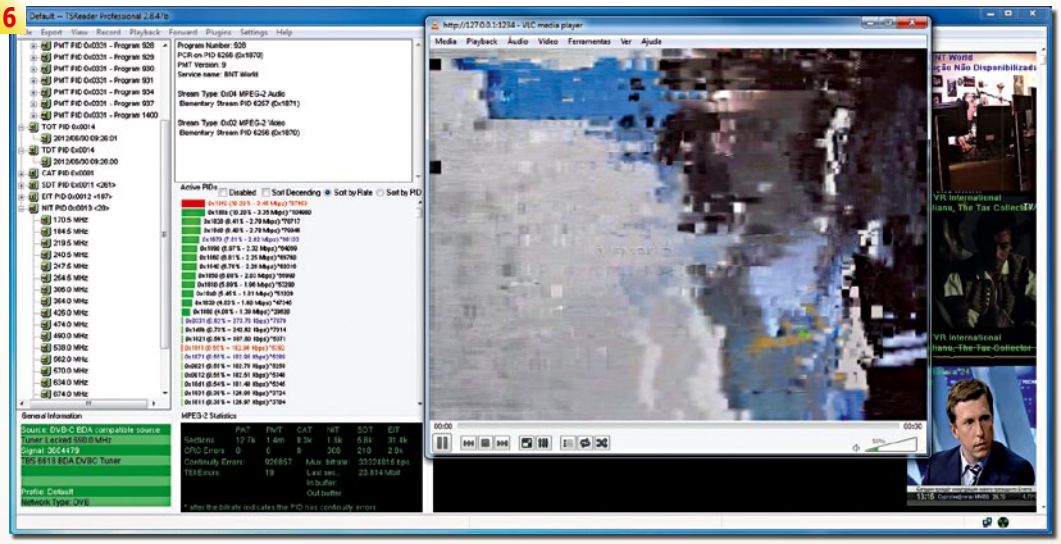


6

should be!

ProgDVB even offers blind scan, although this is without hardware support. To circumvent that limitation ProgDVB scans the entire frequency range in pre-defined steps (2 MHz by default), which takes forever (we're not talking minutes here but hours) but in the end delivers a result. Those of you who haven't already done so should definitely have a look at the ProgDVB software.

Strictly speaking, TSReader is not software for watching TV but a high-performance professional application for analysing transport streams. In TELE-satellite 06-07/2012 we already presented TSReader and its creator Rod Hewitt.

Thanks to the BDA DVB-C profile setting up TSReader was successful in the very first go. This software required that reception parameters of the selected transponder(s) must be entered manually, but once that is accomplished you are immediately presented with all transponder stream details. We found that truly impressive!

Rather than for watching TV we used this application to have an in-depth look at the reception capabilities of both the TBS 6618 and the TBS 5680. Beginning with the TBS 6618 we reduced the signal level from 55 dBµV to 32 dBµV dBµV. Conventional DVB-C receivers will look in wonder at such a weak signal and will not be able to produce a usable picture at all. Your TV screen will stay blank and the receiver in all probability will not even be in a position to get a signal lock.

Out reference meter shows a BER value of <1-0e-8 when the signal has its original level of 55 dBµV and consequently identifies all channels of the transponders flawlessly. Once the reception level is reduced to 32 dBµV, however, our reference meter cannot lock the signal any longer and hence cannot give out a BER value either.

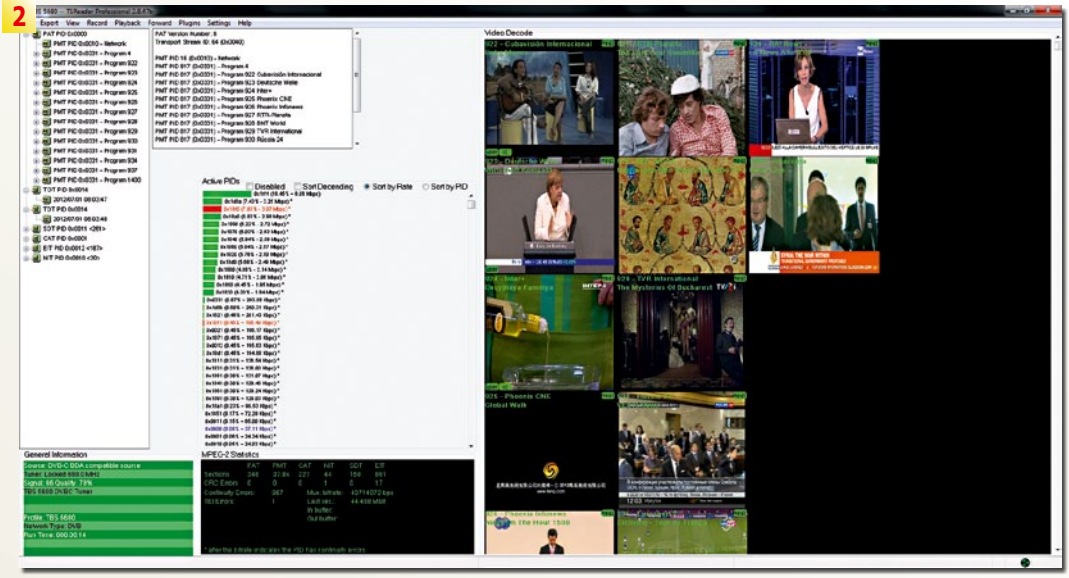
Given the above, we could hardly believe our eyes when the TBS 6618 nonetheless managed to get a signal lock and was even able to whizz up a picture on our screen at times. We obviously could not expect faultless video but we were surprised that some picture artefacts appeared at all, which is impressive proof of the tuner's capabilities.

Next, we checked whether both models would allow recording an entire transponder. Since it is a single tuner, the TBS 5680 happily recorded all data, even though it is connected through a USB 2.0 interface with its inherent data rate restrictions.

We finally looked at the NIT and were in for quite a surprise: All transponders used by our cable provider transmitted the relevant reception parameters, which means it is indeed possible to perform a successful network search. Why none of the software solutions we tested was in a position to also put this information to practical use is beyond us.

Now that we had checked out the TBS 6618 with all TV channels available to us it was time to turn to the TBS 5680 as well.

Basically, this is an external USB version of the TBS 6618 that will find users in the laptop computer com-



TBS 5680

1. The CD for the TBS 5680 comes with an automatic installer and includes a manual and TBSViewer. Buyers of the TBS 6618 can still download everything from the TBS website at www.tbsdtv.com.

2. Despite the USB-2.0 connection, we could stream the whole Transport Stream without a drop. No worries if you want to use your laptop to watch DVB-C.

munity, for example, since it offers the only solution for watching DVB-C on such a mobile device. If you look at the TBS product range there is a similar model in store which is called TBS USB-C TV STICK, but it comes without a CA slot and thus cannot be used for the many encrypted cable channels. All the more reason for us to get truly excited about the TBS 5680, as it makes your life so much easier. Simply insert a CA module with a valid smartcard and off you go.

We tried several modules and the TBS 5680 seemed to be happy with all except one: It was the CI+ CAM which only prompted an alert message telling us the receiver in use is not CI+ certified and therefore will not work with CI+ CAMs. Fair enough!

We tested all channels mentioned before in the course of this report with the USB box as well and no matter how hard we looked, there was no difference at all. While this generally is a very good outcome we were nonetheless surprised because in theory the transfer rate via USB 2.0 is inferior to PCI-e. That is why we used TSReader to record an entire transport stream (as described above) to find out if the TBS 5680 really is that fast.

It turned out that the USB box can indeed keep up with its PCI-e counterpart, irrespective of theoretical USB limitations. So the message we can send out to all those interested laptop PC users out there is: Don't worry about USB 2.0 restricting the performance of your external TV box – you'll never notice it!

What we did notice in the course of our test, however, is that the TBS 5680's tuner does not have as low a threshold as the TBS 6618 that performs almost miraculously in that regard.

Something odd we also found out: When testing TSReader on a PC with the TBS 6618 and on a laptop computer with the TBS 5680 using the same channel started at exactly the same time via VLC the output of the TBS 6618 lagged one second behind that of the TBS 5680 – for no apparent reason.

The table below provides a concise overview of our experiences with all tested TV applications (Table 1).

Admittedly, since our previous test of TBS cards we had totally forgotten how to integrate the remote control into the workflow.

Initially, we were wondering why none of the TV applications we tested could be operated with a remote control and why a remote was not even offered in the configuration options. The CD ROM that is shipped with the TBS 6618 did not include a relevant driver either...

It took us a while until we remembered that TBS offer their own in-house tool for the remote control and when we checked their website we

	WMC with DVBLink	DVB Dream (OEM version)	TBSViewer	ProgDVB (free version)	DVBViewer (Pro version)	TSReader (Pro version)
Channel switching	+	+	+	+	+	
Ease-of-use	+++	-	+	+	+	-
Functions	+	-	+	++	++	+++
Comments		Restricted OEM version, aggressive drive for selling the full version	OEM version of DVBViewer, different skin Only works with TBS cards Best free TV software for TBS cards	Plugins can be added and used without limitation Lots of functions, including streaming	Lots of functions, easy to use Integrated streaming functions	Professional application for stream analysis Extensive streaming functions
CI / CAM support	yes (*)	yes	yes	yes	yes (*)	yes (*)
OEM/free version	no	yes – with many restrictions	yes	yes	yes	yes
Full version (for purchase)	yes	yes	-	yes	yes	yes

Table 1. * did not work in our test – CI or CAM not identified

quickly discovered the tbs-vhid_v1.0.0.8.zip archive for downloading. Unfortunately, this handy solution is listed neither for the TBS 6618 nor the TBS 5680.

After installation TBSVHID can be launched on the PC and it really works wonders: The buttons of a remote control are visualised as keyboard keys and since TV applications invariably are operated with keyboards you will never have to face any compatibility issues. Major TV applications such as WMC, DVBViewer, TBSViewer, DVBDream or ProgDVB come already fully pre-configured.

If need be, you can also conveniently set up the system to work with other software as well. Quite frankly, we do not know of any manufacturer with a similarly clever system integration of the remote control.

If you own an a laptop computer and would like to use that device for watching DVB-C at home, the TBS 5680 is the solution you've been looking for. The fact that the USB box comes with an external power supply unit is not a problem at all, as DVB-C can only be used stationary anyway – contrary to DVB-T.

For desktop computers we recommend the TBS 6618, which is a sturdy PC card that also comes with a CI slot. Thanks to BDA drivers you don't need an engineering degree to turn your desktop PC into a Windows-based multimedia center.

TBS lends proof to our recommendation that today's generation of TV cards should always be as independent as possible from proprietary software.

The DVB-C PC cards tested in this report are shining examples of that strategy. TBS clearly focuses on top-quality hardware and faultless drivers, while leaving the choice of TV software to end-users.

That does not mean, however, that those simply looking for an easy tool to watch DVB-C are left in the dark. They should opt for the TBSViewer which will provide just the functions and features they require.

Our test has demonstrated that both the TBS 6618 and the TBS 5680 are excellent DVB-C receivers that will integrate well with any TV application that runs under Windows. Both of them are characterised by top-notch hardware components and extremely low-threshold tuners.

On the software side TBSViewer is fine for simply watching TV, but if you intend to exploit all capabilities of the TBS cards to the full and to get the most out of DVB-C there's no way around purchasing professional software.

TBS has complemented its product range with DVB-C tuner with CI slot for PCI-e and USB.

In our eyes, TBS has rightfully become a reference manufacturer for DVB-S/S2, DVB-C and DVB-T/T2 cards at this stage. Keep up the good work!

MORE ABOUT THIS COMPANY

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

Expert Opinion

Vitor Martins Augusto
TELE-audiovision
Test Center
Portugal

TBS 5680

+
- great DVB-C receiver for USB
- simple installation
- BDA drivers for compatibility with most current TV applications
- great TBSViewer application included
- good remote with clever integration

–
- None

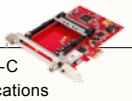
TBS 6618

+
- great DVB-C receiver for PCI-e
- simple installation
- BDA drivers make the TBS 6618 compatible with most current TV applications
- great TBSViewer application included
- good remote with clever integration
- extremely sensitive tuner

–
- some applications are missing on the included CD and must be downloaded from the TBS website

TECHNICAL DATA

Manufacturer	Tenow International Ltd, Unit C-8A, Shennan Garden Building High-Tech Park, Shenzhen, CHINA
Phone	+86-755-26501345 or 26501201
Email	sales@tbsdtv.com
Website	www.tbsdtv.com
Function	PCI-E card / USB 2.0 Box for DVB-C, compatible with most current TV applications

TBS6618 	**TBS5680**
Fully compliant with DVB-C and ITU J83 A/C Specifications	Fully compliant with DVB-C and ITU J83 A/C Specifications
Receiving Frequency: 47~862 MHz Tuning Range	Receiving Frequency: 47~862 MHz Tuning Range
Input level: -65~-10dBm	Input level: -65~-10dBm
16QAM, 32QAM, 64QAM, 128QAM and 256QAM Support	16QAM,32QAM, 64QAM, 128QAM and 256QAM Support
Symbol Rate: 0.87 to 9Mbaud	Symbol Rate: 0.87 to 9Mbaud
Single CI Slot	Single CI Slot
Standard Profile TV Card Size: 130x83mm (Length x Height)	TV Box Size: 103x88x22mm (Length x Width x Height)
TV Card Weight: 80 Gram	TV Box Weight: 165 Gram
Package Gift Box Size: 205x140x50mm (Length x Width x Height)	Package Gift Box Size: 210x175x55mm (Length x Width x Height)
System Requirements:	**System Requirements:**
Windows 2000/XP/Vista/7 or Linux	Windows 2000/XP/Vista/7
DirectX9.0 or later Version	DirectX9.0 or later Version
Available PCI-E x1, x4, x8 or x16 slot	Available USB Port
Cable TV connection	Cable TV connection
For HDTV:	**For HDTV:**
Dual core CPU	Dual core CPU
1GB RAM or Above	1GB RAM or Above
Graphic Card with at Least 64MB RAM	Graphic Card with at Least 64MB RAM
Package Content:	**Package Content:**
1 x TBS6618 PCIe DVB-C TV Tuner CI Card	1 x TBS5680 USB DVB-C TV Tuner CI Box
1 x remote control	1 x remote control
1 x IR receiver	1 x USB Cable
1 x Software CD	1 x Software CD

Dexing 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*

DESING
Desai Electronic Technology (Sic
Dexin Digital Technology (Che
Http://www.dscdvb.c

IRD with three different inputs

The NDS3975 is shipped in a rather plain-looking cardboard box, yet as soon as you open the packaging you learn that looks can be deceiving: Out comes a top-notch product that is protected by foamed material on all sides, plus all cables that are required to get going in a flash. You'll find the power cable as well as cables for ASI, YbPbR and composite video.

The IRD (integrated receiver decoder) NDS3975 is designed with the standard 19-inch rack width in mind and sports spotless build quality that seems to suggest 'I'm made to last!'. In addition, a look at the rear panel puts us in for another surprise, as there are more connection options available than most of us would think possible:

- power input
- 3 x RJ-45 (IPTV input – „FE", IPTV output – „GE", as an option and not available on our test unit, NMS – maintenance)
- 1 ASI input
- 4 ASI outputs
- 1 tuner input (DVB-S2/C/T as selected, our test unit was equipped with a DVB-S2 tuner)
- 1 HDMI port
- 1 composite video output
- 1 audio output (L+R)
- 1 YbPbR component output

What truly set our hearts ablaze, however, was a second look at the front panel: Apart from the two-line LCD display, which is extremely easy to reads thanks to its blue backlighting, two arrow keys and three additional buttons for Enter, Menu and Lock we discovered a small screen. Could it be true? Does this new IRD come with a small monitor right on the front that can show live TV with its 38mm diagonal?

There was only one way to find out – quickly connect and set up the device! Yes, this small monitor has a surprisingly high resolution and can easily replace an external monitor for most purposes. There's even a small switch to turn it on or off, so that it stays dark whenever it isn't required.

In addition, the front panel is characterised by six status LEDs (Power, Tuner Lock, ASI Lock, IP Lock, Decoder OK and Alarm), plus two CI slots on the right side, which turned out to be compatible with all our CAMs except those working with the CI+ standard.

When we think of integrated receiver decoders (IRD), we usually have in mind professional reception devices for head-ends. Contrary to conventional consumer receivers, IRDs are designed for permanent use. This means, the ultimate benchmark is not convenience and fast zapping, but receiving a channel or transponder for any length of time up to several years and making that signal available for further processing and distribution.

The major specifications for IRDs are:

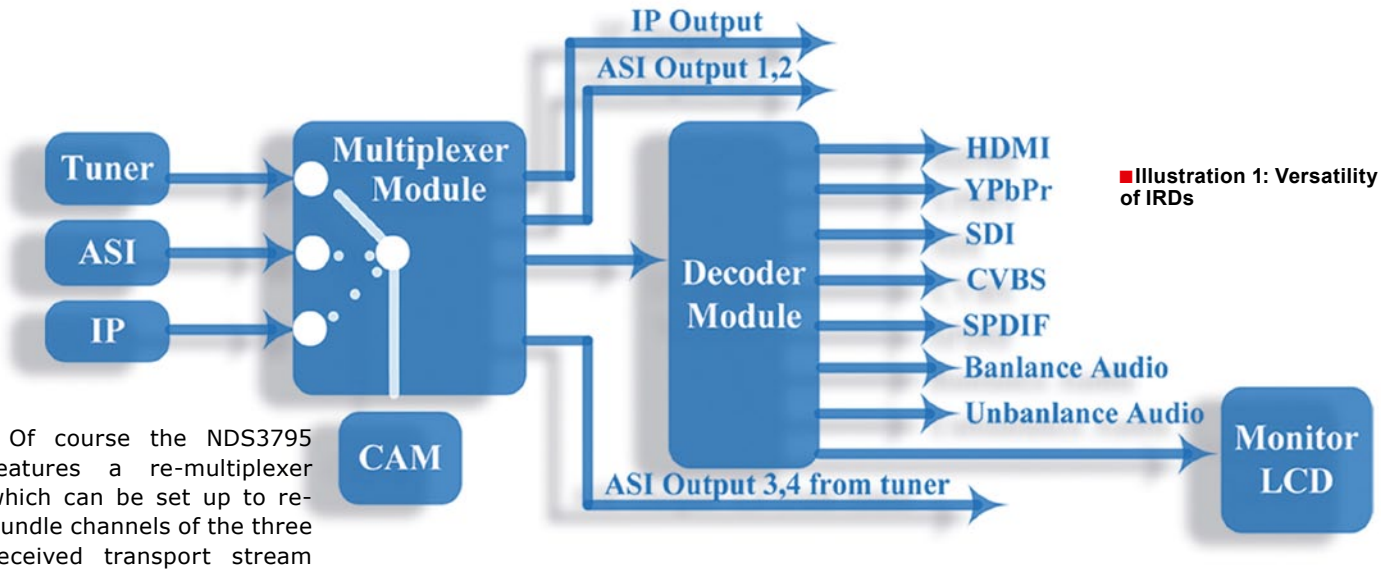
- high reliability
- 19-inch rack format
- high usability
- excellent reception quality
- signal output with very good quality
- low maintenance costs

The NDS3975 receives high scores for each of these demands, and yet it offers so much more. It's best to have a look at illustration 1 to get an impression of its versatility.

The main difference between the NDS3975 and standard IRDs can be found right at the beginning of this report: It features three usable inputs, instead of one tuner only. While the tuner itself is exchangeable – which means you can either choose DVB-S2, DVB-C or DVB-T – there is an ASI input as well as an option to receive a transponder stream via a dedicated network interface.

This means that it is possible to receive a satellite transponder through the built-in DVB-S2 tuner and at the same time feed in a second transponder from another IRD via ASI.

Still looking for some icing on your cake? There you are: A third transponder can be integrated via IP at the very same time.



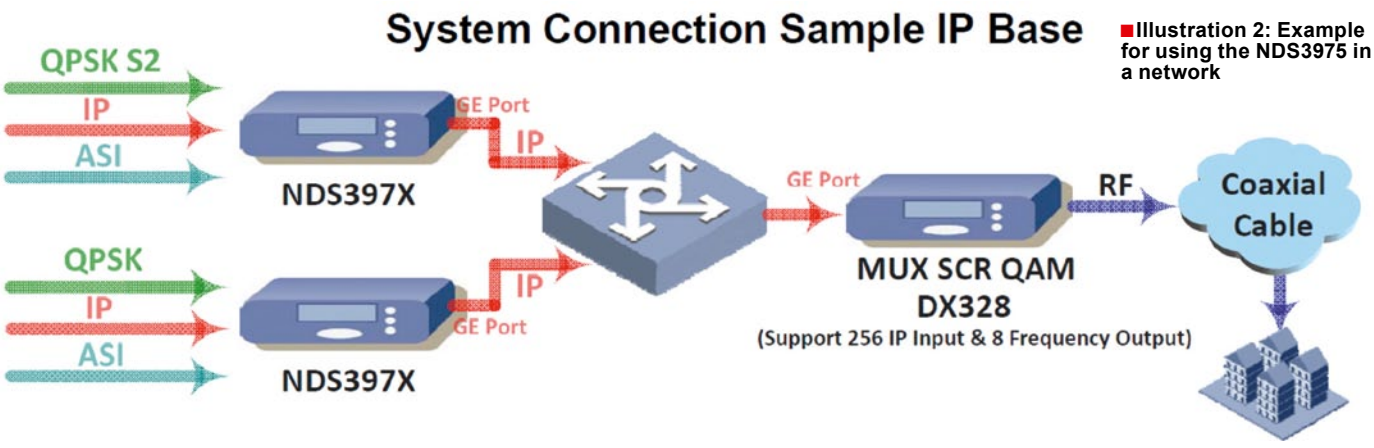
■ **Illustration 1: Versatility of IRDs**

Of course the NDS3795 features a re-multiplexer which can be set up to re-bundle channels of the three received transport stream into a new transport stream without any limitations whatsoever ('muxing'). The newly multiplexed stream is then made available via the two ASI outputs as well as through the network interface for further processing.

Illustration 2 gives an example of how a typical cable head-end could look like.

Simultaneously, the transport stream of the tuner is available via two additional ASI outputs, and the integrated MPEG-2/MPEG-4 decoder can even provide the selected channel as HDMI, SDI or CVBS. This is also the channel that can be viewed on the built-in mini monitor, which means the NDS can at the same time provide analog video signals for CATV, for example.

The fact that the NDS3975 does not only come with two CI slots for conditional access modules but also sports an integrated BISS decoder goes to show that the manufacturer Dexing has tried to really meet all customer demands. BISS is short for Basic Interoperable Scrambling System and was defined by the European Broadcasting Union in order to allow encryption for occasional transmissions (feeds, etc.) without having to deal with all the obligations imposed by proprietary solutions like PowerVu, for example, which would cause incompatibilities on too many levels. BISS is an open platform which can easily be implemented by manufacturers without any hassles. As far as broadcasting companies are concerned, BISS offers the benefit of adding encryption to sports feeds without incurring additional costs. The transmitting and the receiving end



■ **Illustration 2: Example for using the NDS3975 in a network**

```
1   Input Setting
      1.1 Tuner (DVB-S2)
            1.1.1  Prog Parse
            1.1.2  Sat freq set
            1.1.3  LNB freq set
            1.1.4  Symbol rate
            1.1.5  LNB voltage
            1.1.6  22KHZ Switch
      1.1 ASI
            1.1.1  Prog Parse
      1.2 IP
            1.2.1  Prog Parse
            1.2.2  Input IP Addr
            1.2.3  Input Port
2   Output Setting
      2.1 Multiplex Set: Multiplexing /
          Tuner passthrough /
          ASI passthrough / IP passthrough
      2.2 Output Bitrate: Output Bitrate
      2.3 TransStream ID
      2.4 OriginalNetID
      2.5 IP Output
            2.5.1  IP Out Enable: ON / OFF
            2.5.2  Out IP Addr
            2.5.3  Out Port
3   Decoder Setting
      3.1 Video Setting
            3.1.1  Resolution
            3.1.2  Standard
            3.1.3  Subtitle
            3.1.4  CC Switch
            3.1.5  Finger Switch
            3.1.6  Aspect Ratio
      3.2 Audio Setting
            3.2.1  Audio Select
            3.2.2  ES Mode: Stereo,
                   Left Channel, Right Channel
            3.2.3  Volume
            3.2.4  Audio SPDIF: Auto
            3.2.5  Audio Channel: Auto
      3.3 Program Select
      3.4 Search
      3.5 Decoder Select: Tuner, ASI, IP
4   Descramble Setting
      4.1 Card Setting
            4.1.1  InPut Select: Tuner, ASI, IP
            4.1.2  A Card Info
            4.1.3  B Card Info
            4.1.4  Pro Select
            4.1.5  CI Bitrate
      4.2 BISS
            4.2.1  Select Mode
            4.2.2  Mode 1
            4.2.3  Mode E
5   Network Setting
      5.1 IP Address
      5.2 Subnet Mask
      5.3 Gateway
      5.4 MAC Address
      5.5 Service IP
      5.6 SPTS Net Config
            5.6.1  SPTS Config
            5.6.2  SPTS IP Addr
            5.6.3  SPTS Gateway
            5.6.4  SPTS Enable
            5.6.5  SPTS Para Prg
6   Saving Config
7   Loading Config
      7.1 Saved config
      7.2 Default config
8   Version (SNMP)
```

■ **Illustration 3: Menu structure of the NDS3975**

merely have to agree on a key for reliable and cost-efficient encryption. Dexing definitely deserves special praise for implementing this encryption method in its NDS3975 as well.

To make sure we can look at all features and functions of the NDS3975 we set up a small head-end in our test center. A second IRD with ASI output was added to provide a complete transport stream from ASTRA 19.2° East, and with the help of the TSReader software (see test report in TELE-audiovision 09-10/2012) we also provided the locally available DVB-T transponder. The NDS3975 itself was set up to receive a second transponder of the ASTRA 19.2° East satellite.

We then verified all results using a professional meter with ASI input, while at the same time distributing the transport stream generated by the NDS3975 to our PC using UDP Unicast. The Dektec DTS-215 Gold (see test report in TELE-audiovision 12-02/2012) was installed in our PC to re-modulate the signal into the DVB-C and DVB-T standards. Once that was achieved the final signal could easily be tested on any standard DVB-C or DVB-T receiver.

When you go about setting up the NDS3975 you can follow two different routes: You may choose to do all the configuration right on the device itself (frontend operation) thanks to the LCD screen and the seven control buttons, or you can download the Network Management Software (NMS operation) from the Dexing website at www.dsdvb.com free of charge.

We embarked on route 1 first, which is self-explanatory once you have grasped the meanings and functions of the Enter, Menu and Lock buttons. Lock, for instance, switches between status display and menu, so one could argue that Lock in this context means that the configuration menu cannot be accessed when status display is active.

Once the configuration menu is called up you can use the Up/Down buttons to navigate between different menus.

The menu option that is shown in the first line can be activated with the Enter button, and the Menu button brings you up one menu level. A highlighted option in a sub-menu can be activated with the Enter button and edited with the four arrow buttons. This way editing frequencies or symbol rates becomes a surprisingly straightforward affair.

When you're done editing a touch of the Menu button confirms all parameters. Illustration 3 shows the menu structure of the NDS3975.

Before we went about configuring the NDS3975 we first defined which channels should be included in the final transport stream:

- ARD (from the tuner of the NDS3975)
- ZDF (from the ASI input)
- RTP-1 (from the IP input)
- RTP-2 (from the IP input)
- SIC (from the IP input)
- TVI (from the IP input)

This channel list is based on three different transport streams, which should be fed to the NDS3975 using the following scenario:

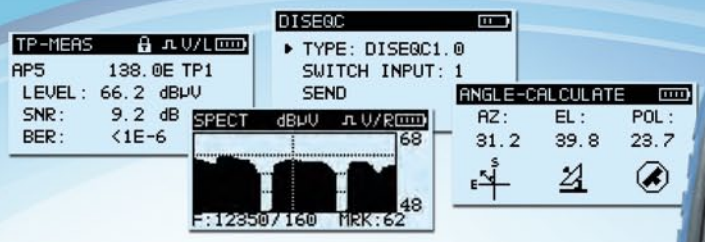
1) Tuner: Using the built-in DVB-S2 tuner transponder 19 from ASTRA 19.2° East (11494 H 22000-2/3 8PSK) is received. This transponder carries the German public broadcaster 'Das Erste' in high definition, among other channels.

2) ASI: Using the ASI input transponder 77 from ASTRA 19.2° East (11954 H 27500-3/4 QPSK) is fed to the IRD. It is entirely on purpose that we set up the second transport stream with a standard definition transponder, so that we could check out how capable the multiplexer of the NDS3975 is.

3) IP: The IP input should receive its signal from a PC with TSReader Pro. To that end, we installed a BDA compatible DVB-T USB receiver

DEVISER

www.devisertek.com



S30

Satellite Meter

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

S7000

TV Analyzer

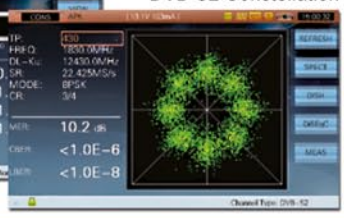
QAM Constellation

Spectrum

TR101 290 Three level Monitoring

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

DVB-T Signal


DVB-S2 Constellation

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

DEVISER

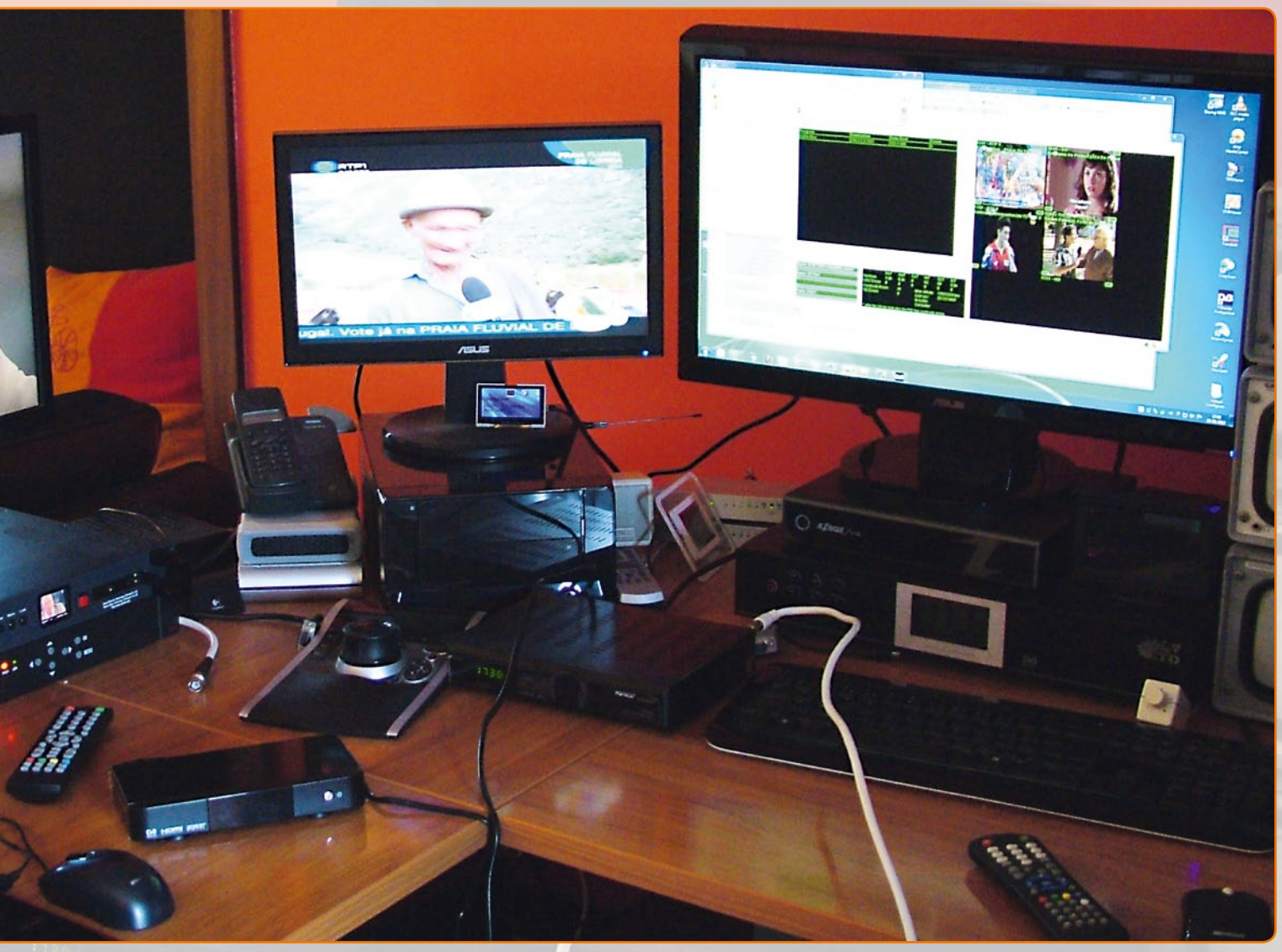
1. Everything is hunky-dory, with the LCD screen showing the current data rate.

2. What a fascinating feature: The built in mini-screen can present the currently selected channel with high resolution. This way you won't need an external monitor. Pure genius!

3. The small screen has exactly the same content as our external monitor, which we connected via DVI and a corresponding adapter. The NDS3975 even delivers audio in addition to video.

4. The transport stream generated by the NDS3975 was passed through to our meter that has an ASI input.

5. Almost like a professional studio: The NDS3975 (left, under the monitor), IRD, DVB-C receiver, DVB-T receiver, PC with TSReader and Dectek DTU-215 Gold installed.



on our PC and streamed the entire 754 MHz transponder of the local DVB-T in Portugal to the NDS3975 via UDP. This stream is comprised of five channels with MPEG-4 and AAC compression.

These three transport streams should be muxed into a newly created transport stream carrying the channels listed above. In addition, the new stream should be given out both via ASI and IP. The IP stream will be forwarded to a Dektec DTU-215 Gold, which will take care of modulating the IP stream into a DVB-C signal which will then be led to our improvised cable headend.

These are the steps we took to set up the NDS3975 for our test scenario:

1) Configuration of the built-in tuner: To start with, we had to change the tuner's LOF to 9750, since by default it is set up for the C band. Next, we entered the frequency (11494 MHz), symbol rate (22000) and LNB voltage (18V for horizontal). Once the Tuner Lock status LED indicated a locked signal we went to the Prog Parse sub-menu and started a channel search.

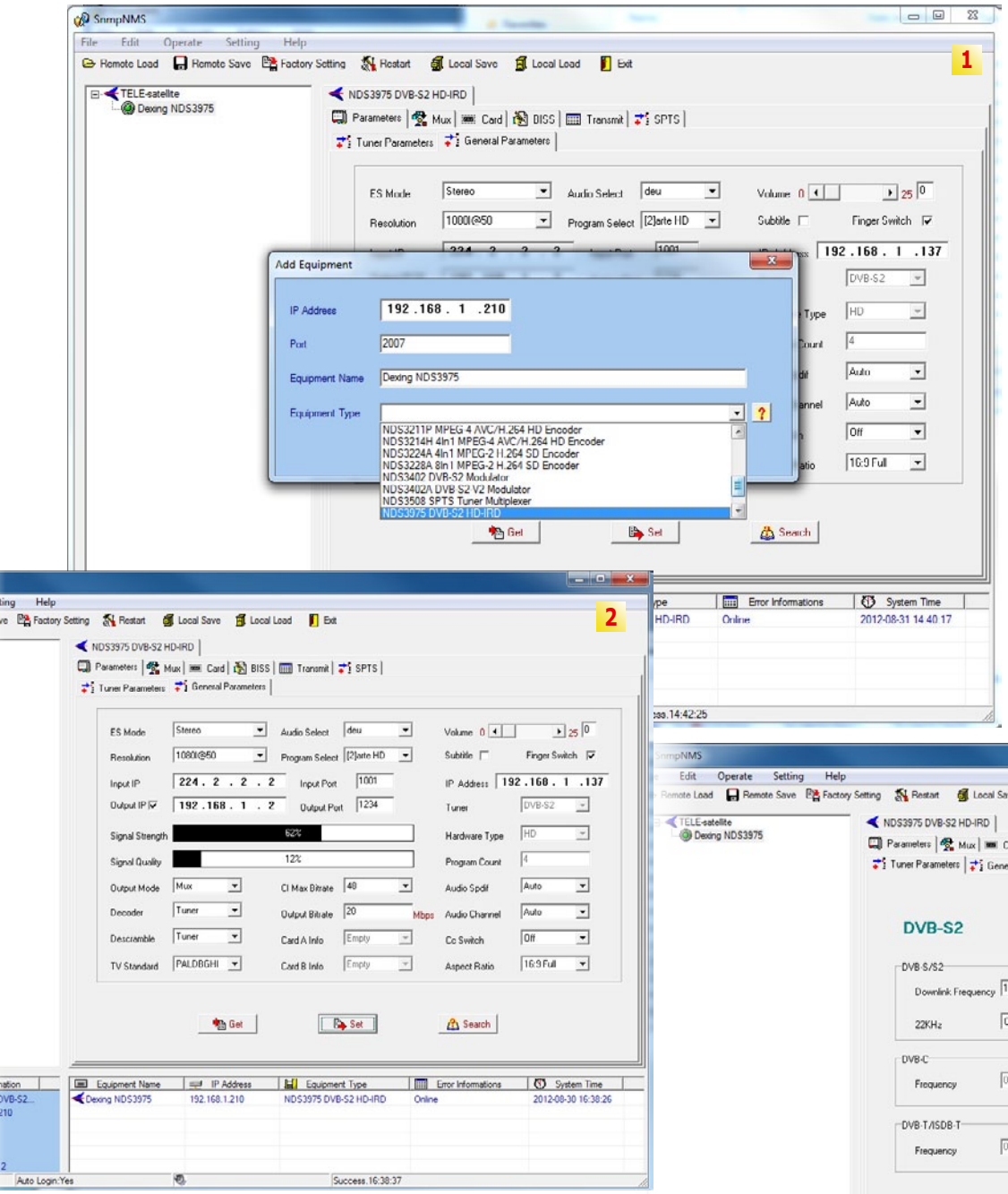
2) Configuration of the ASI input: All we had to do is initiate a search in the Prog Parse sub-menu.

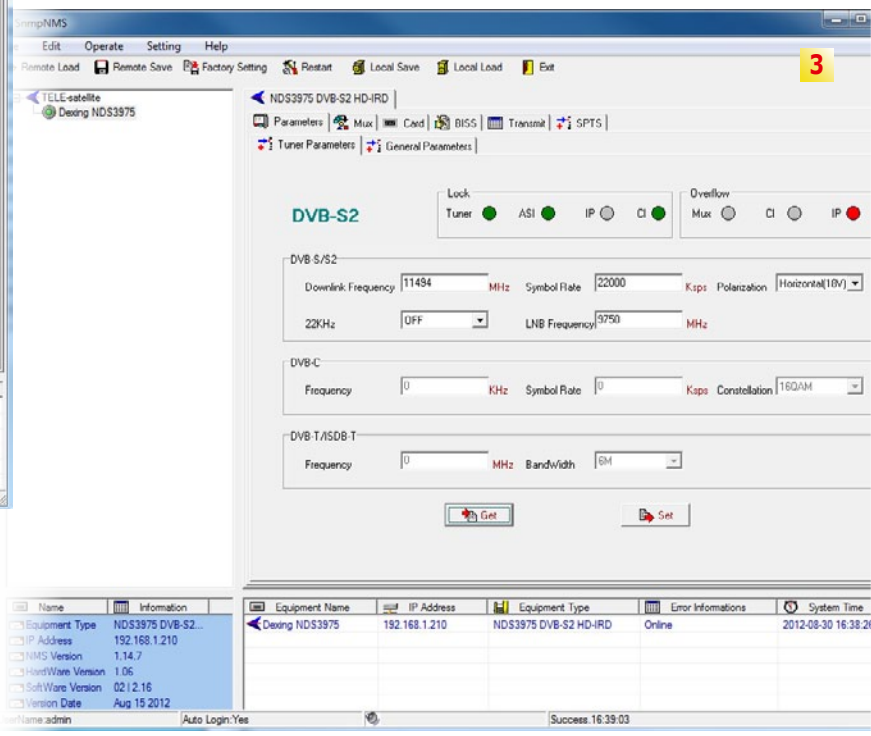
3) Configuration of the IP input: By default, the NDS3975 comes with some useful parameters for IP interfaces, which meant we did not change the multicast address 224.2.2 at port 1001. Once again, we then proceeded with the search in the Prog Parse sub-menu.

4) We then had to turn to the output side. The NDS3975 can be set to pass through the transport stream from one of the inputs (tuner, ASI or IP) directly to the IP output, or to lead all input signals to the re-multiplexer first.

We opted for the latter, since our end result should be a single transport stream with six channels.

We also configured the output bitrate. We did not edit the network IDs at this stage, even though the NDS3975 gives users that possibility too. What we did change, however, was the IP address for the IP stream output. By default, a multicast IP address was entered here as well, but we thought it would be wise to stream directly to one of our test PCs via Unicast. This way





1. All Dexing devices are supported by the NetworkManagement Software, allowing entire head-end stations to be managed with a single software solution.

2. The "General Parameters" tab shows all main configurations and here the video signal can be adjusted as required.

3. To be seen on the left: Tree structure with TELE-audiovision group and Dexing NDS3975. To the right: Parameters Tab showing Tuner Parameters of the integrated tuner. Our IRD is equipped with a DVB-S2 tuner.

we could eliminate potential network problems in our test center.

5) In the Decoder Settings menu you can freely select the video and audio formats, with a huge array of options available.

We restricted ourselves to perform a tuner search and then selected ARD HD. This meant that ARD HD would be available from the video and audio outputs of the NDS3975 as composite video, component video and HDMI. In addition, this was also the channel that would be displayed on the mini screen on the front panel.

Any channel can be selected for output, no matter whether it's in the transport stream of the tuner or comes for the ASI or IP inputs.

6) We did not change the network configuration, since the pre-defined IP address of the NDS3975 (192.168.1.210) worked brilliantly for our test network.

As soon as a single change of the NDS3975 parameters is confirmed the IRD becomes active. You can see this with all five LEDs lighting up: Power, Tuner Lock, ASI Lock, IP Lock and Decoder OK.

Only one LED remained dark, and we were quite happy about that, since it is labelled Alarm.

In step 4 just above we had activated Multiplex, which meant we needed to define which channels from the three inputs should be taken over.

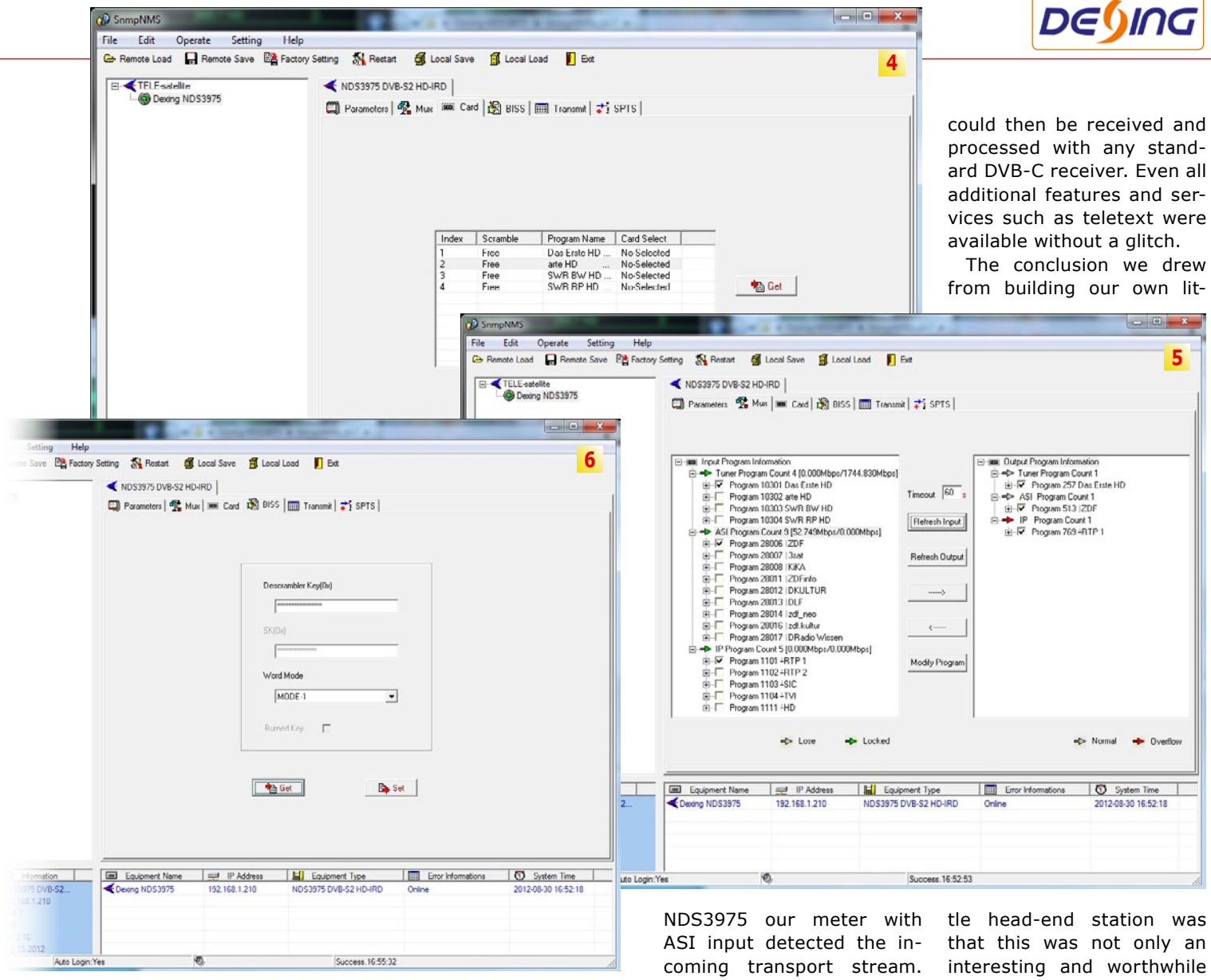
As mentioned in the beginning, the NDS3975 can also be set up with great ease using the Network Management Software (NMS) right on the PC. For the Multiplex setup we opted for that very convenient option.

The software is not designed specifically for the NDS3975 but works with all Dexing products. This way a head-end equipped with different Dexing products can be set up and controlled with a single software solution.

The tree structure of the software allows defining groups which can be used to control several head-ends at the same time, for example. Each group can then be set up to manage any number of Dexing devices.

The one thing you need to make sure is to select the correct device from the drop-down list, so that the corresponding tabs show the menu options for that particular device.

After entering the IP ad-



4. Channels received by the tuner can be descrambled with one of the two plugged in CAMs. It's interesting to note that each channel can be individually paired with one of the two CAMs.

5. The 'Mux' tab takes care of re-multiplexer configuration, which could not be easier: on the left side you select a source channel and by clicking on the arrow button pointing to the right it is added to the target stream. Selecting a channel on the right side and using the arrow button pointing to the left, the channel is removed from the target stream.

6. The NDS3975 is a professional device, which is why it comes with a fully implemented BISS decoder inside. Simply enter the current BISS key, select the BISS version and you're done.

dress of the NDS3975 (IP 192.168.1.210 in our case) and confirming it all parameters of the receiver can be accessed, read and changed as required. This is way faster and much more efficient than making all adjustments directly on the box.

Each device is shown in the tree structure with a virtual LED in front of its name. This LED lights up in green whenever a connection between software and receiver is established, and if no connection is possible this is indicated with a red light. We believe this is an extremely user-friendly solution and for large installations, in particular, you can identify potential problems at a single glance.

On the left side of the MUX tab all received channels are listed according to input, while the software lists channels that should be packaged into the output stream on the right side. This way it does not take rocket science to set up a new Mux.

In fact, you don't even have to consult a manual. Once the final settings have been transferred to the NDS3975 our meter with ASI input detected the incoming transport stream. What's more, all channels of the stream could be received nice and clear.

Next, we turned to the Dectek DTU-215 Gold. First, we set up the MuxXpert software – which is available as an option – to make sure the IP stream from the NDS3975 is handed over directly to the DTU-215, which in turn would take care of modulating the stream into a DVB-C signal.

At this point you should take care of the input bandwidth, which must not exceed the maximum bandwidth for the selected modulation. At the beginning we simply could not resist the temptation of adding too many channels to a single transponder, but after we had reduced that number to six everything was alright and worked flawlessly.

The frequency that was created with MuxXpert (447MHz, 64QAM, SR 6875) could then be received and processed with any standard DVB-C receiver. Even all additional features and services such as teletext were available without a glitch.

The conclusion we drew from building our own little head-end station was that this was not only an interesting and worthwhile undertaking, but can also easily provide residential accommodation, hotels or hospitals with complete TV bouquets via DVB-C/T or IPTV.

As always, we put the integrated tuner itself to a thorough test as well. The results show that it is able to lock a signal even if the antenna is on the small side and delivers a rather sketchy input signal.

What's more, we also tried to provoke errors feeding the IP input with a faulty transport stream – but to no avail! Turning the transport stream via ASI and IP off and on again did not bother the NDS3975 either, it performed brilliantly whenever a stream was fed to one of its inputs.

All that happens when the ASI cable is disconnected, or the feeding receiver is switched off, for example, is that the status LED ceas-

es to light up. No troubles caused, no tricks required – that's what we like about this IRD.

There's one more thing that deserves special praise: Whenever video cannot be put out due to faulty reception, for instance, there is only a short alert message indicating the signal failure. After that, the screen simply remains dark. We believe this is a very smart solution, since end users do not need to know the precise cause of a problem. After all, would you want "Bad reception – please tune your dish" to pop up on the TV sets of your cable TV customers? A blank screen is much less embarrassing, don't you think?

So does all this mean we could not even find the slightest fault with this product? Well, the receiver we were sent for testing came without a user manual. But then again, we found out right away how to use the IRD and hardly ever noticed that the manual was missing. This in itself speaks volumes about the user concept of the NDS3975, which is self-explanatory like only few other products we had tested before. And in case you didn't know: The iPhone doesn't come with a manual either. We had a total of three weeks to check out every nook and cranny of the NDS3975 while it was running without interruption. Were we faced with any technical problems or malfunctions?

Far from it! This is all the more impressive, since our tests place the highest of demands on all devices and we usually don't give up until we detect a flaw. The NDS3975 got the better of us, which means we can only congratulate Dexing on a top-quality product. The IRD NDS3975 is top-notch product in a league of its own. Not only is it a professional receiver, but an integrated device combining tuner, ASI and IP into an excellent package complete with re-multiplexer. Add to that a high-performance demodulator capable of giving out video as HDMI, component video or composite video and you end up with a state-of-the-art offering. With the option of re-multiplexing the transport streams right within the system it can do away with or at least reduce the number of required standalone multiplexers, depending on the field of application.

Thanks to its wide range of features and functions the NDS3975 is fit for the future as it can always be adapted to new or enhanced requirements. When they go out to buy a professional receiver these days many people are worried their purchase may turn into a waste of money as soon as some framework conditions change. Owners of the MNDS3975 need not have such worries, since all their product will require is an updated configuration to stay ahead of the pack. Conventional tuners, on the other hand, more often than not must be replaced by a new model.

In our final verdict we can whole-heartedly recommend the IRD NDS3975 without any restrictions. Never before has a similarly robust, versatile and fascinating professional receiver made its way to one of our test centers. The icing on the cake is provided by the mini screen on the front panel, which had us wonder why something useful like this has not been available before.

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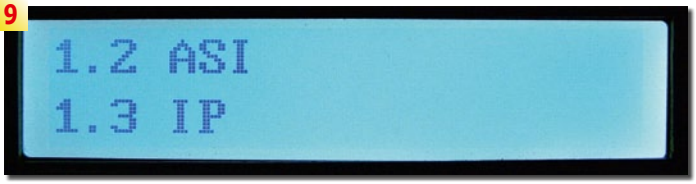

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11

1. Main menu: All menu items are numbered, which greatly facilitates all documentation and remote support. Based on the menu number it is easy to communicate which parameter has to be adjusted and in what way.

2. We started out by accessing the Input menu and from there going to Tuner Configuration.

3. The correct frequency has to be entered in menu item 1.1.2 for a satellite transponder to be received properly.

4. Don't forget to make sure the right LOF is given in menu item 1.1.3.

5. Now the symbol rate has to be entered in item 1.1.4.

6. This is followed by menu item 1.1.5, which takes care of the correct polarisation – V or H.

7. The only thing that's still missing is the high or low band, i.e. 0/22 KHz. You can set this in menu item 1.1.6.

8. Time for a signal scan (menu item 1.1.1 – Prog Parse), which delivers all channels of the transponder. Each channel can be selected individually.

9. Menu items 1.2 and 1.3 must be accessed to set up the ASI and IP input.

10. German channel ZDF was selected in this case. This channel was fed through the ASI input.

11. As far as the IP input is concerned, the correct IP address has to be entered in sub-menu 1.3.2 first. In addition, the port has to be entered as well (1.3.3).

12. Right after that, all channels of the IP stream can be listed and selected in menu item 1.3.1.

13. Numerous adjustment options for video and audio output are available in the decoder menu.

14. In menu item 3.1.1, for example, the output resolution can be set as required.

15. Once the desired input is selected in menu 3.5 and a channel search has been performed in menu 3.4 it is possible to select the desired channel in menu 3.3. This channel is then available via HDMI, component video out and composite video out. For monitoring purposes this channel can also be watched on the built-in mini-screen.

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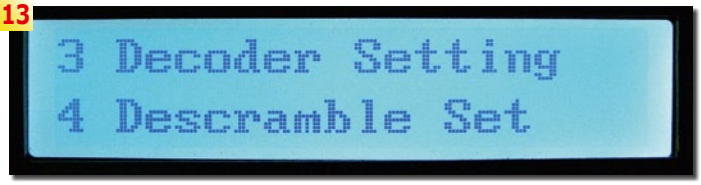

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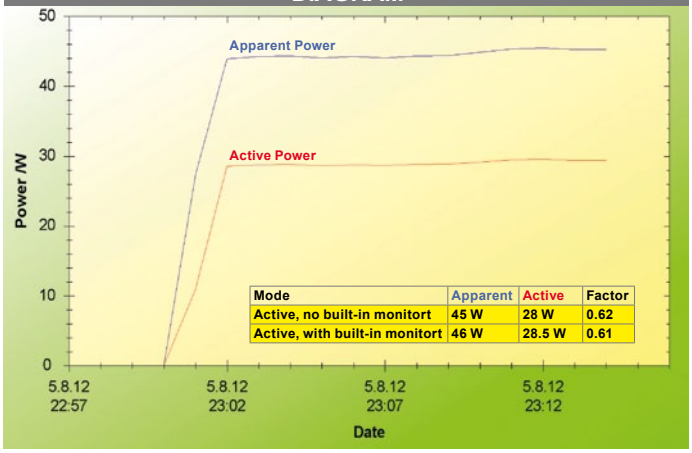
ENERGY

DIAGRAM



Mode	Apparent	Active	Factor
Active, no built-in monitort	45 W	28 W	0.62
Active, with built-in monitort	46 W	28.5 W	0.61

In the first ten minutes the NDS3975 was operated with three input signals and active re-multiplexing.
During the last five minutes a slightly increased power consumption can be observed, which is caused by the switched on mini-screen of the front panel.

Expert Opinion

Vitor Martins Augusto
TELE-audiovision
Test Center
Portugal

+
- Very robust and sensitive Tuner
- Multiple reception (Tuner, ASI and IP)
- Integrated Re-Multiplexer
- Many output options (ASI, IP, HDMI, Component, Composite)
- Simultaneous tuner pass-through to ASI

−
- None

TECHNICAL

DATA

Manufacturer	Dexin Digital Technology Co. Ltd.
Email	sunyu@dsdvb.com
Website	www.dsdvb.com/english
Model	NDS3975
Function	Professional Integrated Receiver Decorder
Input	
Tuner Input x1	QPSK,QPSK DVB-S2 (DVB-T/DVB-C/ISDB-T optional)
ASI Input x1	Maximum transmitting rate 90Mbps
IP x1	Maximum transmitting rate 80Mbps
Output	
Video Output	SDI: 1080i@25 ,29.94fps,720p @ 50 59.94fps, 576i@25 fps480i@29.94 fps
	YPbPr:1080i@ 25 ,29.94fps,720p @ 50 59.94fps
	CVBS: 576i@25 fps, 480i@29.94 fps
Audio Output	Stereo unbalanced audio BNC interface
	Stereo balanced audio XLR interface
	Digital audio digital audio
ASI Output 1#x2	One pair
ASI Output 2#x2	One pair, optional
IP Output x1	FE Port: MPTS&10 SPTS, maximum transmitting rate 90Mbps
CAM	
Descrambling procession	Supporting European DVB-CSA
	Smart Card interface: ISO7816
	Interface Card separation: PCMCIA
Graphical LCD	Status and configuration
Video Monitor	Live TV
Buttons	7x Control buttons
Power Supply	AC 110V-240V
Temperature Range	0-450C (Operation)
Dimensions	482mm×360mm×44mm 3.2Kg

Skytrack JTU41

JIUZHOU

Twin LNB of Jiuzhou

- *excellent performance with high signal levels*
- *a rare exception: manufacturers gives the true specifications*
- *perfectly suited for multi-user installations*
- *very high output power*

Solid Performance

Jiuzhou offers a wide range of LNBs that suit the needs of almost any user. Our regular readers can remember a number of test reports dedicated to Jiuzhou products. What is so special about this company: they do not over specify their products. For example, they do not claim their LNBs have a noise figure of 0.2 dB or even 0.1 dB as so many other competitors do. They promise just 0.6 dB. Some casual customers (and we do not want to call them "naïve") may think that Jiuzhou products are second class LNBs. Far from it! In our previous tests we discovered that the performance of Jiuzhou 0.6 dB devices matches quite well, if not beat, the 0.2 dB LNBs of some other manufacturers. Now we wanted to find out: is that also the case with their new Twin LNB JTU41?

To be quite certain about their performance we did not measure just one but two samples of the JTU41 model. The external design of JTU41 is classic. This is the shape we are accustomed to when dealing with universal twin LNB for Ku Band with a 40 mm collar. It has two F type connectors which can be covered with a sliding bottom part of the plastic enclosure. Thanks to that they will not be exposed to rain and snow and

One of the sample LNBs during the test

TELE audiovision AWARD 01-02/2013

Jiuzhou JTU41
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In satellite signal C band and KU band range ,
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show Cursor location and signal strength downlink frequency,
Signal was locked。
Show spectrum bandwith：1200MHz；540 MHz；108 MHz

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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.

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the quality of cable connection will be not degraded over time. Their weight is not high so they are suitable even for the dishes with not so strong LNB supports. Also their energy consumption is moderate – 130 mA in our measurements, so it will not be a problem for any receiver or antenna switch. Workmanship leaves nothing to be desired for this class of products.

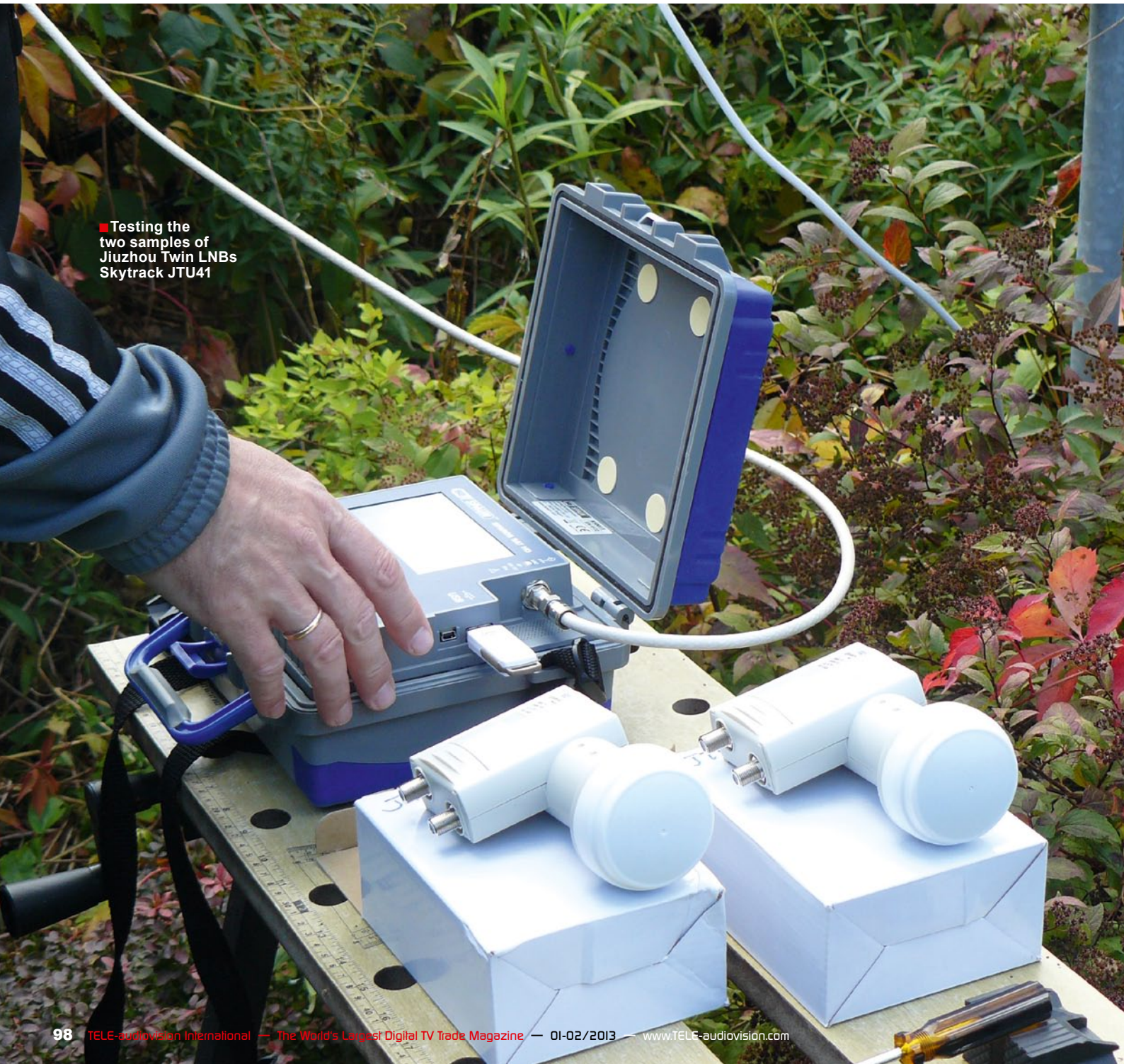
We usually test this kind of LNBs with one of the strong European satellites – ASTRA on 19.2° East or HOTBIRD on 13° East as this is the most typical application for them here in Europe. This time, however, we decided to make our test a little bit harder. We chose TURKSAT on 42° East. Some of its transponders are quite weak in our location and additionally some of them transmit with low symbol rates. This makes the test more demanding.

The table below (Table 1.) lists all the transponders we used for our test. Symbol rates vary from 2,500 up to 30,000 ks/sec and there are transponders of both polarizations from low and high sub bands of the Ku-Band.

We turned our dish to TURKSAT and did the first round of measurements with our reference high performance single LNB. Then, we installed the first sample and measured its two outputs (1A and 1B in our graphs). Finally, we did the same with our second sample of the JTU41 (2A and 2B).

In our analysis we focused on the output power achieved from the same transponders; this corresponds to the LNB conversion gain parameter and modulation error ratio (MER) which in turn corresponds to a combination of a few parameters: noise figure, phase noise, isolation, image rejection and intermodulation. In other words, the first parameter tells us how strong the signal is and MER is a measure of signal quality at the output of LNB.

The first graph shows

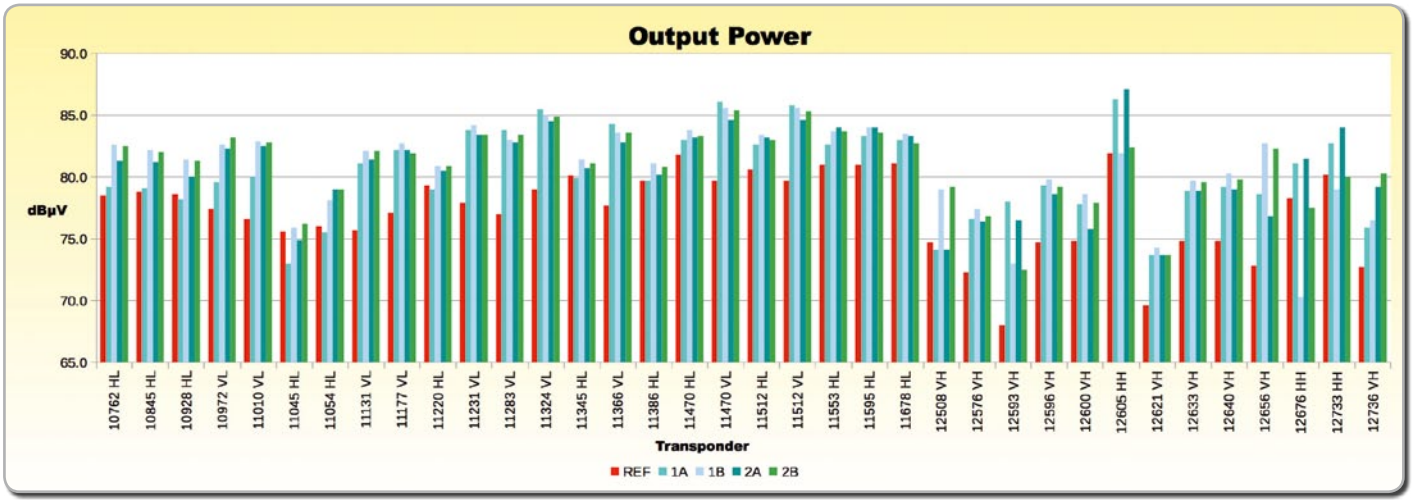


■ Testing the two samples of Jiuzhou Twin LNBs Skytrack JTU41

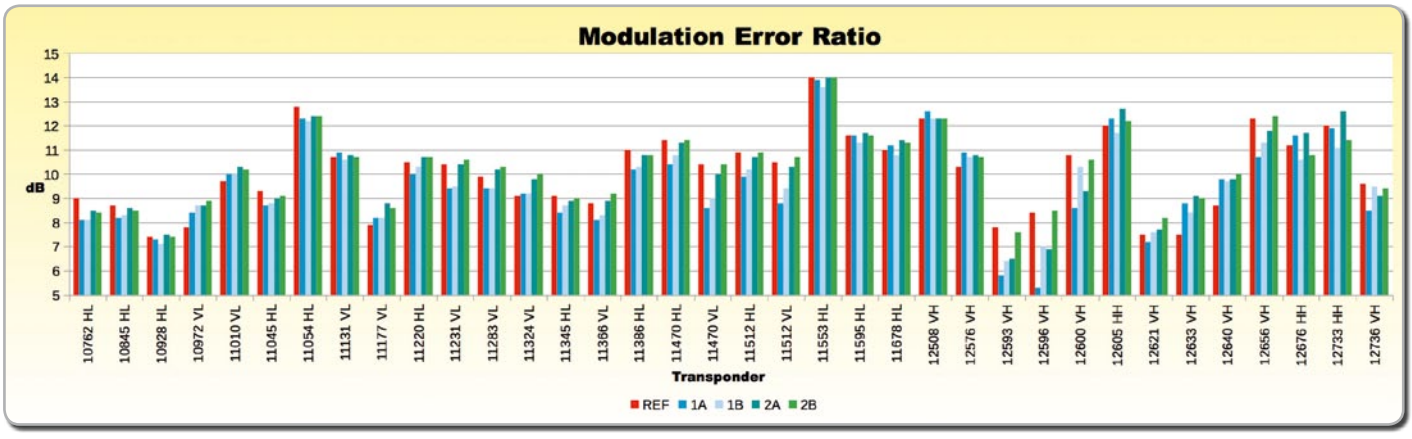
Transponder	Modulation and SR
10762 HL	DVB-S 27500
10845 HL	DVB-S 27500
10928 HL	DVB-S2 30000
10972 VL	DVB-S 27500
11010 VL	DVB-S 27500
11045 HL	DVB-S 10555
11054 HL	DVB-S 2894
11131 VL	DVB-S 14815
11177 VL	DVB-S 27500
11220 HL	DVB-S 30000
11231 VL	DVB-S 30000
11283 VL	DVB-S 27500
11324 VL	DVB-S 30000
11345 HL	DVB-S 27500
11366 VL	DVB-S 30000
11386 HL	DVB-S 30000
11470 HL	DVB-S 30000
11470 VL	DVB-S 29950
11512 HL	DVB-S2 30000
11512 VL	DVB-S 29950
11553 HL	DVB-S 30000
11595 HL	DVB-S2 30000
11678 HL	DVB-S2 30000
12508 VH	DVB-S 2532
12576 VH	DVB-S 5925
12593 VH	DVB-S 2500
12596 VH	DVB-S 2848
12600 VH	DVB-S 2500
12605 HH	DVB-S 27500
12621 VH	DVB-S 3364
12633 VH	DVB-S 4883
12640 VH	DVB-S 6510
12656 VH	DVB-S 4883
12676 HH	DVB-S 2800
12733 HH	DVB-S 5700
12736 VH	DVB-S 3703

output power. Th Skytrack JTU41 had evidently a stronger signal than our reference LNB. Practically for every transponder, both Jiuzhou samples delivered higher output power by about 5 dB on average. This is a lot. It means that we can use long cables or high loss switches and still enjoy a strong enough signal at the IF input of our receiver.

Our general conclusion is: if you do not need to hunt for very weak transponders and signals with very low symbol rate, the Skytrack Twin LNB JTU41 will perform as perfect as many 0.2 dB devices of other manufacturers. It is a solidly designed LNB giving a very strong signal level suited even for very demanding installations with long cables and multiswitches.



■ **MER measurement results shown in the second graph are more balanced between the reference LNB and the devices under test.**



■ **Except for two weak transponders with low symbol rate where JTU41 performed slightly worse than the reference, it had no problem in matching or even exceeding our reference for all remaining transponders. The difference between the outputs of the same twin device was rather small for the majority of the test transponders.**

Expert Opinion

Jacek Pawlowski
TELE-audiovision
Test Center
Poland

(+) Very good performance for stronger signals
Low LO drift
Low phase noise

(–) Slightly worse performance for weak signals with low symbol rates

TECHNICAL DATA

Manufacturer	Sichuan Jiuzhou Electric Group Co. Ltd.
Internet	www.jiuzhou.com.cn
E-mail	sales@skytrack.cn
Telephone	+86-755-21389616 +86-755-26947264
Fax	+86-755-27496486 +86-755-26947266
Model	JTU41
Function	Universal Twin LNB for Ku-Band
I/P Frequency Range	10.7 GHz ~ 12.75 GHz
O/P Frequency Range	950 MHz ~ 2150 MHz
L.O. Initial Accuracy	± 1.0 MHz (@ 25° C)
L.O. Temperature Drift	± 2.0 MHz (-30 ~ + 60° C)
L.O. Phase Noise	-60dBc/Hz @ 1 kHz offset (Max.)
L.O. Phase Noise	-80dBc/Hz @ 10 kHz offset (Max.)
L.O. Phase Noise	-100dBc/Hz @ 100 kHz offset (Max.)
L.O. Spurious	-50 dBm (Max.)
Noise Figure	0.6 dB
Conversion Gain	50 dB (Min.)
Gain Variation	8 dB (Max.)
Gain Flatness	±0.5 dB/27MHz
Isolation	20 dB (Min.)
Image Rejection	40 dB (Min.)
P1dB	0 dBm (Min.)
Output VSWR	2.5:1 (Max.)
DC Current consumption	200 mA (Max.)
Polarization Switching Voltage	V:11.5~14V, H:16~19V
Band Switching	Low:0 kHz, High:22 ± 4kHz
Water Proof Test	+60°C water for 5 minutes

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

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- *suitable for multi-point distribution of satellite signals as well as other signal types*
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TELE audiovision AWARD 01-02/2013

Satson HD-MOD-001T
Smart solution for distributing HD signals via an existing coax cable network

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

Most of us will surely remember that in the analog age video signals were distributed via coax cables with the help of a conventional UHF or VHF modulator. Such a device would have set you back between a few and a few hundred dollars, depending on brand, specifications and overall quality.

Fair enough, but the analog age is gone and it is time now to look for suitable digital solutions. Why go digital in the first place? Well, how about high-resolution video without all that irritating signal interference for a start!

The HD-MOD-001T from Satson ships in a black case measuring 24 x 21 x 4 cm and does not weigh more than 0.8 kg. It sports a two-line backlit LCD display on the upper side which on the one hand provides a steady flow of useful status information, but – even more importantly – can also be used to program and control the modulator in conjunction with six buttons located right next to it (four arrow keys, OK and Lock). In addition, Satson throws in an RF-45 network socket that allows remote access for controlling and managing the modulator via Telnet.

All other connection options can be found on the bottom side of the HD-MOD-001T and we can happily state that the manufacturer has followed a rather generous approach: HDMI input, three RCA jacks for YUV as well as three RCA jacks for stereo audio and composite video are available. Power to

THE LASER DISH SYSTEM 1000

激光卫星接收天线系统 1000

The Laser Dish System allows mounting satellite dish far away from where the satellite receiver is located. Ideal for difficult reception areas, e.g. when a dish installation is not allowed in vicinty to receiver or when obstacles hinder satellite reception. The Laser Dish System is based on the fibre optic system invented by GlobalInvacom and allows the connection of up to 4 satellite receivers.
激光卫星接收天线系统支持卫星接收机和卫星接收天线之间的远距离传输。
假想有一些接收比较困难的地方，例如：当卫星接收天线不允许安装在邻近卫星接收机的地方或者有障碍物阻挡卫星接收。激光卫星接收天线系统基于GlobalInvacom 公司发明的光纤系统，他允许连接多达4个卫星接收机。

The Laser Dish System 1000:
- Fibre Optic LNB, Type Universal, Ku-band, Offset, 40mm
- Power Supply for LNB
- 2 x 500m Fibre Optic Cable, ready to connect
- Converter Type Quad for 4 Satellite Receiver or Multiswitch

Other Systems:
The Laser Dish System 500 with 500m cable

Guaranteed 100% Signal Quality thanks to GlobalInvacom Fibre Optic technology
GlobalInvacom的光纤技术使信号质量保证100%

IMPROVED VERSION
NEW
NOW 1000 METER

1000 METER 1000米

Distance from Dish to Receiver

从卫星接收天线到卫星接收机的距离

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Luohu District, Shenzhen 518001, CHINA

Tel.: +86-755-82175354
Email: sales@ALuo-Sat.com
Website: www.ALuo-Sat.com

ALuoSat
深圳市罗湖区东门中
路南海中心B座29D, 518001

电话: +86-755-82175354
邮箱: sales@ALuo-Sat.com
网址: www.ALuo-Sat.com

ALuoSat
Advanced Technology Division

the modulator is supplied by an external 12V power unit which is actually screwed to the main case and thus makes sure power cannot be interrupted unintentionally. Thumbs up for such a reliable construction!

In general, both the build quality and the design philosophy of the HD-MOD-001T suggest right away that we're dealing with high-quality equipment here.

We should also mention at this stage that this modulator does not come with a mechanical power switch which – for a change – is a good sign in this case. Why? Simply because the HD-MOD-001T is designed for heavy-duty permanent operation and can easily be wall-mounted or integrated into a distribution rack thanks to its dedicated mounting rails. In case of an electrical power outage the HD-MOD-001T will remember all of its exact settings until power is up again and will continue in precisely the same operational state as before the power failure.

Thanks to the external power pack the modulator itself does not heat up significantly, which means fans or cooling elements are not required.

While the manual that Satson ships together with the modulator is on the thinner side, it does nonetheless deal with most functions and if you make a point of reading it carefully you should be able to set up and operate the HD-MOD-001T without further ado.

It only takes some 25 seconds for the HD-MOD-001T to boot, after which the device is fully operational and can convert an input signal coming from one of three sources (YUV, HDMI or CVBS) into an MPEG-2 signal for distribution on a DVB-T frequency. MPEG-4/H.264 is not supported and only DVB-T is available as output format, but neither of those facts is an issue since this modulator only produces a single output channel with up to 1080i, so that enough bandwidth is always available. In addition, thanks to distribution via coax cables error correction is of only minor importance in this case.

All settings and adjustments can easily be made right at the device with the help of the four arrow keys and the OK button. It takes a little time to familiarise oneself with the keys but once that phase is over the modulator is quite easy to operate.

The main menu of the HD-MOD-001T is made up of five sections, namely RF Output, Video, Audio, Stream and System. As it turns out the menu designations are more or less self-explanatory, which was all the more impetus for us to start with the RF Output sub-menu and look at the parameters of the DVB-T output signal.

Obviously, the manufacturer has tried to make this product as universally compatible as possible, which is why the following output types are available: European UHF and VHF, Taiwan, OC PAL, OC NTSC, as well as Australian UHF and VHF. The required output frequency can be keyed in as channel number, with the modulator showing the corresponding frequency in brackets.

Depending on the type of cabling and signal distribution the output signal level can be adjusted by 75 to 90 dBµV so that it will blend in nicely with existing distribution systems and cabling setups.

The QPSK, QAM16 and QAM64 modulation types are available, with QAM64 offering the most available bandwidth, of course.

This optimum bandwidth comes at a price, however, since a signal with QAM64 modulation is more interference-prone due to its four amplitudes and 16 different phases. There is a workaround, however, if you look at all adjustment options in the error correction field: This modulator offers FEC rates of 1/2, 2/3, 3/4, 5/6 and 7/8, as well as Guard Intervals of 1/4, 1/8, 1/16 and 1/32.

All things considered, you should not expect a lot of drama in terms of error cor-

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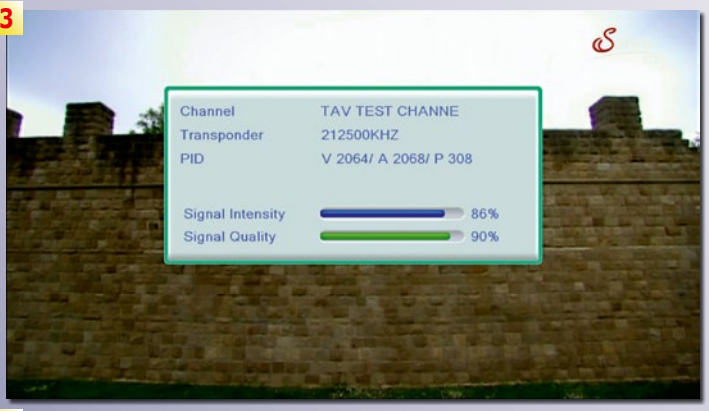

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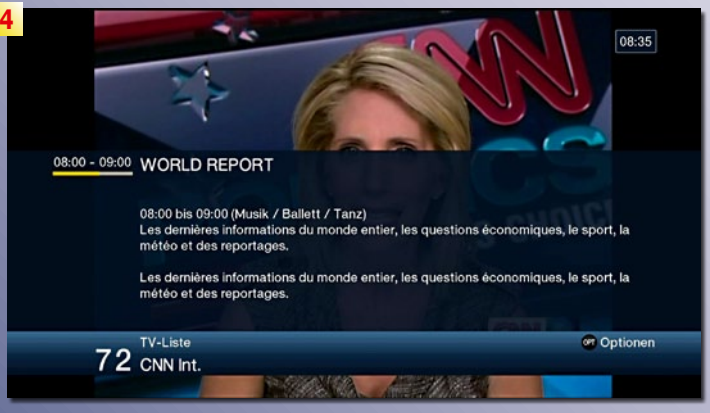

1. The channel name of any created DVB-T channel can be freely chosen

2. An HDTV channel originally received via satellite can easily be modulated into a DVB-T frequency by the HD-MOD-001T – without impairing the quality whatsoever

3. PID values can be freely determined by the user

4. Signals provided by a satellite receiver in 1080i can conveniently be modulated into a DVB-T frequency

rection anyway. After all, our DVB-T signal safely travels through locally distributed coax cables rather than over the air from far-away transmission towers.

If you want to look at an overview of all RF Output settings you simply go to 'Retrieve Status' in order to find out everything. What's more, this function is available for all sections of the main menu and has turned out to be a valuable tool on several occasions during our test.

As already mentioned above, the modulator can process the incoming signal from one of three inputs, which in turn means users have to go to the Video menu first and select either HDMI, YUV or CVBS as signal source.

As far as video resolution is concerned the modulator can be set to adjust the output resolution to the resolution of the incoming signal (which worked flawlessly in our test), or one of the following output resolutions can be set manually: 480i, 480p, 576i, 576p, 720p or 1080i.

We truly appreciated the fact that brightness, contrast, colour saturation and colour space can be user-defined as this is of particular importance for analog input signals.

If you want to check whether or not the modulator performs as intended you can always activate a bar test pattern, which can be activated and stopped again from a dedicated menu item with a single touch of a button. Users can freely select the encoder rate, i.e. the overall data rate, which in this case means the level of redundancy that is added to the output signal to make for a stable and reliable signal transmission.

Once the video settings are taken care of we recommend dealing with Audio, which is right next to the video menu. Here it is possible to set the bit rate of the audio output signal at 128, 256 or 384 kbps, thus defining the quality of the distributed audio signal. While it's great to have the highest setting at 384 kbps available with this Satson modulator we nonetheless suggest you use 128 or 256 kbps, which will be fine in most scenarios.

It goes without saying that the final DVB-T stream created by the HD-MOD-001T can be freely customised with a channel name of your choosing (up to 15 characters long), with freely selectable PID parameters for audio, video, PMT and PCR PID as well as with an individual network ID (NID) which again can be up to 15 characters long.

While setting or changing the channel name and network ID with the use of the arrow keys and OK button surely takes its time, this is still acceptable given the fact that you don't really have to accomplish that task on a regular basis. In actual fact, we have seen solutions before that are much less elegant than that. Incidentally, PID values need to be entered using the decimal numbers, which does away with all the cumbersome conversion into the hexadecimal format.

We finally threw a glance at the System settings, which can be accessed to adjust the basic settings of the modulator. It is here that you can configure the RJ-45 network connection, with the HD-MOD-001T supporting either the DHCP protocol (for automatic assignment of IP address, gateway and DNS server by the router) or accepting manual entry of parameters. Furthermore, the Satson modulator provides hardware and software information in that menu or can be factory-reset.

As the manufacturer constantly strives to optimise its products it is also possible to update the modulator's operating software from this menu section.

As our regular readers probably know it's always the unexpected little features that attract our attention and this time it was the RJ-45 network interface.

If you – like us – think there might be a web server behind that feature you're

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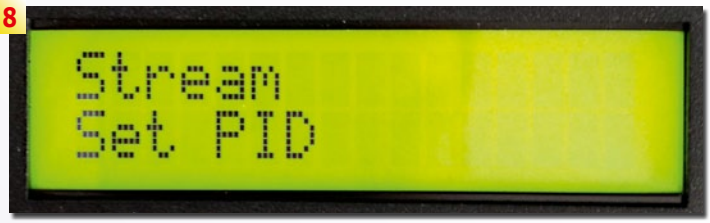

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5. Status display of the HD-MOD-001T

6. Selecting the frequency

7. The channel name of any created DVB-T channel can be freely chosen

8. PID values can be freely determined by the user

9. Entering the channel name

10. The HD-MOD-001T takes approximately 25 seconds to boot

11. Selecting the input signal

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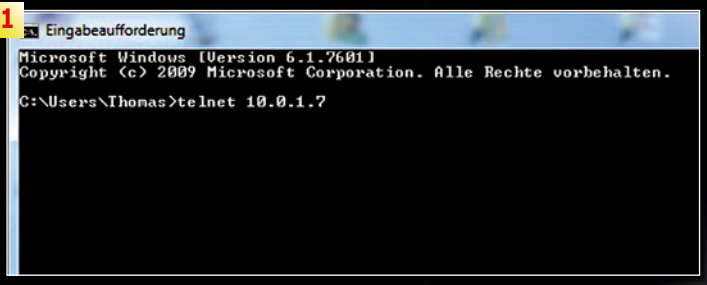

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not quite right. Rather, Satson uses the well-known Telnet protocol for remote control and maintenance of the HD-MOD-001T.

Any Telnet client will do for establishing a connection from a PC to the modulator. If your operating system is Windows you may use the built-in Telnet feature (which has to be retro-installed via the system control center in Windows 7 and above).

The LCD display of the modulator shows the appropriate IP address that is assigned to the HD-MOD-001T via DHCP. This address needs to be entered into the MS-DOS command line together with the telnet command (e.g. telnet 10.0.1.7).

A connection to the modulator is established immediately and in the login window you have to enter 'root' as username and '1234' as password. Then you are able to look up and change all status information and settings that would otherwise have to be dealt with right at the device. In our test this worked beautifully and it also means the HD-MOD-001T can easily be integrated into a local network.

No matter whether it's the signal from a surveillance camera, satellite receiver or any other set-top box that needs to be distributed via coax cables in digital quality, you need not look further than to the HD-MOD-001T. With its three available input options it's a brilliant match for both analog and digital SD/HD signals.

For this TELE-audiovision test we provided the analog signal of a surveillance camera to the modulator, a high-definition YUV signal as well as a digital high-definition signal via HDMI. The HD-MOD-001T processed all three of our source signals in an exemplary way and the automatic resolution detection also worked absolutely reliably. It only took a few seconds for the modulator to adjust its output signal to the resolution of the incoming signal.

What's more, we were genuinely impressed by the video and audio quality delivered by this latest Satson product as we were not able

1. The 'telnet' command has to be entered in the MS-DOS command line to establish a Telnet session with the modulator

2. Login of the HD-MOD-001T

3. All parameters can easily be adjusted via a convenient Telnet session

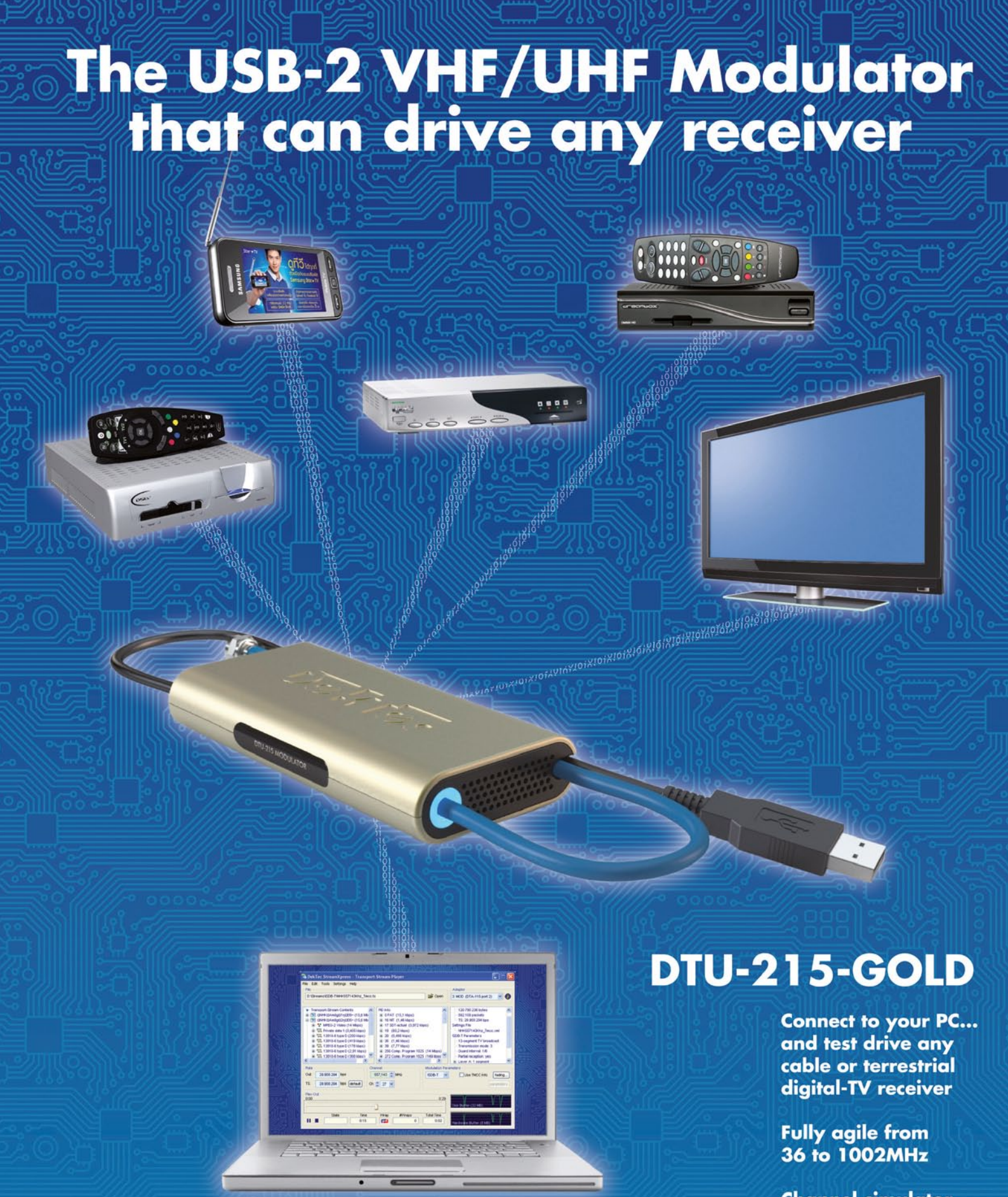
4. Configuration of the RF output signal

5. Status display of the RF output settings

6. Selecting the video input source

7. Changing the channel name

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



DTU-215-GOLD

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

Fully agile from 36 to 1002MHz

Channel simulator included

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

DekTec
www.dektec.com

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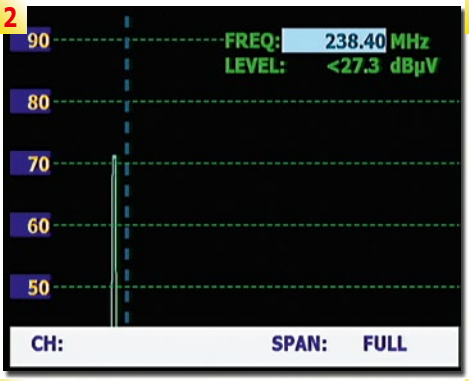

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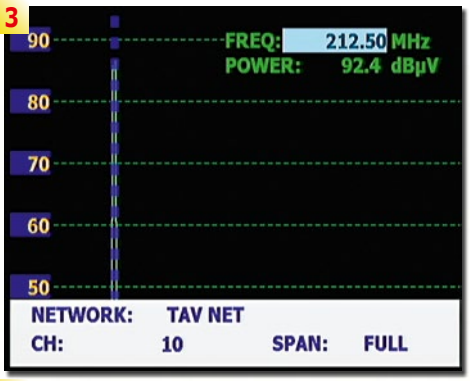

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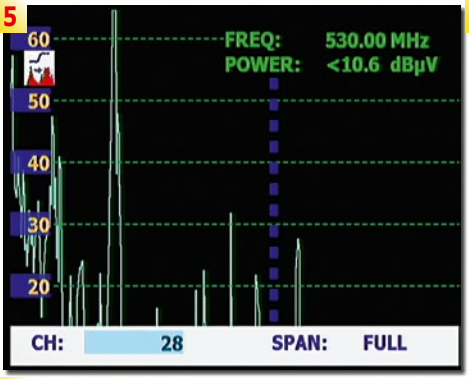

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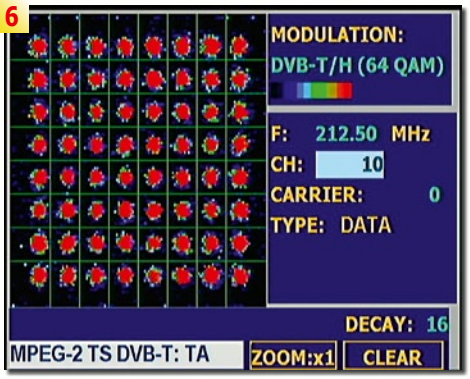

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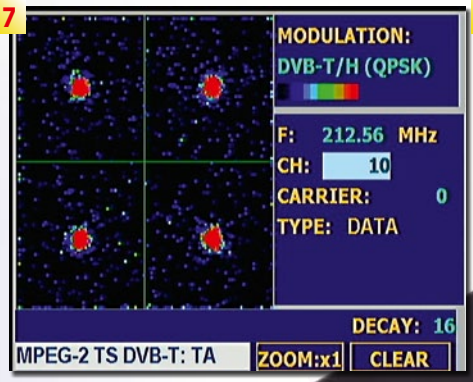

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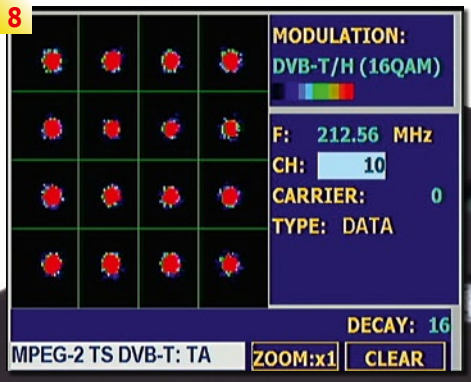


1. A signal created by the HD-MOD-001T with maximum signal level
2. A signal created by the HD-MOD-001T with minimum signal level
3. The network ID can also be freely chosen
4. The HD-MOD-001T creates a perfect and flawless output signal
5. A signal created by the HD-MOD-001T in combination with the signal from a UHF/VHF antenna
6. Constellation diagram of a QAM64 signal created by the HD-MOD-001T
7. Constellation diagram of a QPSK signal created by the HD-MOD-001T
8. Constellation diagram of a QAM16 signal created by the HD-MOD-001T

to detect any difference between input signal and output signal – even after looking at every video detail long and hard.

One thing you should take into account is a lag time of about one second that is required for the modulator to process the input signal and create the required output signal.

During active use the display of the new Satson modulator always shows the currently used frequency as well as the current resolution of the output signal.

Thanks to the Lock button directly on the device it is possible to block any outside interference with internal settings, this way preparing the modulator for hassle-free 24/7 operation.

It did not make a difference which source we chose, the signal was always processed correctly, modulated into a flawless DVB-T signal on the UHF or VHF band and given out according to our pre-defined parameters (PIDs, service name, network ID, etc.).

By the way, the modulator works with all frequencies between 50 and 860 MHz.

As you can see on the screenshots for this test report, the HD-MOD-001T delivers an immaculate and error-free signal with the exact user-defined output level. The manufacturer has even thrown in an integrated RF input, which can be used to also add a signal from an existing terrestrial reception system to the modulator, so that a maximum number of channels is available.

All of our testers at TELE-audiovision thoroughly enjoyed working with the new Satson DVB-T modulator and we can wholeheartedly recommend this product for distributing HD signals via existing coax cables in your house or apartment. You want the signal from your living room satellite receiver in the bedroom as well? Or how about watching the feed from the camera at the front door on your TV?

Not a problem any longer thanks to the HD-MOD-001T, which will distribute all of this and a lot more via DVB-T using your existing coax cables.

Thanks to a low power consumption of approximately 12.5 W you can expect an annual consumption of around 109 kWh, which is almost negligible given the wide range of professional features offered by this modulator.

Expert Opinion

Thomas Haring
TELE-audiovision
Test Center
Austria

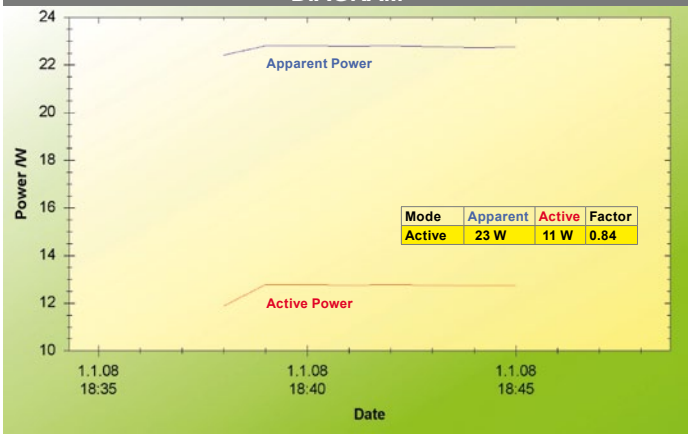
+ **The HD-MOD-001T is a versatile and perfectly useful DVB-T modulator. Using the QPSK, QAM16 or QAM64 modulations with an MPEG-2 audio and video signal it offers three different input types (YUV, HDMI and CVBS) and flawlessly deals with HDTV signals up to 1080i. Satson has designed this modulator for professional and permanent use and almost every single nook and cranny smacks of top-notch build quality and ease of use. The video quality of the output signal is impressive and the time lag due to signal processing and encoding is comparatively short at approximately one second.**

– **Going by the manufacturer's specifications the HD-MOD-001T is not really suitable for unheated locations that are somewhat exposed to the weather (such as attics or basements, for example). Front-end operation and configuration using the available buttons right on the device are a little cumbersome at times, but thanks to the RJ-45 network interface there is an easy and pleasant way out.**

TECHNICAL DATA

Manufacturer	Sat & Sound, Karel Nerinckxlaan 1, 1500 Halle, Belgium
Email sales	stefaan@satsound.be
Internet	www.satson.eu
Model	HD-MOD-001T
Function	DVB-T Modulator
Output Frequency	50 - 860 MHz
Video Resolutions	480i, 480p, 576i, 576p, 720p, 1080i
Video Input Format	Component Video, YPbPr RCA, HDMI
Video Encoding Format	MPEG-2 Video (ISO/IEC 13818-2)
Audio Encoding Format	MPEG-1 Audio Layer II (ISO/IEC 11172-3)
Modulator Standard	DVB-T (ETSI EN 300 744)
Bandwidth	6, 7, 8 MHz
Constellation	QPSK, QAM16, QAM64
Guard Interval	1/4, 1/8, 1/16, 1/32
Code Rate	1/2, 2/3, 3/4, 5/6, 7/8
System Channel Name	Up to 15 characters
Network ID Name	Up to 15 characters
Dimensions	234 x 204 x 44mm
Weight	0.8 kg
Power Supply	12V
Power Consumption	12.5W
Operating temperature	0-40 °C

ENERGY DIAGRAM



The Wonderful World of Spark

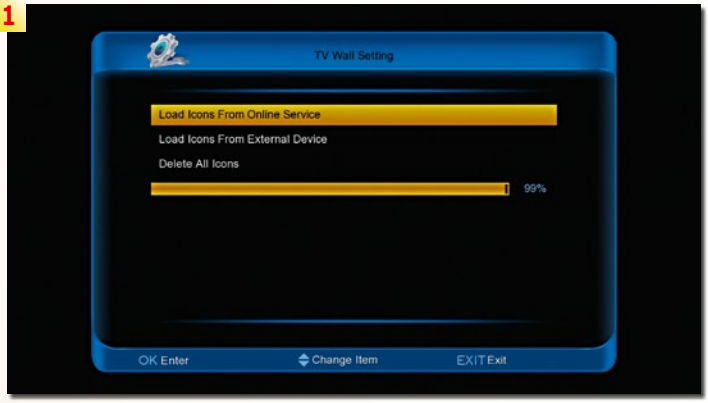
Part 6: TV Wall

- *Provides broadcaster logos for every channel*
- *Optimizes channel selection*
- *Ability to add your own channel logos*
- *Direct selection from the EPG*

The Channel List Rediscovered

Thomas Haring

1



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It doesn't matter if it's a cheap starter receiver or a high-end PVR; every receiver that can receive TV or radio channels via satellite, terrestrial antenna or cable comes with a channel list. It is without a doubt the most often used function in a receiver and yet the manufactures haven't really paid all that much attention to it. Yes, of course, they come in a variety of formats as well as different colors, sometimes they're nicely organized, sometimes not, but in the end they are basically all the same.

We here at TELE-audiovision have long believed that this age-old feature found in every receiver has been long overdue for an overhaul that would add a new and modern shine to it. This desire has been fulfilled by the manufacturer Fulan in its Spark software: the new "TV Wall" function.

The TV Wall is a graphically produced and, thanks to the integrated EPG information, very clear and informative replacement to the standard channel list. It appears at the user's command in place of the regular channel list in any receiver that operates with Fulan's Spark software. The most obvious characteristic of the TV Wall is the display of station logos for each and every entry in the channel list.

Thanks to the full-screen display, a total of 20 channels including their logos can be viewed at one time. In most cases this is more than a standard channel list would have room for. A database with the logos of the most popular channels in Europe and the Middle East that can be found on the more popular orbital positions such as ASTRA 19.2° east, HOTBIRD 13° east and even NILESAT 7° west is provided by Fulan online at no extra cost. Users can also create their own logos and integrate them into the TV Wall. In this way station logos can be swapped out if the user doesn't particularly care for the original version; logos can even be displayed for those channels that Fu-

1. Fulan provides a basic database for the Spark software with the most important station logos that can be downloaded for free via the Internet

2. The TV Wall in operation. 20 station logos, a live TV picture and EPG information make it a perfect replacement for every standard channel list

3. The TV Wall can also group CAS, Favorites, HD, satellites, etc.

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lan doesn't have a logo for. How this all works will be discussed later on in this report.

In addition to the 20 TV channels with associated logos, the Spark software also displays the current TV channel is a small window in the upper left corner. We found this method to be more comfortable and clearer compared to the blending in of a small channel list on top of the TV picture. But we especially liked the TV Wall's EPG function that with the selection of a channel instantly displayed the title of the current and upcoming programs and at the same time showed the live TV picture in a small window. A momentary push of the Info button is all that's needed to access the expanded EPG data for the current program; the Spark software presents it in a very clear fashion so that the user always knows what's going on in the currently running program.

This is all well and good you might be saying right now, 20 channels per page is not bad but with satellite reception you might be dealing with several thousand channels. How are you supposed to keep track of all those channels? It's very simple: on the one hand the TV Wall supports the grouping of entries (such as by satellite, CAS, FTA, HD, etc.) just like with a standard channel list. On the other hand there's also a very practical search function available; simply enter in the first few letters of a channel and the list is then reduced to only those channels that match the letters that were entered.

We here at TELE-audiovision also really appreciated how fast the TV Wall reacted to commands from

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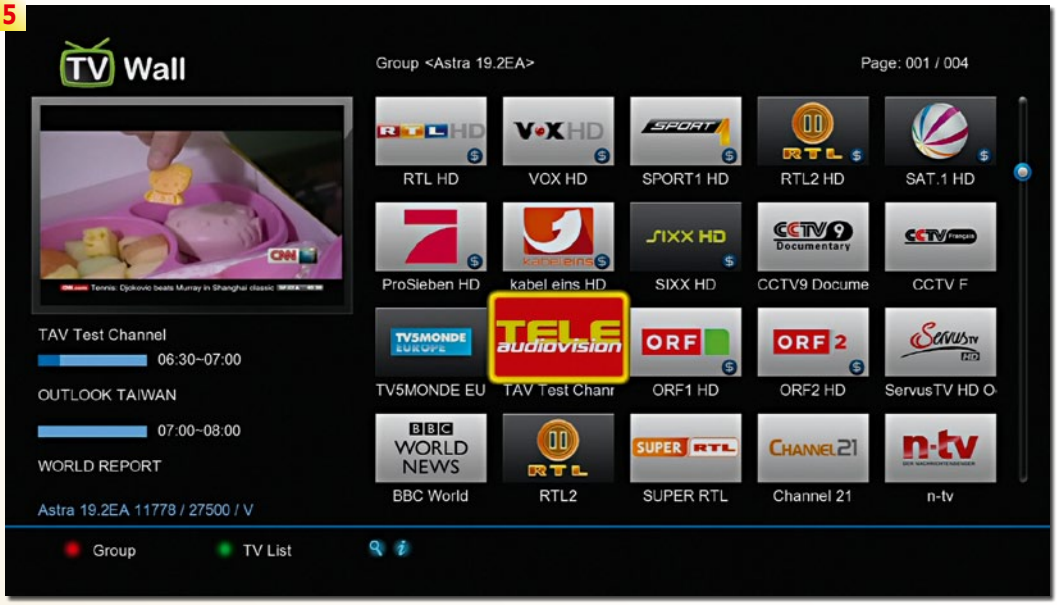

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4. The TV Wall's station logos also appear in the Info bar
5. The TV Wall with our test channel and our own station logo
6. The expanded EPG information can be displayed directly via the TV Wall

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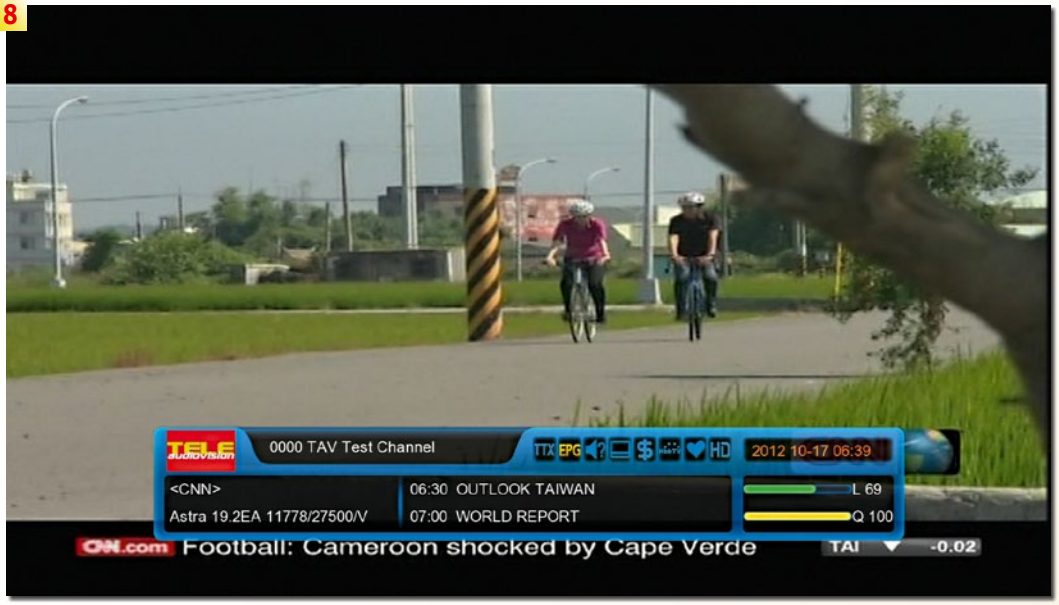

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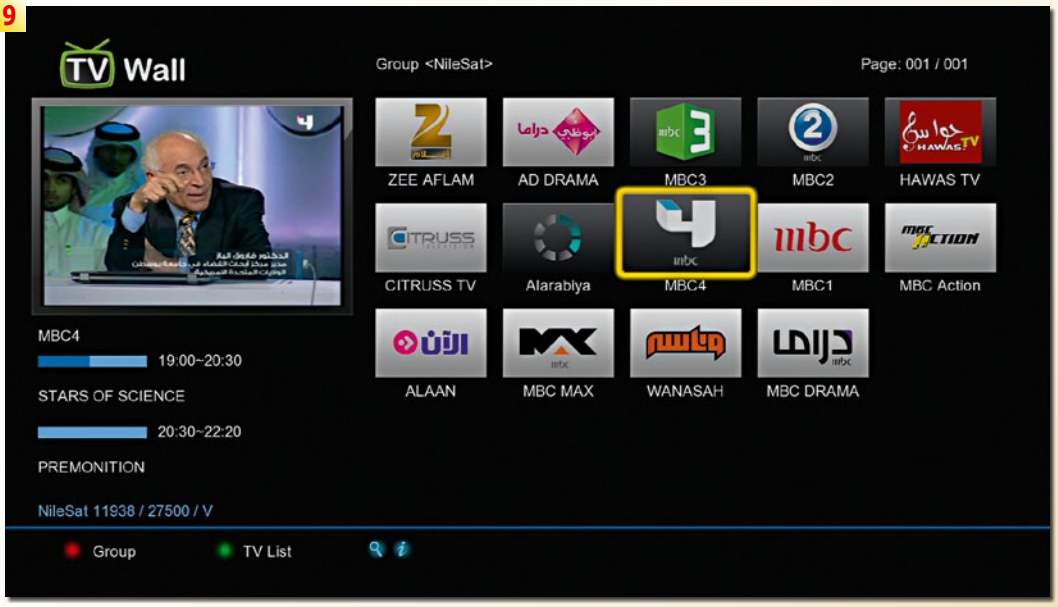


7. Thanks to the practical search function, you can quickly find your desired channel even among thousands of channel entries

8. The Info bar of our TAV test channel with our self-made station logo

9. The freely available station logo database from Fulan is quite extensive; even channels on satellites such as NILESAT 7° west are in the database

the remote control and, despite the elaborate display of station logos, there was no noticeable delay in its operation. Since these station logos also appear in the Info bar after switching channels, it gives an overall well-rounded impression.

The station logos used by the Spark software must be 204 x 126 pixels in size and in JPEG format. If there are no logos available in the proper size for your favorite channels, we recommend using the program XnConvert (http://www.xnconvert.com/) that can be used to convert not just one but multiple logos into the proper format.

In order for the Spark software to know which logo belongs to what station, each individual TV Wall entry must be manually entered. This functions quickly and without any problems with the new Spark Editor 1.7, Fulan's own channel list editor for MS Windows. This assigns each station logo file an individual file name which is then associated by the Spark software with the appropriate TV Wall entry. That's why it's absolutely necessary to copy the newly created station logos to the file /root/spark/AppUserDb/icon in the Spark receiver. This can be done with an FTP program. Simply enter in the IP address of the receiver in the FTP program and use 'root' as both the user name and password.

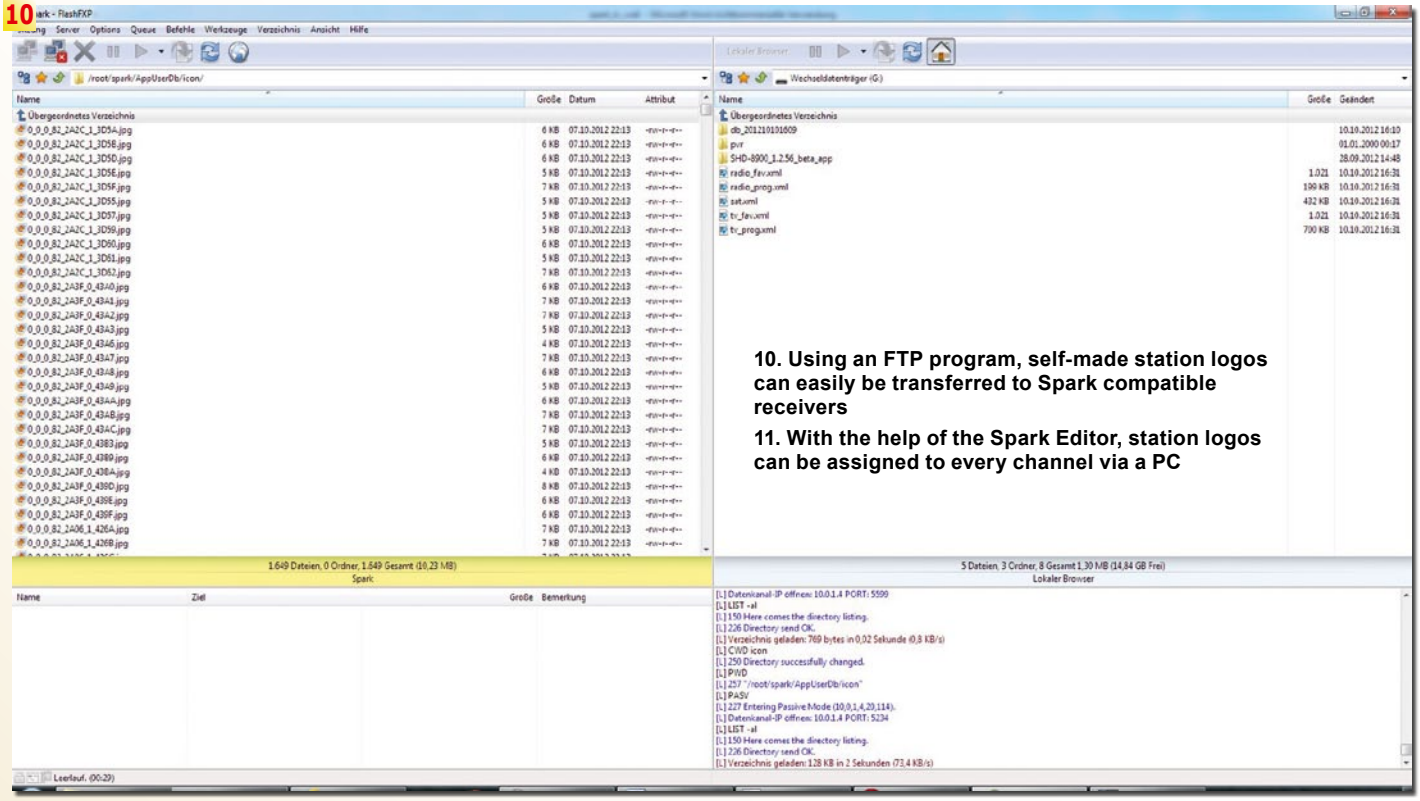
In case the receiver is not connected to a PC via a network, it's also possible via the Spark software Settings menu to directly import the station logos from a USB storage device and automatically copy them into the correct list. We tested this feature using our own TELE-

audiovison logo and found that it worked perfectly. In no time at all we were able to use the Spark Editor to correctly label our test channel with our station logo. Transferring the necessary files in the end turned out to be easy as pie and after pressing the OK button our TAV test channel with our own station logo appeared in the TV Wall of our Spark compatible receiver.

All in all, we very much liked the idea of the TV Wall and felt this was a step in the right direction in terms of modernizing the classic channel list. As we would expect from Fulan, the TV Wall was perfectly and thoughtfully implemented.

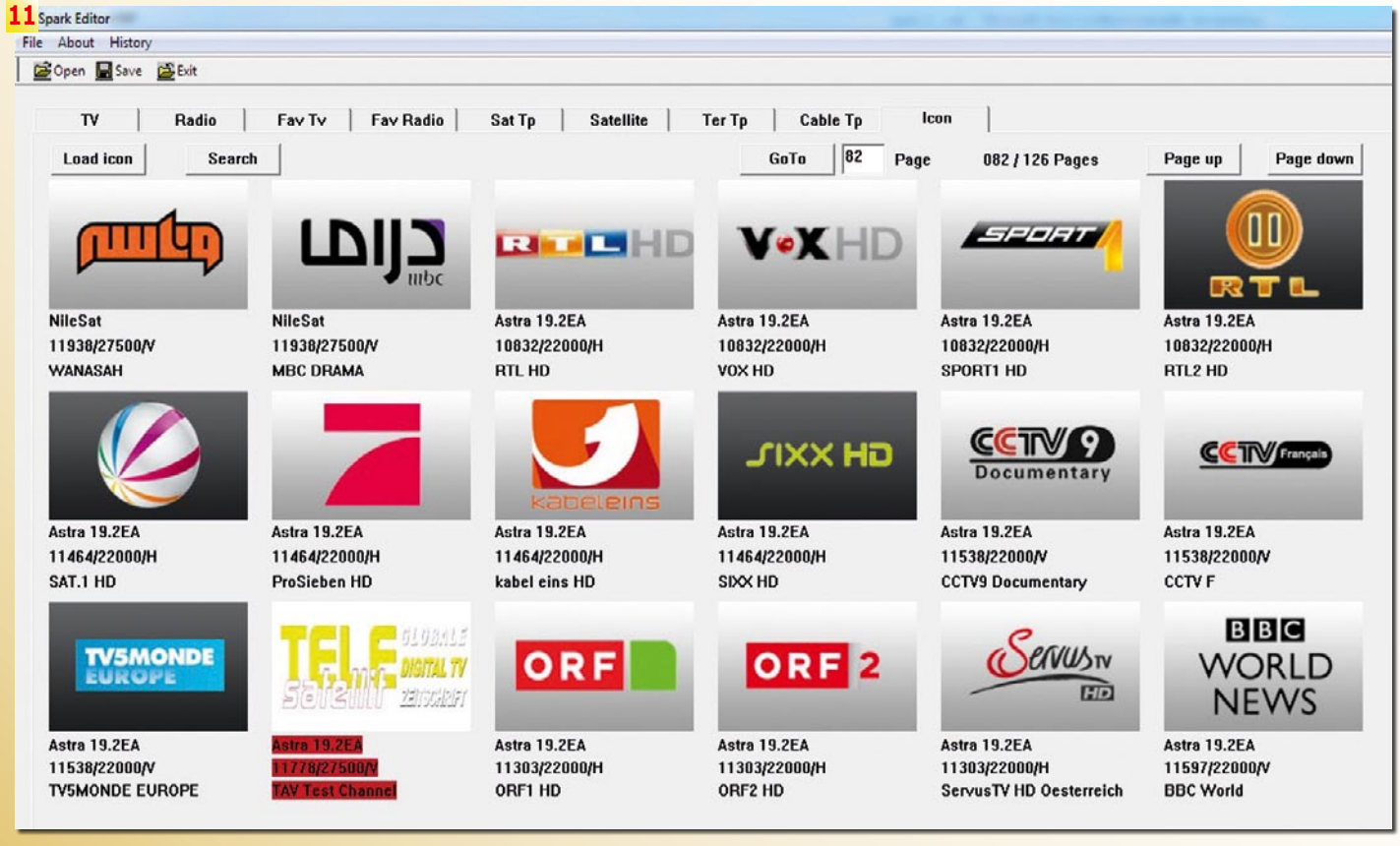
If, despite all of the advantages of the TV Wall, you would still prefer the standard channel list, it can be reactivated with the push of just one button.

But, really, who would want to do without such a wonderful feature like the TV Wall?



10. Using an FTP program, self-made station logos can easily be transferred to Spark compatible receivers

11. With the help of the Spark Editor, station logos can be assigned to every channel via a PC



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Part 3: Spark Apps

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Part 4: Web-TV

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Part 5: HbbTV

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Part 6: TV Wall

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iabm International Association for Broadcasting Manufacturers

Asia Pacific Satellite Communications Council

GVF Global VSAT Forum

SSPI Society of Satellite Professionals International

WTA World Teleport Association

AWARD WINNING 21 DIGITAL RECEIVERS OF 21ST CENTURY

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

TELE audiovision AWARD 01-02/2013

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

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

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

TELE-audiovision International Magazine

Business Voucher

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

Read TELE-audiovision Test Report

INNOVATION TELE audiovision AWARD 11-12/2012

JIUZHOU DTP2100
Cutting-edge receiver thanks to Android operating system

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

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

TELE audiovision AWARD 11-12/2012

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

TELE-audiovision International Magazine

Business Voucher

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

Read TELE-audiovision Test Report

Energy Efficiency Rating eco friendly 0.58 power factor tested by TELE-audiovision

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

TELE audiovision AWARD 09-10/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Energy Efficiency Rating eco friendly 0.57 power factor tested by TELE-audiovision

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

INNOVATION TELE audiovision AWARD 06-07-08/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 06-07-08/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 06-07-08/2012

Skyworth HT-21 DVB-T
Extremely small receiver with best reception characteristics

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Energy Efficiency Rating eco friendly 0.5 Power factor tested by TELE-audiovision

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

TELE audiovision AWARD 04-05/2012

AMIKO STHD-8820 CICXE PVR
Perfect Box to Receive all Available HDTV Programmes

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Energy Efficiency Rating eco friendly 0.54 Power factor tested by TELE-audiovision

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

TELE audiovision AWARD 04-05/2012

Skyworth HS-18 DVB-S2
Sophisticated, fully-featured miniature receiver

Energy Efficiency Rating eco friendly 0.56 power factor tested by TELE-audiovision

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

TELE audiovision AWARD 04-05/2012

Panodic M3601E DVB-T
Extremely small receiver with high-sensitivity HDTV tuner

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

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	— / •

Manufacturer	Jiuzhou
Website	www.jiuzhou.com.cn
Function	DVB S/DVB S2, DVB T PVR Digital Receiver
DVB S2/LAN	• / •
Channel Memory	4000
PVR	•
S-Video/HDMI	• / •
Scart/Digital Audio	• / •

Manufacturer	Skyworth
Website	www.skyworthdigital.com
Function	ISDB-T Receiver with PVR function
DVB S2/LAN	— / —
Channel Memory	1000
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	— / —

Manufacturer	Jiuzhou
Website	www.jiuzhou.com.cn
Function	DVB S/DVB S2, ISDB-T PVR Digital Receiver
DVB S2/LAN	• / •
Channel Memory	4000
PVR	•
S-Video/HDMI	• / •
Scart/Digital Audio	— / •

Manufacturer	Amiko
Website	www.amikostb.com
Function	Digital HDTV DVB S2 including dual boot
DVB S2/LAN	• / •
Channel Memory	unlimited
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
S-Video/HDMI	— / •
Scart/Digital Audio	• / •

TELE audiovision AWARD 04-05/2011

Amiko SHD-8900 Alien
Innovative dual boot receiver with two different operating systems

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/11/05/amiko

Read TELE-audiovision Test Report

Energy Efficiency Rating eco friendly 0.5 power factor tested by TELE-audiovision

Manufacturer	Fulan
Website	www.fulansoft.com
Function	Digital HDTV Receiver with Dual-Boot and Spark online-plattform
DVB S2/LAN	• / •
Channel Memory	unlimited
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
S-Video/HDMI	— / •
Scart/Digital Audio	— / •

INNOVATION TELE audiovision AWARD 04-05/2011

FULAN ST7111
Excellently designed operating software with built-in customer service

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/11/05/fulan

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TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 01-02/2013

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

KWS ELECTRONIC

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 11-12/2012

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

SATLINK

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 11-12/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 11-12/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 09-10/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 04-05/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 02-03/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 12-01/2012

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 12-01/2012

Deviser S20 Satellite Meter
Ideally suited to fastly install dishes

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/11/09/8dtek

Read TELE-audiovision Test Report

Manufacturer	8dtek Technology
Website	www.8dtek.com
Function	Satellite Meter for Antenna Alignment
Frequency Range	L-Band (950-2150 MHz), DVB-S/S2 and analog signal
Video Output	A/V (composite + mono)
Built-in Monitor	Color graphic 16:9 LCD

TELE audiovision AWARD 08-09/2011

8DTEK DSM DESIRED
A HDTV signal meter and receiver all in one with plenty of professional features

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/11/07/satcatcher

Read TELE-audiovision Test Report

Manufacturer	SatCatcher
Website	www.satcatcher.com
Function	Signal meter for digital signals in DVB-S, DVB-T and DAB. Analogue signals in FM radio.
Frequency Range	46~870 MHz
Video Output	Composite
Built-in Monitor	120 x 64 3.5" LCD color display

TELE audiovision AWARD 06-07/2011

SATCATCHER DIGIPRO ST COMBO
Combo Signal Analyzer with Huge Memory for Satellite and Terrestrial Channels

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Manufacturer	Horizon Global Electronics
Website	www.horizonhge.com
Function	Antenna Alignment Meter
Frequency Range	950~2150 MHz
Video Output	—
Built-in Monitor	LCD display

TELE audiovision AWARD 10-11/2010

HORIZON HD-S2
Extremely easy to use with an amazing list of features for the pros

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Manufacturer	SPAUN Electronic
Website	www.spaun.com
Function	TV Signal Analyzer with WiFi Receiver
Frequency Range	45~865 MHz (terrestrial) and 950~2150 MHz (satellite)
Video Output	RCA Composite
Built-in Monitor	7 inch 16:9 color LCD display

TELE audiovision AWARD 08-09/2010

SPAROS 609 WIFI OPTION
Converts the signal analyzer to a universally usable tool

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Manufacturer	Horizon Global Electronics
Website	www.horizonhge.com
Function	Digital and analog terrestrial TV meter with spectrum analyzer and USB data output
Frequency Range	49~861 MHz
Video Output	—
Built-in Monitor	LCD display

TELE audiovision AWARD 08-09/2010

HORIZON HD-TM USB PLUS
Small, economic and fast terrestrial signal meter

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/10/07/satcatcher

Read TELE-audiovision Test Report

Manufacturer	SatCatcher
Website	www.satcatcher.com
Function	Signal Meter for DVB-T, analogue TV, digital DAB radio, analogue FM radio
Frequency Range	46~870 MHz
Video Output	—
Built-in Monitor	120 x 64 3.5" LCD color display

TELE audiovision AWARD 06-07/2010

SATCATCHER DIGIPRO T MAX
Easy to use signal meter that doesn't stop at DVB-T. Everything you want from a signal meter

TELE-audiovision International Magazine

Expert Opinion

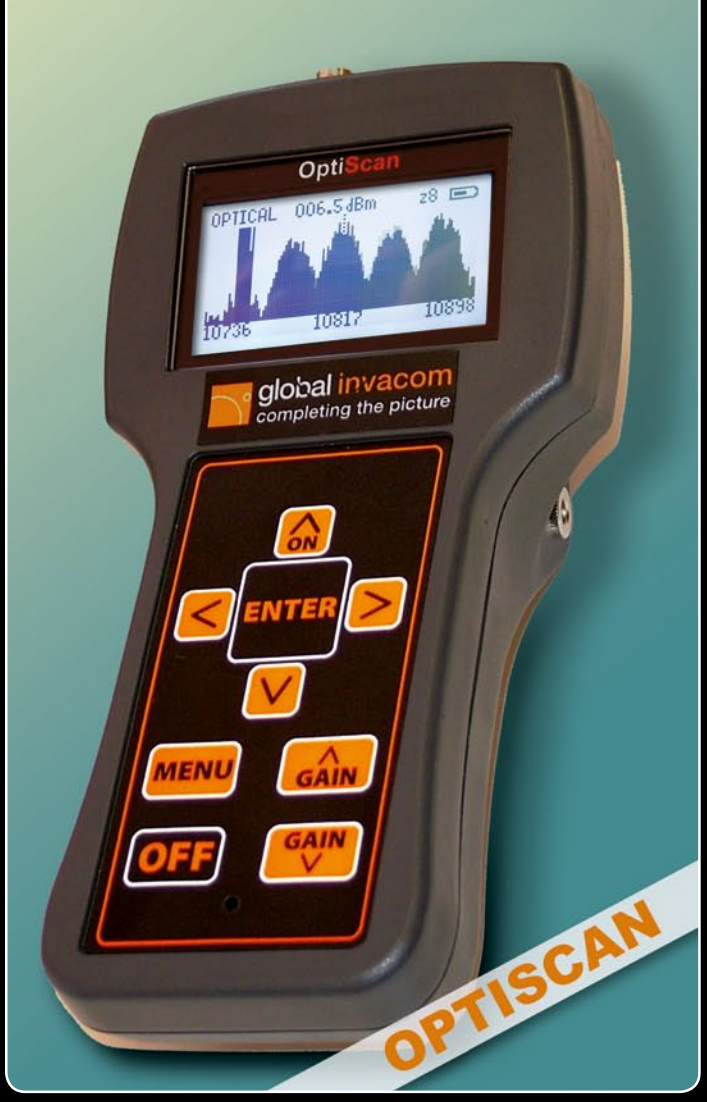
www.TELE-audiovision.com/10/01/optiscan

Read TELE-audiovision Test Report

Manufacturer	Global Invacom
Website	www.globalinvacom.com
Function	Signal Analyzer with an Optical Input
Frequency Range	950(160)~2150 MHz
Optical Range	+10 to -25 dBm
Video Output	—
Built-in Monitor	Eight-digit LCD display

TELE audiovision AWARD 12-01/2010

GLOBAL INVACOM OPTISCAN
Future-proof satellite signal analyzer for optical and coaxial LNBs



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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)

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Expert Opinion

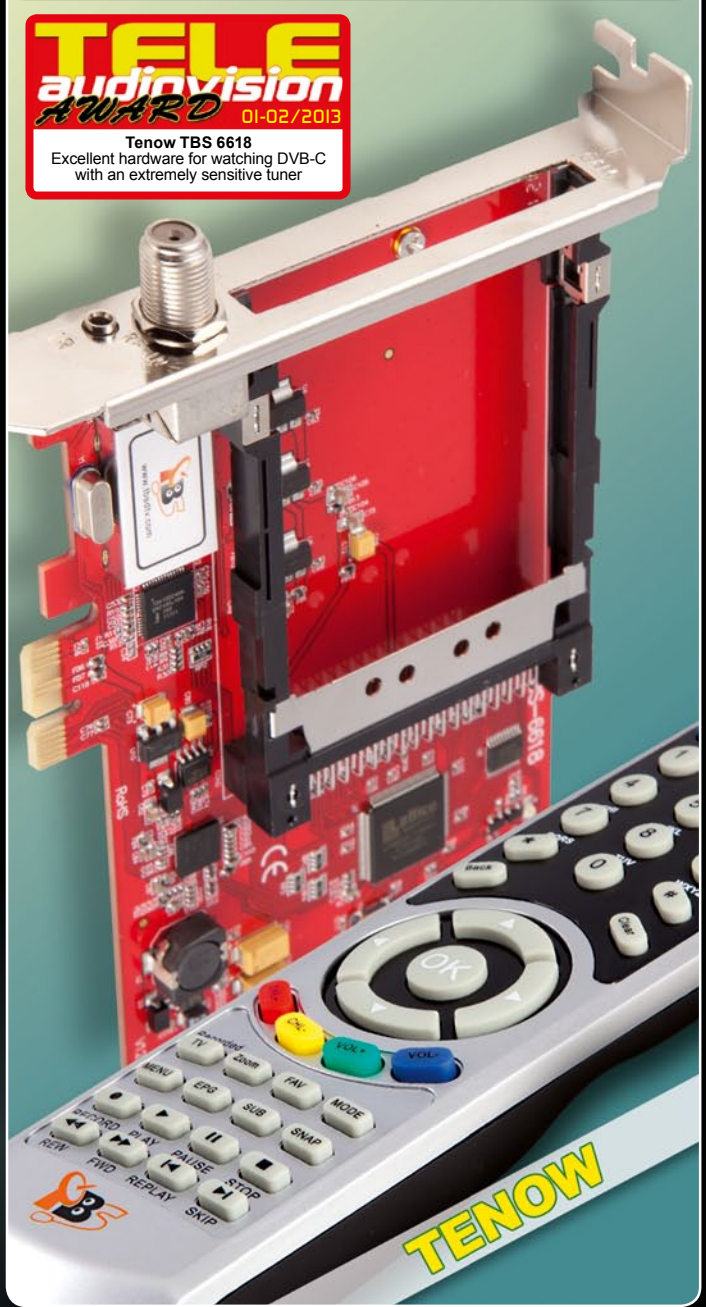
www.TELE-audiovision.com/13/01/tenow

Read TELE-audiovision Test Report

Manufacturer	Tenow International
Website	www.tbsdtv.com
Function	PCI-E card for DVB-C, compatible with most current TV applications
Channel Memory	unlimited
Receiving Frequency	47~862 MHz Tuning Range
Symbol Rates	0.87 to 9Mbaud
QAM Support	16QAM, 32QAM, 64QAM, 128QAM and 256QAM

TELE audiovision AWARD 01-02/2013

Tenow TBS 6618
Excellent hardware for watching DVB-C with an extremely sensitive tuner



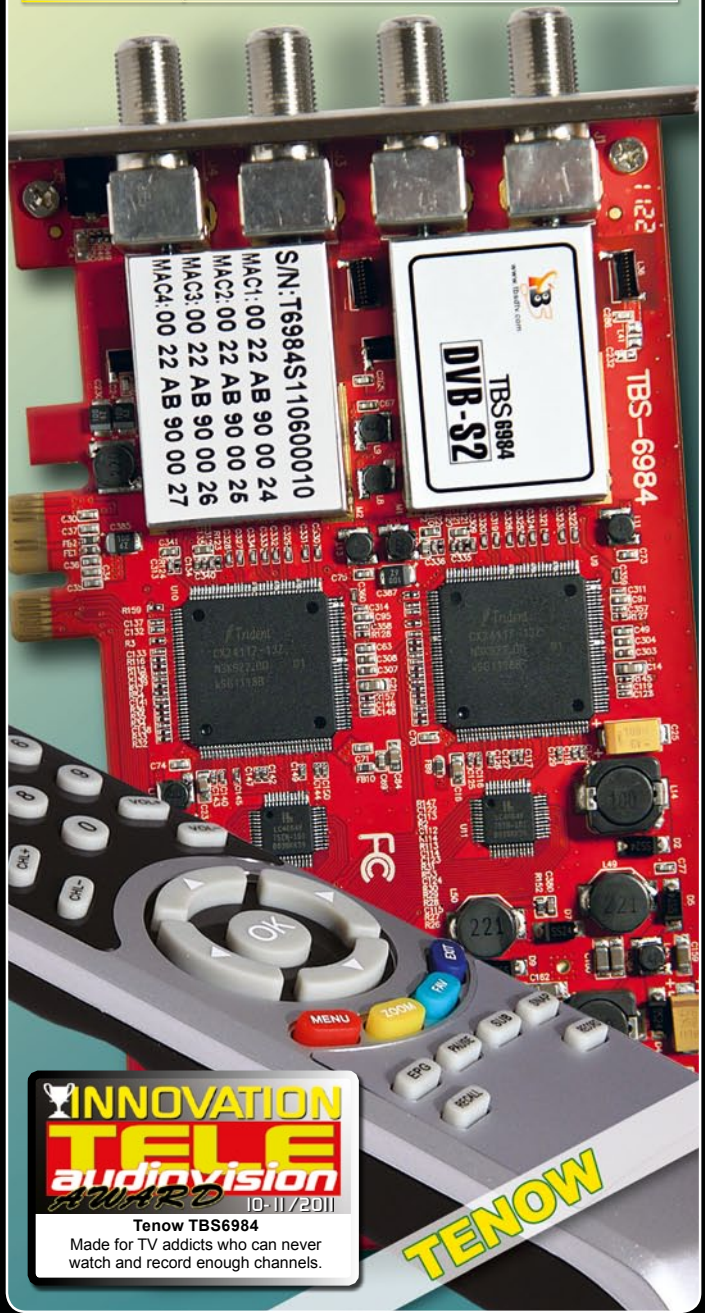
TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Manufacturer	Tenow International
Website	www.tbsdtv.com
Function	DVB-S2 PCI-E card with 4 tuners compatible with Windows and Linux operating systems
Channel Memory	unlimited
Satellite Memory	unlimited
Symbol Rates	1-45 Ms/sec (QPSK), 2-36 Ms/sec (8PSK)
DiSEqC	1.0, 1.1, 1.2, 1.3, 2.x



INNOVATION TELE audiovision AWARD 10-11/2011

Tenow TBS6984
Made for TV addicts who can never watch and record enough channels.

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Manufacturer	Tenow International
Website	www.tbsdtv.com
Function	DVB-S2 PCI-E professional card with Blindscan function
Channel Memory	unlimited
Satellite Memory	unlimited
Symbol Rates	0.2-45 Ms/sec (QPSK), 0.2-45 Ms/sec (8PSK)
DiSEqC	1.0, 1.1, 1.2, 1.3, 2.x

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Manufacturer	Tenow International
Website	www.tbsdtv.com
Function	DVB-T / DVB-T2 PCI-E card with 2 Tuners
Channel Memory	unlimited
Channel Bandwidth	6,7,8 MHz
FFT mode	1K, 2K, 4K, 8K, 16K, 32K
Center IF Frequency	3 ~ 5 MHz

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Function | Multimedia Player for local media and Internet
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Internal Storage | yes, 1.14 GB
HDTV | yes (up to 720p)
CVBS/HDMI | • / •
USB/SD Card | • / •
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Expert Opinion
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Energy Efficiency Rating
eco friendly
0.54
power factor
tested by TELE-audiovision
LOOKEETV

Manufacturer | AZBox
Website | www.azbox.com
Function | HDTV DVB-S/DVB-S2 Miniature HDTV Linux Receiver with Multimedia Features
DVB-S2/LAN | • / •
Channel Memory | unlimited
DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 / USALS
S-Video/HDMI | — / •
Scart/Digital Audio | — / •
TELE audiovision AWARD 09-10/2012
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Excellent mini-receiver with Network features - ideal for a home network
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power factor
tested by TELE-audiovision
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LOOP
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HDMI
Recovery
USB
e-SATA
YPbPr
Normal Boot
A/V
BRAND AZBOX
MODEL miniMe
DISTRIBUTOR OpenSAT Lda.
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	• / •

TELE-audiovision International Magazine

Expert Opinion

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

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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	— / •

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Expert Opinion

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

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Manufacturer	Logitech
Website	www.logitech.com
Function	IPTV Receiver

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Expert Opinion

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

Read TELE-audiovision Test Report

Manufacturer	Amiko
Website	www.amikostb.com
Function	DVB S / DVB S2 & DVB T Combo Receiver with PVR
IPTV	KartinaTV

TELE audiovision AWARD 04-05/2012

AMIKO STHD-8820 CICXE PVR
Perfect Box to Receive all Available HDTV Programmes

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Expert Opinion

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

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Manufacturer	Amino
Website	www.aminocom.com
Function	IPTV Set-top-Box
Stream Protocol	UDP
Menu Standards	NetUP Middleware
WLAN	—

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Expert Opinion

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

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

TELE audiovision AWARD 12-01/2011
JIUZHOU DTP8300
IPTV Receiver Equipped with Top-Notch Technology

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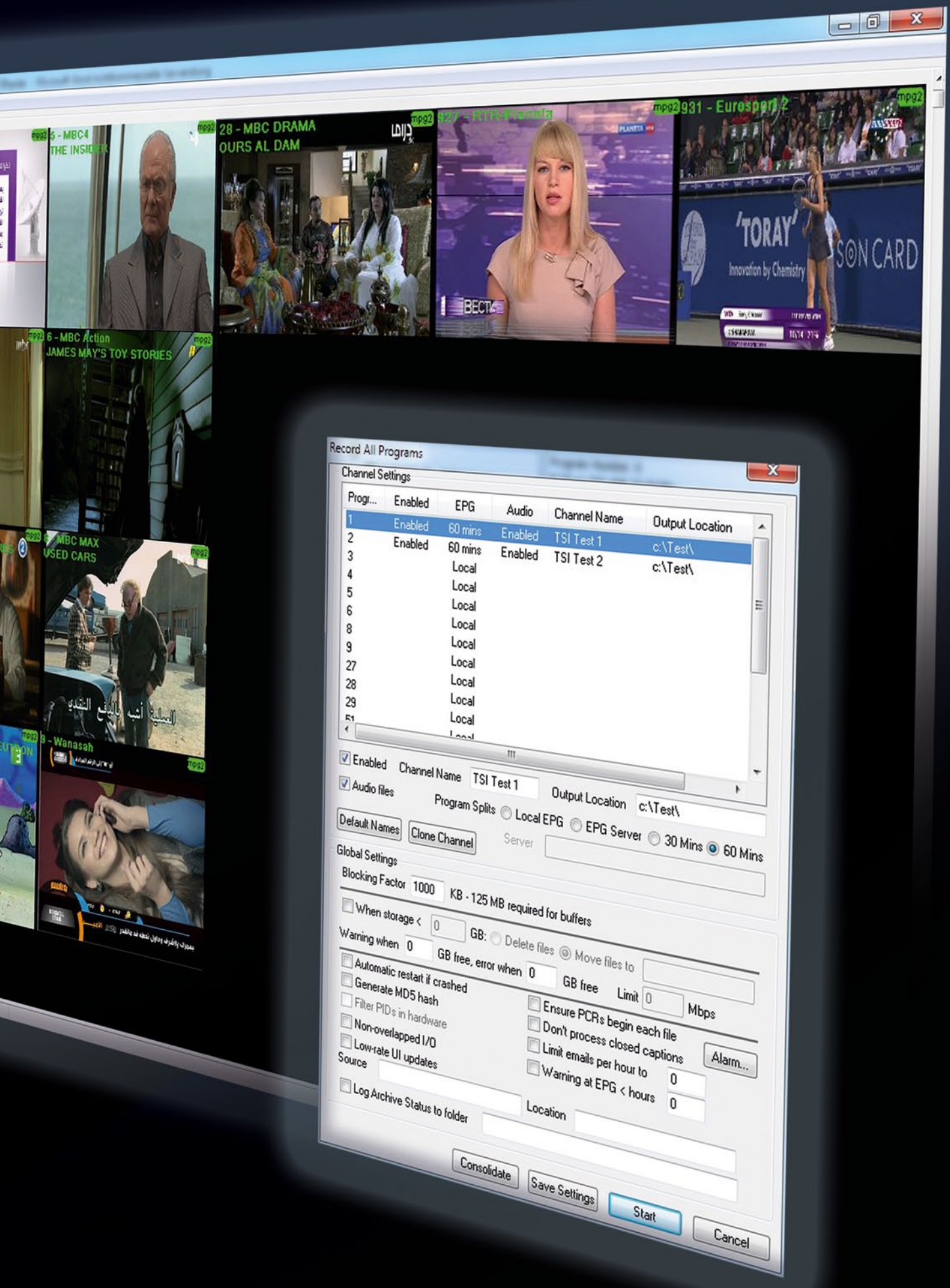
- *Displays all of the available PIDs in the digital transport stream*
- *Easy recording of desired PIDs*
- *Graphic display of faulty streams*
- *All functions can be controlled remotely*
- *Can be set up as an IPTV broadcaster in your own network*

TSReader


28 - MBC DRAMA
OURS AL DAM
931 - Eurosport 2
'TORAY'
Innovation by Chemistry
6 - MBC Action
JAMES MAY'S TOY STORIES
MBC MAX
USED CARS
Record All Programs
Channel Settings
Progr... Enabled EPG Audio Channel Name Output Location
1 Enabled 60 mins Enabled TSI Test 1 c:\Test\
2 Enabled 60 mins Enabled TSI Test 2 c:\Test\
3 Local
4 Local
5 Local
6 Local
8 Local
9 Local
27 Local
28 Local
29 Local
Enabled
Channel Name TSI Test 1
Audio files
Program Splits
Output Location c:\Test\
Local EPG
EPG Server
30 Mins
60 Mins
Default Names
Clone Channel
Server
Global Settings
Blocking Factor 1000
KB - 125 MB required for buffers
When storage <
GB:
Delete files
Move files to
Warning when
GB free, error when
GB free
Limit
Mbps
Automatic restart if crashed
Generate MD5 hash
Filter PIDs in hardware
Non-overlapped I/O
Low-rate UI updates
Ensure PCRs begin each file
Don't process closed captions
Limit emails per hour to
Warning at EPG < hours
Alarm...
Source
Log Archive Status to folder
Location
Consolidate
Save Settings
Start
Cancel

Professional Software for Analyzing, Recording and Monitoring DVB, ATSC, ISDB and DTMB Transport Streams

In the good old analog days it was all much simpler: the video and audio of a channel were modulated on one frequency and then broadcast from one transmitter or uplinked to a satellite and then further distributed to the target areas.

Digital transmissions on the other hand are much more involved and complex in that they could contain as many as ten channels depending on picture quality and in some cases even more than that! On top of that there are various audio tracks, subtitles, EPG data and let's not forget the encryption of the content. All of this information must be carried on one single frequency in such a way that the receiver on the other end can correctly read and process that data.

The digital transport stream is a fairly complex and confusing thing. Transmitter and receiver can only keep track of all the information when it's tagged with its own PID (packet identifier) number. For example, TV channel A is assigned a video PID of 100 and an audio PID of 101 while TV channel B would get a video PID of 200 and an audio PID of 201, and so on. In addition to this data, the various PID tables are also included in the stream allowing the receiver to find the correct PIDs within the data stream and associate them with the right TV channel.

This is where TSReader comes into play. It's a software tool designed exactly for this situation. It's available in three different versions (Lite, Standard and Professional). Exactly what the differences in functions are between the two versions can be seen in our table - all the different features are listed in detail there. The author of TSReader is Rod Hewitt. We introduced him to you in the 05-06/2012 issue of TELE-audiovision with a detailed report. The professional version of TSReader with all of its functions is 18MB in size. The hardware requirements are not all that high: an 800 MHz processor to process SD streams and a 2.5 GHz processor for HD content are recommended as are a graphics card and

Rod Hewitt developed the TSReader analysis software. We previously reported on his activities in the 06-07-08/2012 edition of TELE-audiovision.

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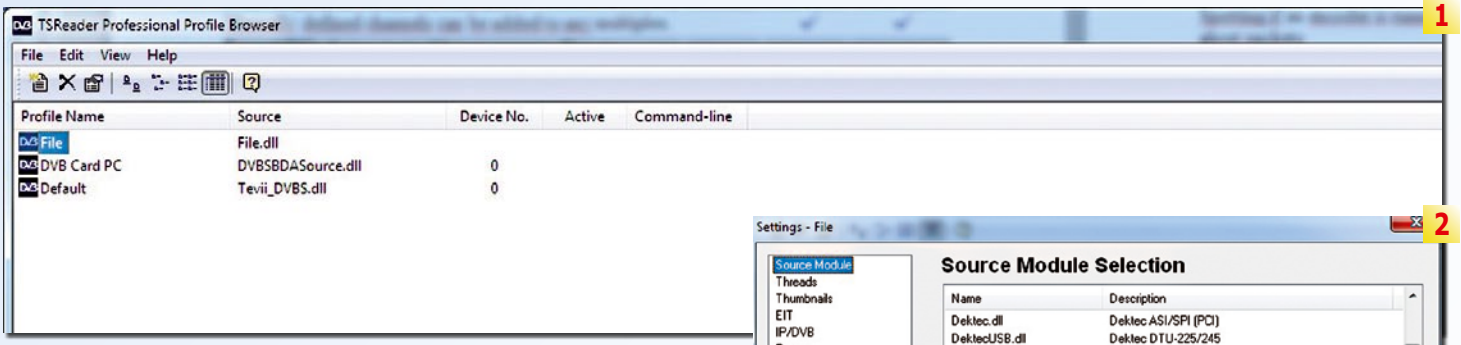

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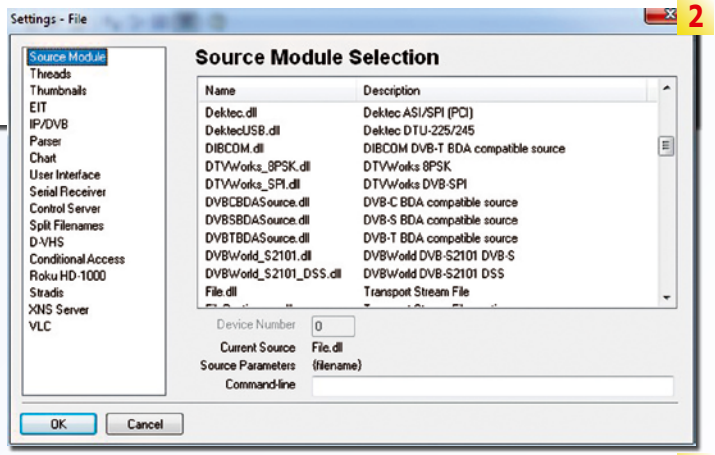

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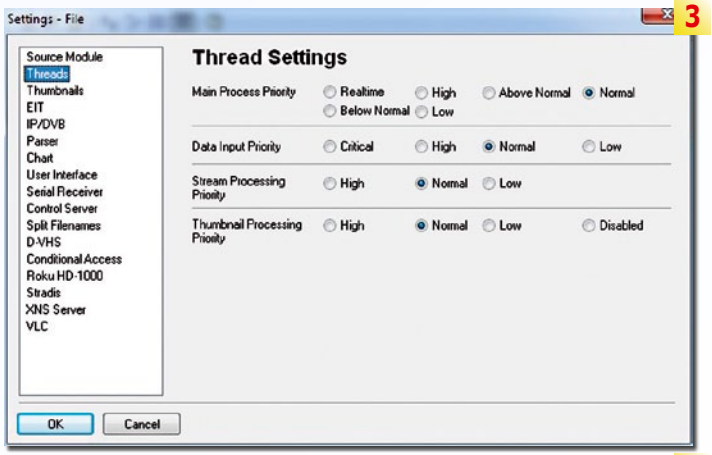

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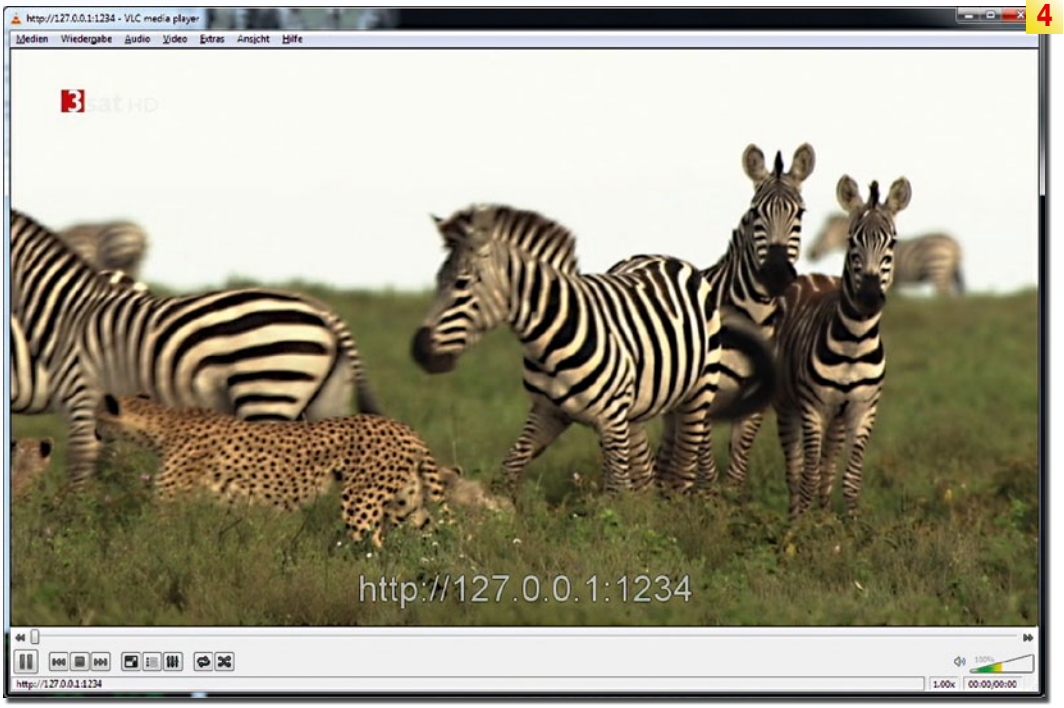


4

a monitor with a minimum resolution of 1024 x 768 pixels. TSReader supports the Windows 2000, XP and Vista operating systems and we'd like to point out here that it also functioned on our Windows 7 32-bit test PC without any problems.

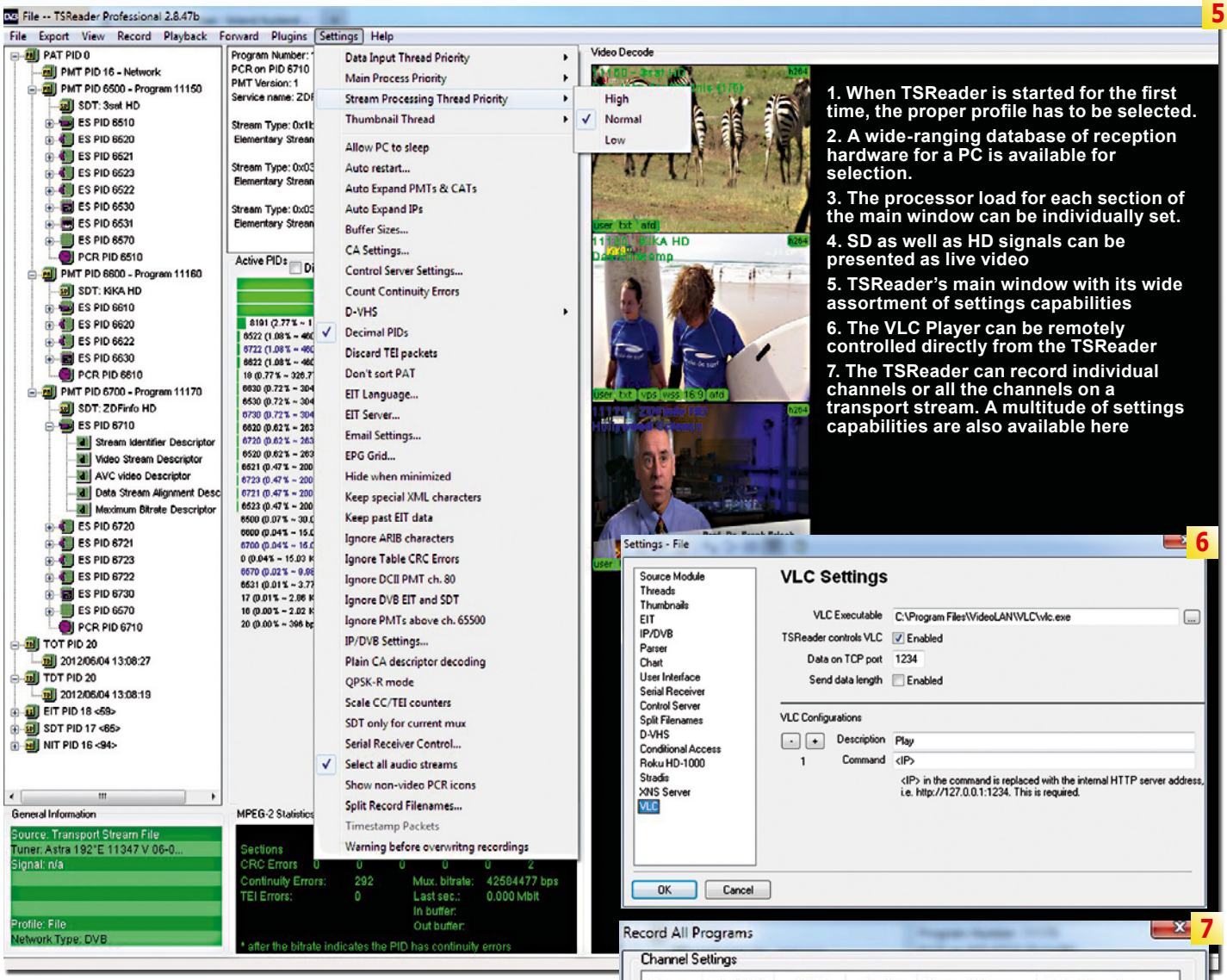
After starting this tool for the first time, a relatively empty program window appears. Upon closer inspection the reason for this initial view quickly becomes clear: it's another outstanding TSReader feature. But first things first.

In order to be able to even process a transport stream, the TSReader has to be able to one way or another receive it and Rod Hewitt has come up with a rather smart solution to make TSReader as universal as possible. Before the program is even started, the user has to select the hardware he is using from a list of several dozen entries as well as how TSReader will gain access to the transport stream.

This extensive list includes profiles for PC reception accessories from nearly every known manufacturer (such as DekTec, Tevii, etc.) as well as profiles for reception of transport streams via Multicast or Unicast network transmissions. There's also the capability to process previously recorded transport stream data.

The rather empty selection window that appears after starting the program for the first time only serves as a way in the TSReader installation to add as many profiles as desired. These profiles will later be used to receive the channel and process the transport stream. We especially liked the ability to set up an icon on the desktop or in the start menu of the PC for each individual profile making it extremely easy to start TSReader in the desired profile with a single mouseclick. And if the PC itself is powerful enough, multiple instances of TSReader with different profiles can be run at the same time; this provides access to multiple reception cards at the same time.

Depending on the selected profile, the TSReader opens a transport stream, requires the input of a Unicast or Multicast network address

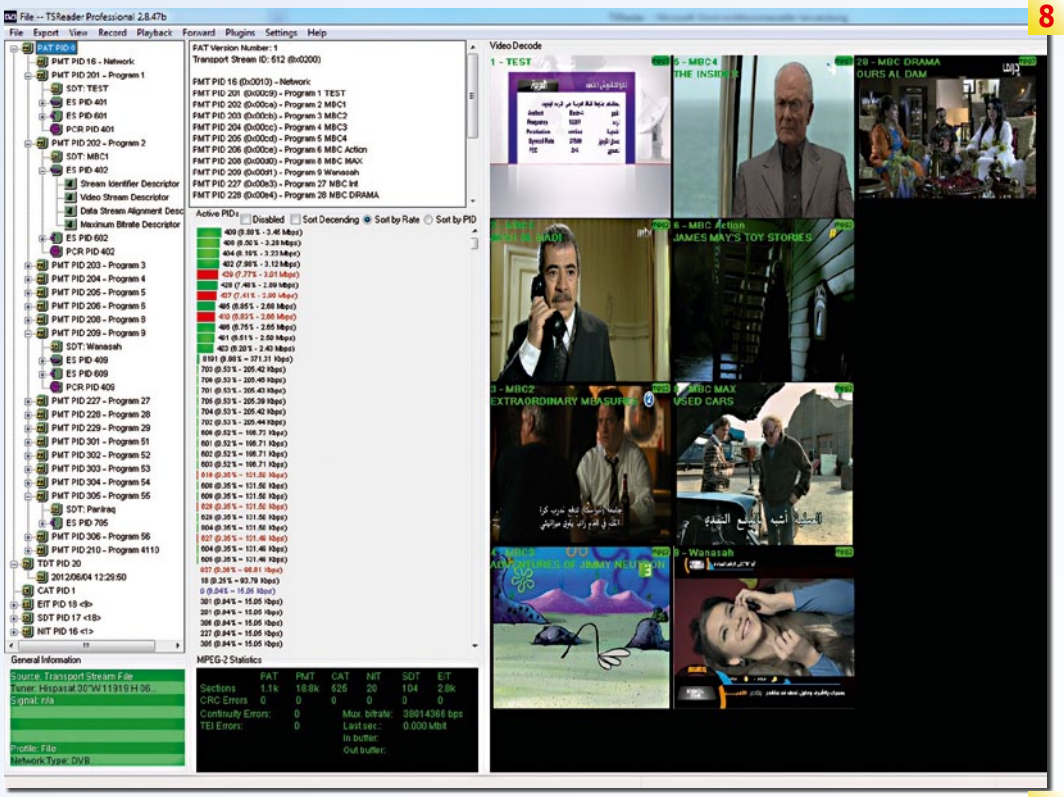


or blends in a window that can be used to control the reception hardware installed in the PC. While no settings capabilities are available when opening a transport stream or calling up a network stream, a variety of them can be accessed by opening the tuner window.

And it's here where the TSReader shows how well-rounded it is and just like you'd expect with professional tools, all of its functions can be completely be set up as needed. Not only is the DiSEqC 1.0 protocol supported, the user can also define the LOF parameters individually. The supply voltage and the 22 kHz signal can also be easily matched to the user's system so that even those systems that aren't quite run-of-the-mill are supported.

A database with a total of 188 satellite entries between 180° east and 177° west that includes the transponder data in the C-band and Ku-band is also provided. The satellite and transponder data is for the most part up-to-date and considering how much data there is, it's really well organized. If needed, the TSReader can also import an updated list or even a list created by the user in CSV or SDX format.

Once the TSReader has recognized a stream, it instantly starts analyzing and



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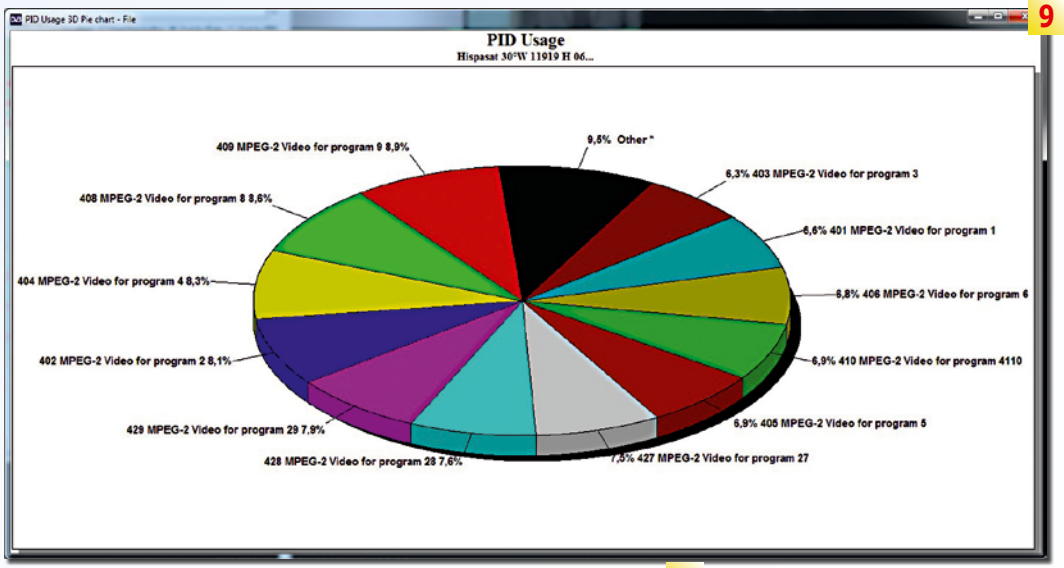

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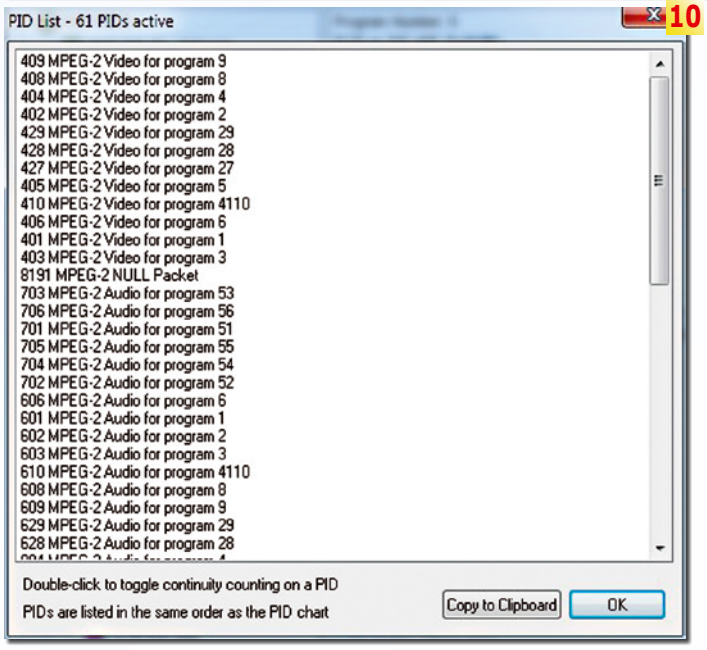

10

8. TSReader's main window
9. The bandwidth use of individual PIDs is graphically displayed
10. The list of all active PIDs

processing it. The main window then switches over to its Tools standard view and is split into three large sections. To the left the structure of the transport stream along with other bits of information is visible, just to the right can be seen a column of detailed information and all the way to the right of the screen is the visual display of what's contained in the transport stream.

The structure of the transport stream includes a listing of all the PIDs that are displayed in the form of a tree diagram. In this way you can easily see which PIDs belong to what channels and how the datastream is constructed.

The Details column reveals details of each PID marked in the overview column and graphically displays all of the active PIDs in the transport stream. The visual display of the available content takes the form of thumbnails for each individual TV channel and provides a quick overview of all the transmitted content.

Double-clicking on one of the thumbnails is all that's needed for TSReader to start playing back the selected channel. This is where the freely downloadable VLC player goes into action (download from www.videolan.org). It can be controlled directly through TSReader. It doesn't matter if it's an SD or HD broadcaster in MPEG2 or whether you're dealing with the H.264/MPEG4 standard. And as long as we're talking about standards, the TSReader supports DVB, ATSC, ISDB and DTMB.

In our tests with a variety of transport streams in DVB (SD and HD), the analysis and processing of these signals functioned without any problems. The demand on the processor remains relatively low allowing you to easily use the PC for other work. We liked the ability to set up a variety of basic settings for each individual profile. This lets you, for

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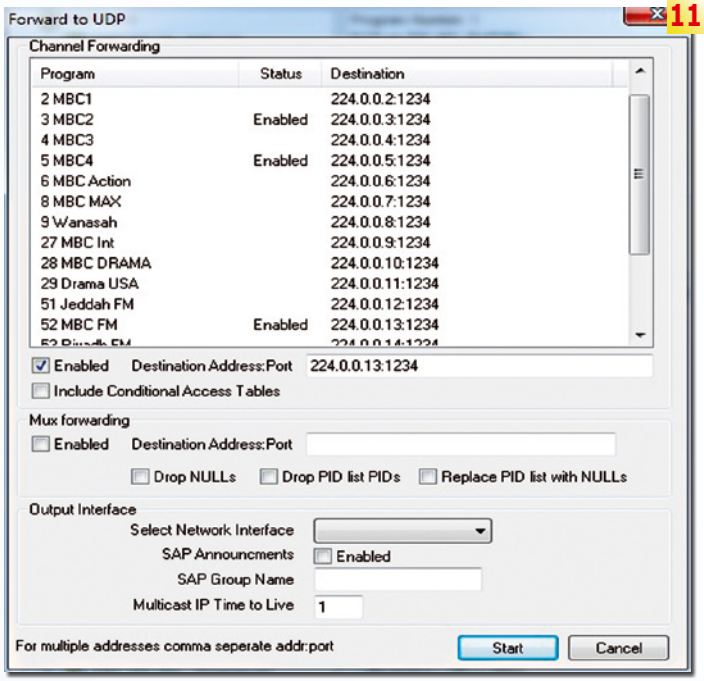
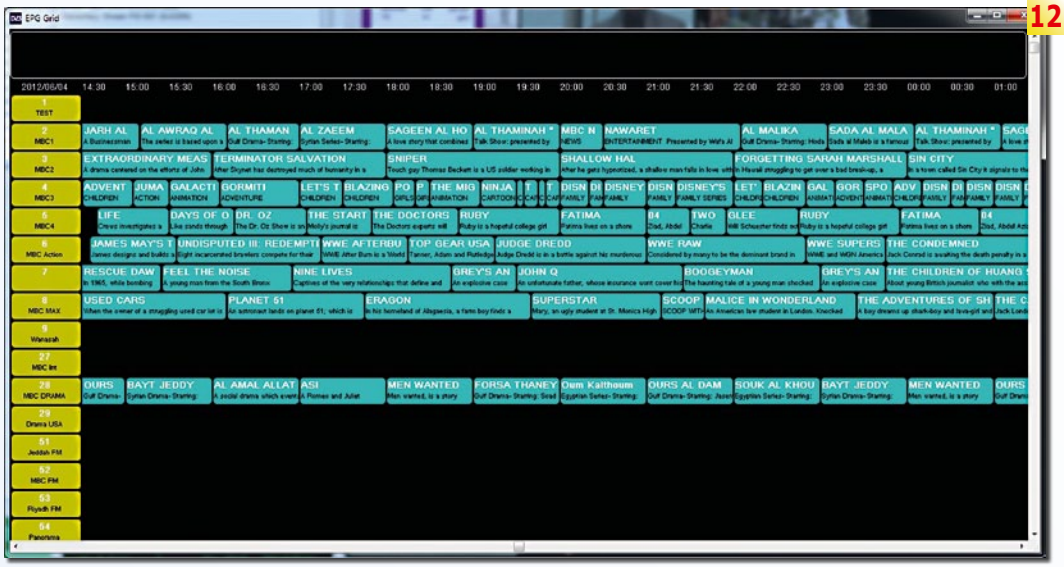
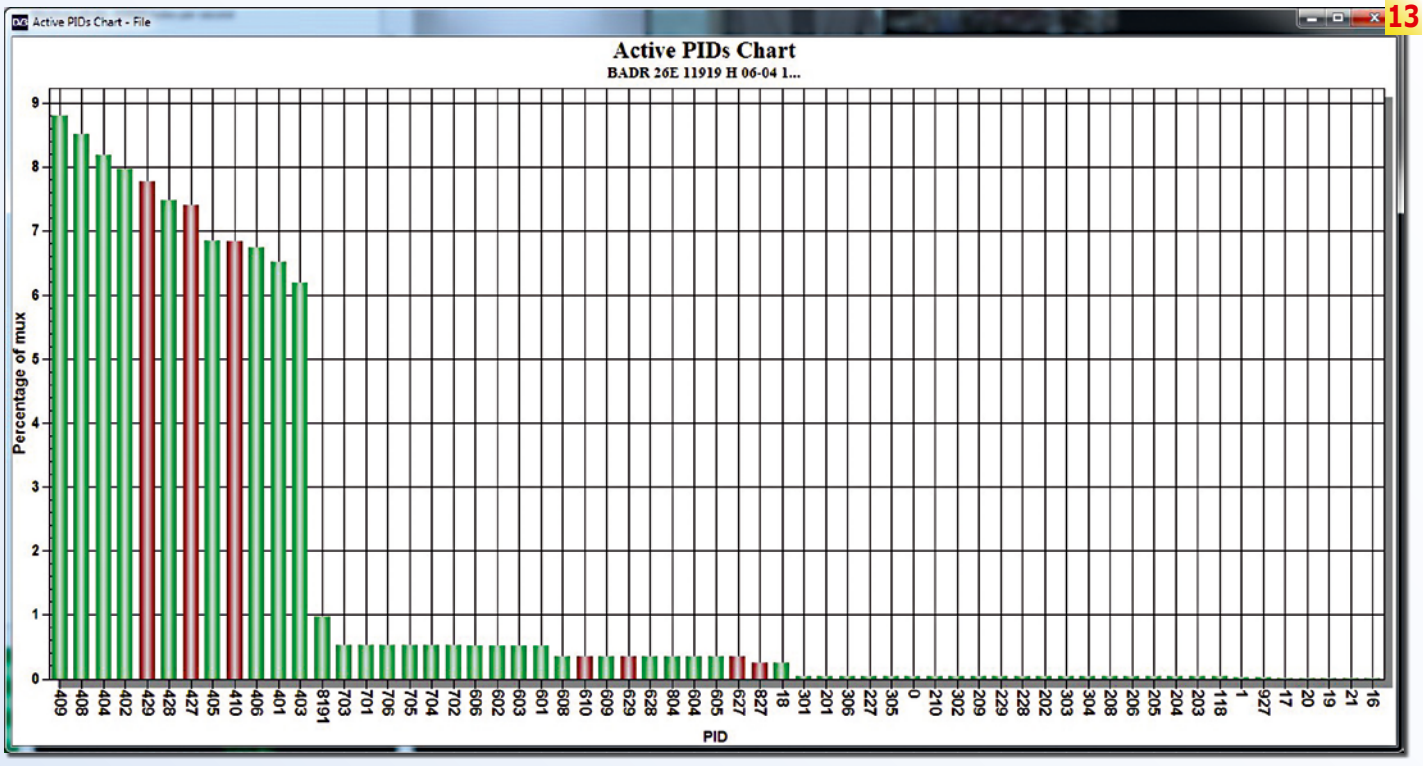


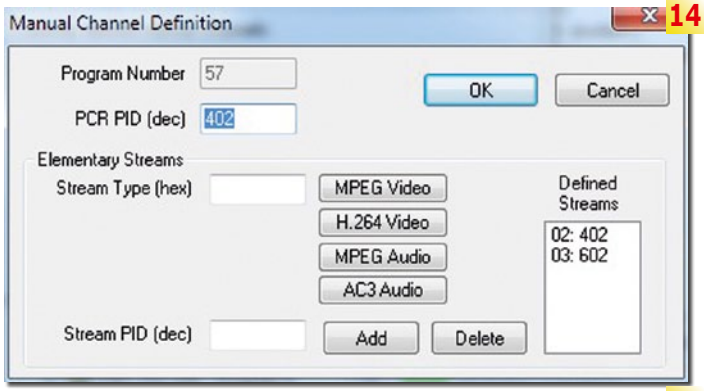
example, set up the priority of the TSReader based on the available hardware with just a few mouse clicks and this for all three sections of the main window. While you would most likely let TSReader have priority over all other programs and services if you have a modern PC with a powerful CPU, stepping down to a slower PC allows the simultaneous use of other tools and programs.

If the TSReader receives a data stream via hardware connected to the PC's PCI slot or an external USB 2.0 device, the data can not only be analyzed a number of different ways, it can also be recorded on the PC's hard drive. And it's here that the TSReader shines with all of its settings capabilities beginning with the selection of the desired channels in the transport stream (the TSreader is also a demutliplexer that can extract individual channel sections out of the data stream), continuing with the splitting into multiple files depending on the EPG of individual broadcasters up to setting a maximum size for recorded data. Even the recording of some or all of the PIDs is possible.

In our tests this function performed exceptionally; even recording for hours at a time and activating the Split function did not disturb the TSReader. The entire received data stream was recorded on our test PC's hard drive without any errors.







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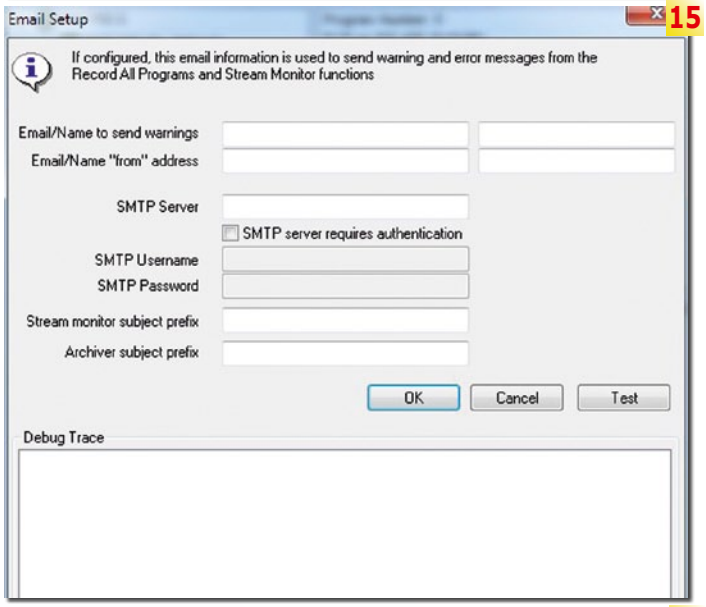

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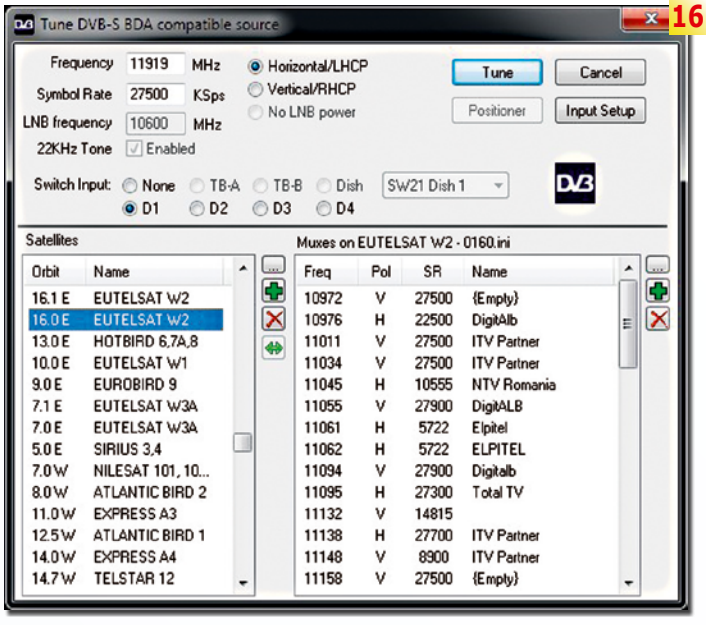


16

11. One or more channels in the transport stream can be retransmitted as Unicast or Multicast via LAN

12. EPG overview of a transport stream

13. Graphic display of all active PIDs

14. If desired, PIDs from the transport stream can also be manually entered

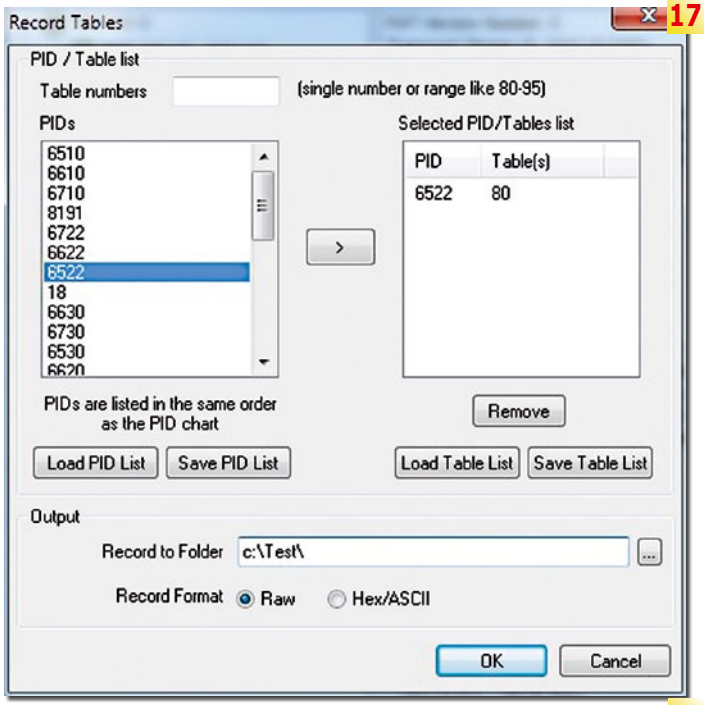
15. If there's an error, TSReader automatically sends out an e-mail; it essentially calls for help on its own.

16. The extensive satellite and transponder list comes with up-to-date data. LOF and other LNB parameters can be individually set up

17. Some or all of the PIDs of a transport stream can be recorded.

18. A previously marked channel is being recorded in MPEG format with all of its associated PIDs

In addition to the recording of transport streams, the second huge application for the TSReader is the ability to analyze and monitor a transport stream as well as to export the different tables (PAT – Program Association Table, PMT – Program Map Tables , NIT – Network Information Table, etc.). Either the HTML or XML format can be used here; both of them performed quite well in our tests. We were able to effortlessly record the entire architecture of a transponder exactly the way it was received from the ASTRA satellite at 19.2° east. Even storing the entire EPG database of a transport stream is possible and functioned perfectly in our tests. We also liked the graphical display of the EPG; you can get a quick



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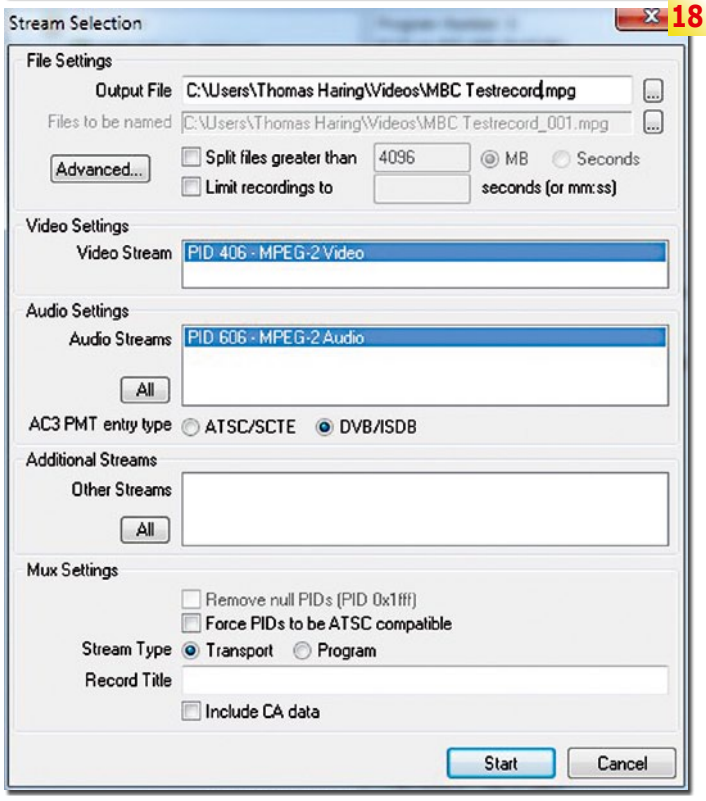
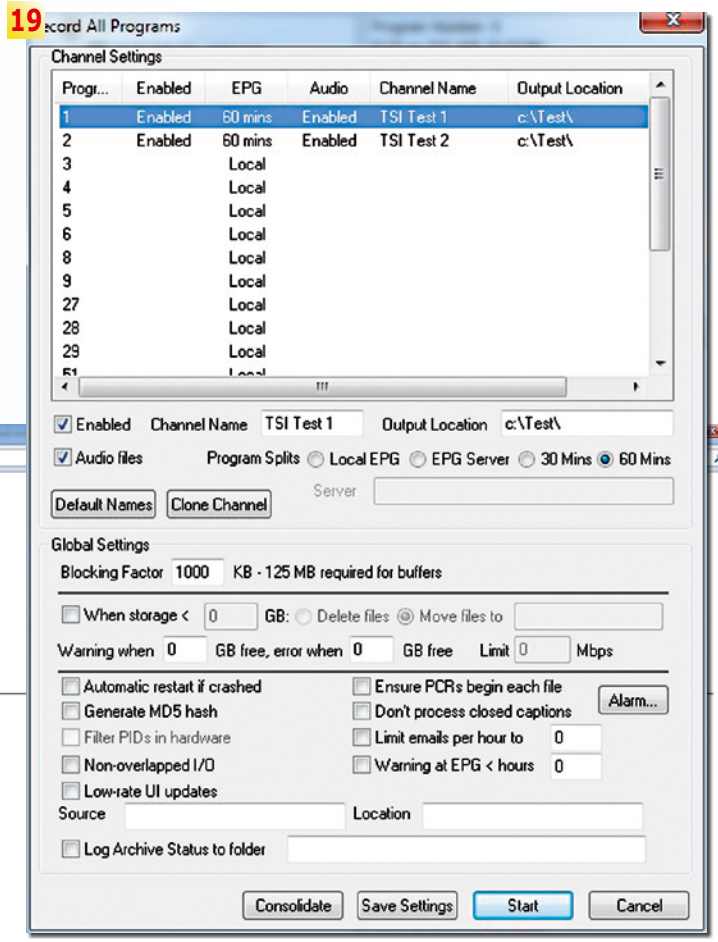
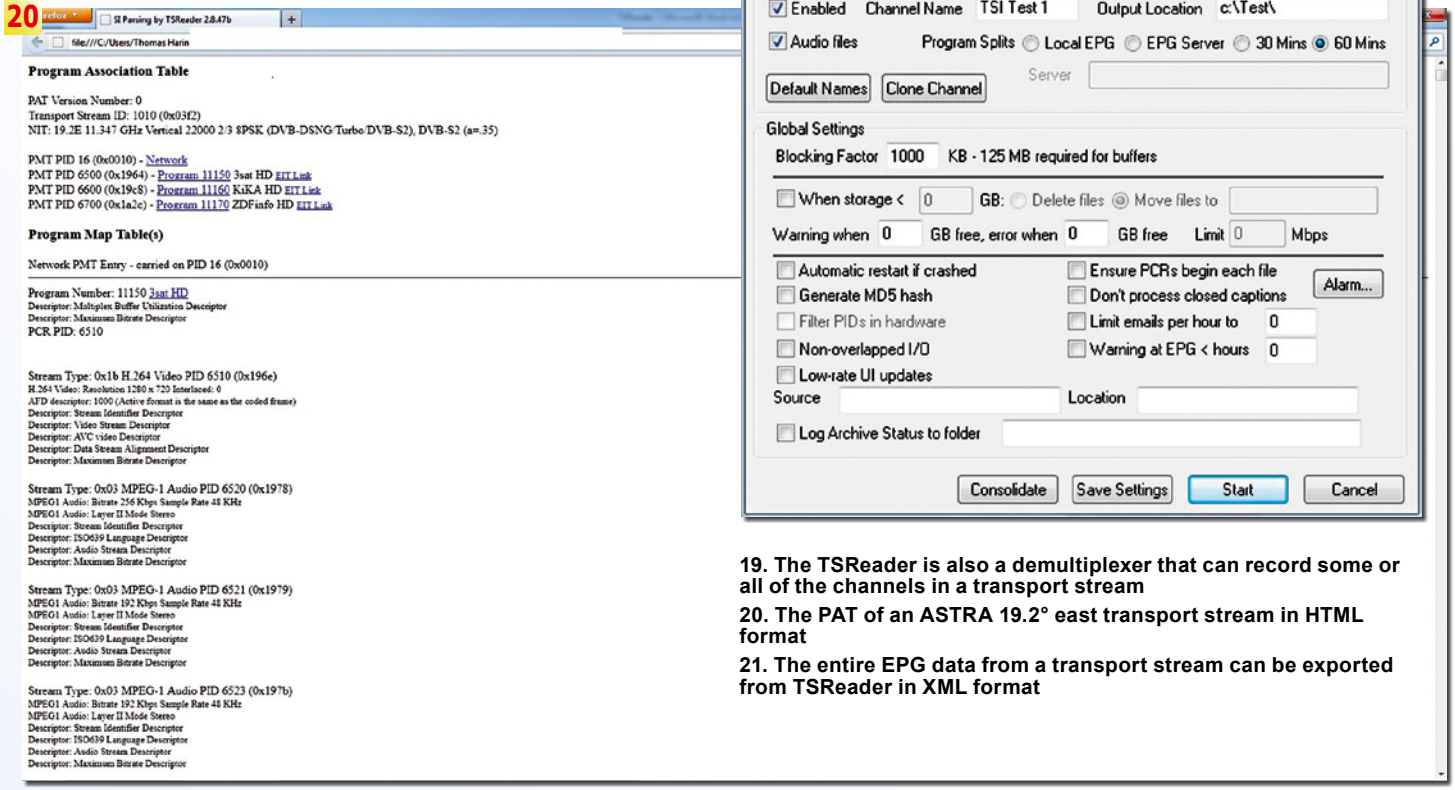


18

overview – you might not have guessed that a tool like TSReader would have had something like this.

If you were to set up your own transport stream with the help of a multiplexer, it would be absolutely imperative to have a grasp on the bandwidth use of each individual PID. In fact, that would be the only way to identify any savings potential and where you might be able to increase the datarate. In addition to the static values provided by the TSReader in the main window, there's also a variety

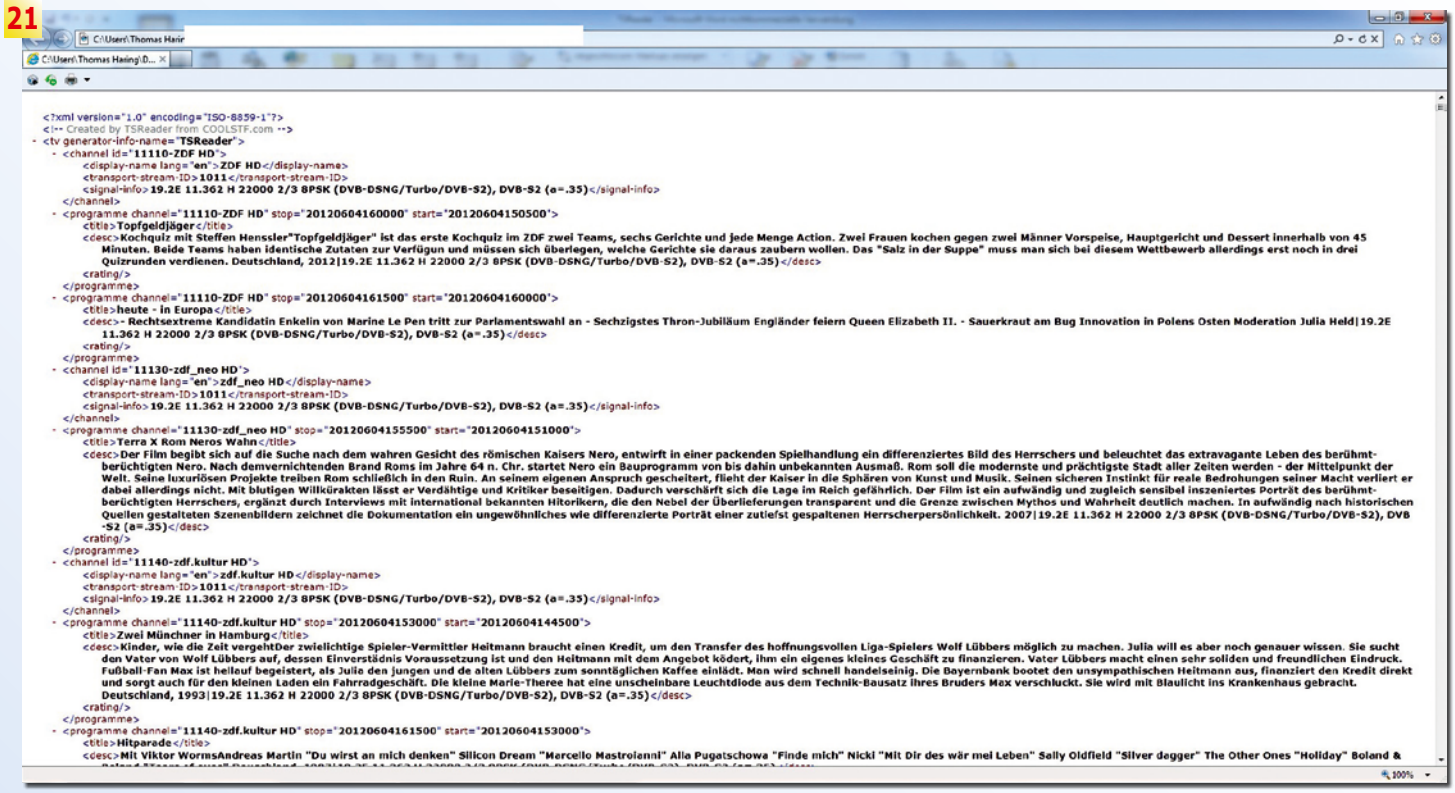




19. The TSReader is also a demultiplexer that can record some or all of the channels in a transport stream

20. The PAT of an ASTRA 19.2° east transport stream in HTML format

21. The entire EPG data from a transport stream can be exported from TSReader in XML format



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General internet-partner: COMNEWS

FEATURE	Lite (free*)	Standard ($99)	Professional ($399)
Decodes MPEG-2 tables with DVB, ATSC and Digicipher II extensions.	✓	✓	✓
Decodes MPEG-2 video in thumbnail format.	✓	✓	✓
Decodes MPEG-4 and H.264 video in thumbnail format.		✓	✓
Decodes VC-1 video in thumbnail format.			✓
Thumbnails can be exported as they are generated to JPEG files for remote monitoring via a web browser.		✓	✓
High speed parallel PMT parser		✓	✓
Parallel stream decoding (thumbnails display very quickly)			✓
Parses MPEG, A/52 (AC3) and DTS audio streams to show bitrate/mode settings.	✓	✓	✓
Parses AAC audio streams to show bitrate/mode settings		✓	✓
Generates scope-style thumbnails for MPEG, AC3 and AAC audio streams		✓	✓
Shows A/52 (AC3) dialog-normalization.		✓	✓
Indicates CC/DTVCC streams for ATSC streams and VBI/Teletext/Subtitle/WSS/VPS on DVB muxes.	✓	✓	✓
Supports a wide range of MPEG-2 hardware input and output devices Transport streams can also be fed from a file.	✓	✓	✓
Records the transport stream to a disk file.		✓	✓
Records an individual program to a disk file with PAT/PMT regeneration into files with a very flexible file naming scheme.		✓	✓
Decodes IP/DVB transmissions in MPE format with decodes of the MAC and IP destination addresses.	✓	✓	✓
Can save the payload from TCP and UDP transmissions and act as a multicast UDP/IP/DVB router.		✓	✓
PID usage graph with percentage displays for each PID.	✓	✓	✓
Actual bitrate on PIDs carrying PCR and estimated bitrates for non PCR carrying PIDs.	✓	✓	✓
PID graph is color coded to indicate unscrambled and scrambled PIDs.	✓	✓	✓
Counts continuity and TEI errors on mux and PID-by-PID basis.		✓	✓
Variable resolution real-time or average charting.		✓	✓
Table report generation into HTML.	✓	✓	✓
Export mux information to XML		✓	✓
EPG data export to XMLTV format for use with myHTPC and other HTPC frontends.		✓	✓
Automatic transport stream recording and export for unattended operation.		✓	✓
Control over D-VHS decks for unattended HDTV recording (Windows XP).		✓	✓
Supports plugins written for MultiDec.	✓	✓	✓
Manually defined channels can be added to any multiplex.		✓	✓
Record PIDs from a mux either as separate files or combined in their received order.	✓1	✓16	✓64
Multiple card support in a single system with qualified drivers.		✓	✓
Serial receiver control for Motorola DSR-4800 and Tandberg Alteia Plus/TT1260 receivers.		✓	✓
TCP/IP based remote control server to allow TSReader to be operated remotely by other software.		✓	✓
Graphing capability	Limited	✓	✓
EPG grid for DVB and ATSC networks.	✓	✓	✓
Record scheduling from EPG Grid using the standard Windows Scheduler.		✓	✓
Video mosaic shows all video streams in the mux.			✓
Archiving mode - records all programs from all or some channels within a mux.			✓
Profiles - different configurations for TSReader allowing multiple instances to run simultaneously.			✓
EPG server to provide programming information to other TSReaders running in archiving mode.			✓
Closed Caption decoder (EIA-608/EIA-708) for caption monitoring.			✓
Stream monitor function with alarms (ETR 290 style).			✓
UDP Forwarder - routes programs or the entire mux to UDP unicast/multicast.			✓
Custom descriptor decoding			✓
Hardware Forwarder - routes the transport stream to ASI and LVDS output devices.			✓

Table 1: Features and Editions
*** free for personal, non-commercial use**

More Informationen: www.tsreader.com

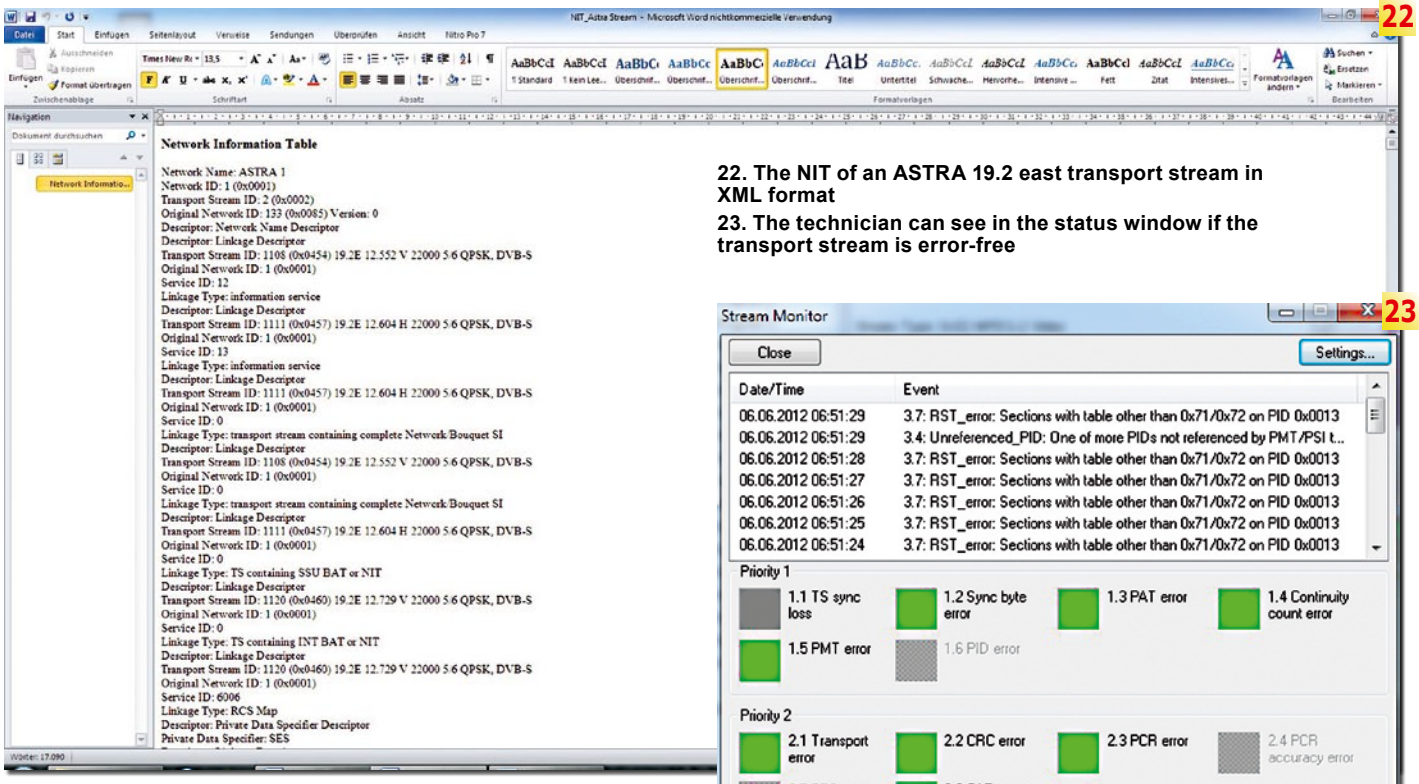
of graphical display capabilities that would allow you to view the desired information visually. This would make it very easy for the user to control the operation of the multiplexer and, if necessary, intervene should there be too many null or ghost packets.

In the case of errors within the datastream, the TSReader also lets you search, for example, for missing or erroneous PIDs. It also displays the labels for FTA and encrypted channels in different colors so that the user can easily differentiate between them.

A status window with green and red blocks (green indicates error-free sections while red indicates sections with errors) makes it easy for a technician to monitor the entire transport stream and quickly identify any problems if they should occur. He can also recognize with a single look if a broadcaster is constantly switching from FTA to encrypted and vice versa which, for example, would suggest an error in the encryption.

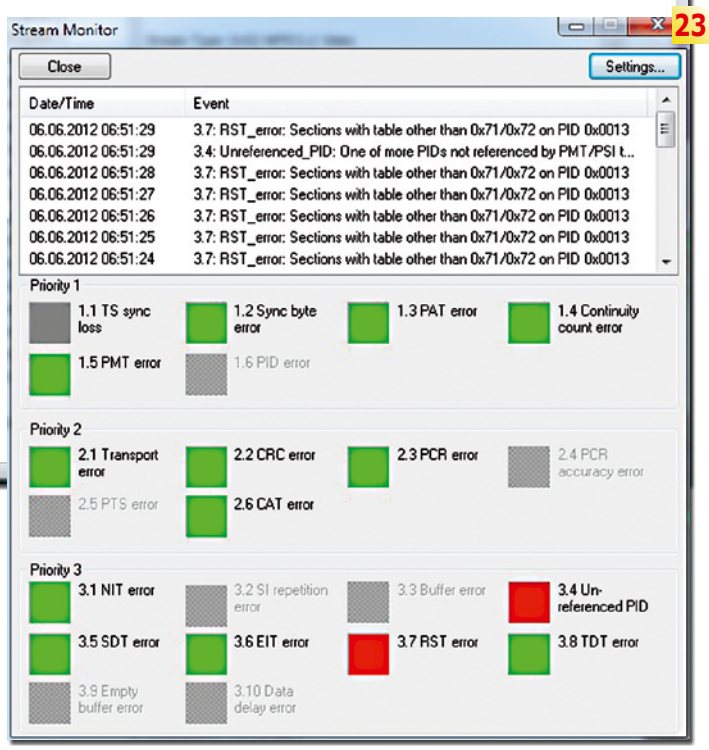
Of course, software developer Rod Hewitt also realized that the TSReader in many cases would also be used for continuous control of a multiplexer which is why the remote control of the entire system becomes an absolutely required function.

For this reason, the TSReader includes its own small server which can be used to remotely control every function via LAN or the Internet. In conjunction with the VLC Player, it's



22. The NIT of an ASTRA 19.2 east transport stream in XML format

23. The technician can see in the status window if the transport stream is error-free



even possible to convert the current video signal from the transport stream from MPEG2 into H.264/MPEG4 (if needed) and then directly pass it along via LAN or the Internet. If the TSReader ever comes across some form of an error, it can send out an e-mail with information on the particular error. You could say that the TSReader is thus able to call for help all by itself.

It should also be mentioned that the TSReader can also control external hardware; this could be a number of digital receivers connected via a serial interface (fast becoming an older method) or a D-VHS deck through a firmware connection making it possible to decode and record MPEG2 streams without putting a load on the CPU of the PC.

If the TSReader is set up within a network, it could then also be used as an IPTV server since the passing on of live transport streams via Unicast or Multicast is supported. Here at the TELE-audiovision test center we took a closer look at this function using an IPTV receiver; we were able to feed it with a variety of error-free and interference-free HD channels that were received by TSReader live via satellite.

The TSReader is a piece of software that, thanks to its wide range of functions and its attention to detail, is perfectly suited for professional applications.

Beyond that, the free Lite version offers the user at home a peak behind the walls of digital TV. It doesn't matter if it's a self-made DVB data stream that you want to control and monitor, the TSReader offers the necessary features and functions for every application.

Thanks to the nicely organized menu structure and the optically designed user interface, professionals as well as ambitious amateurs will easily be able to work with this program.

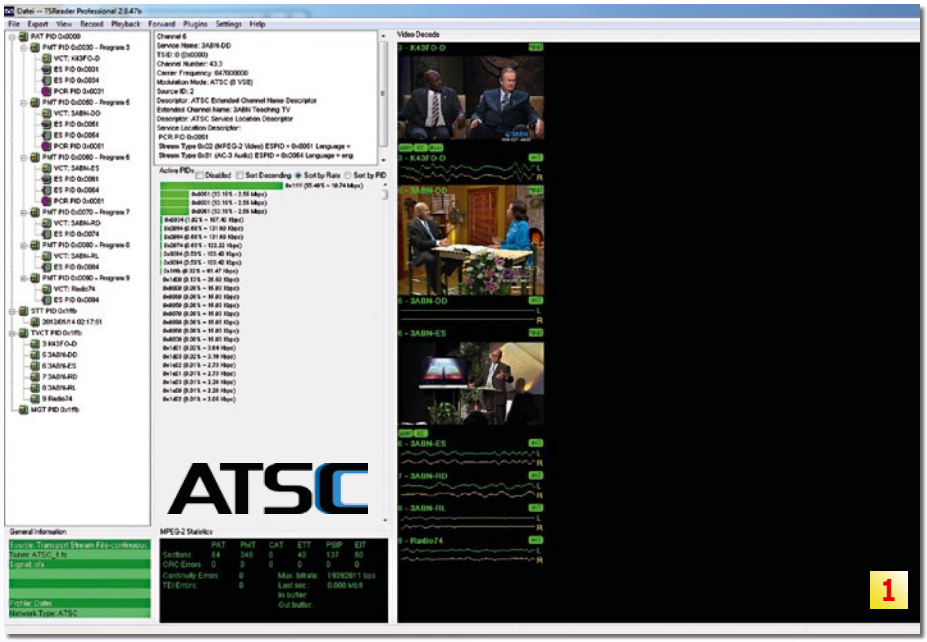
It's clear that together with the ability to control the program remotely and its error reporting capabilities, TSReader is perfect for long-term operation, for example, at a head-end station, and is therefore an inexpensive alternative for smaller companies and programming providers compared to other more expensive products. The TSReader has been part of the basic equipment for all of our TELE-audiovision test centers for quite some time now.

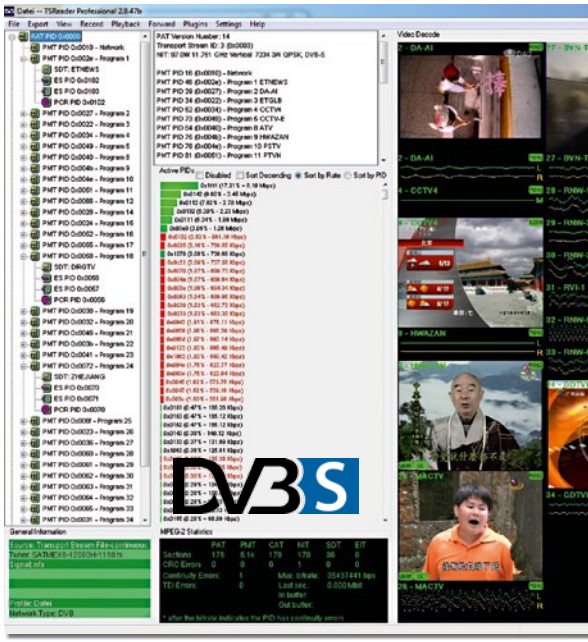
Expert Opinion

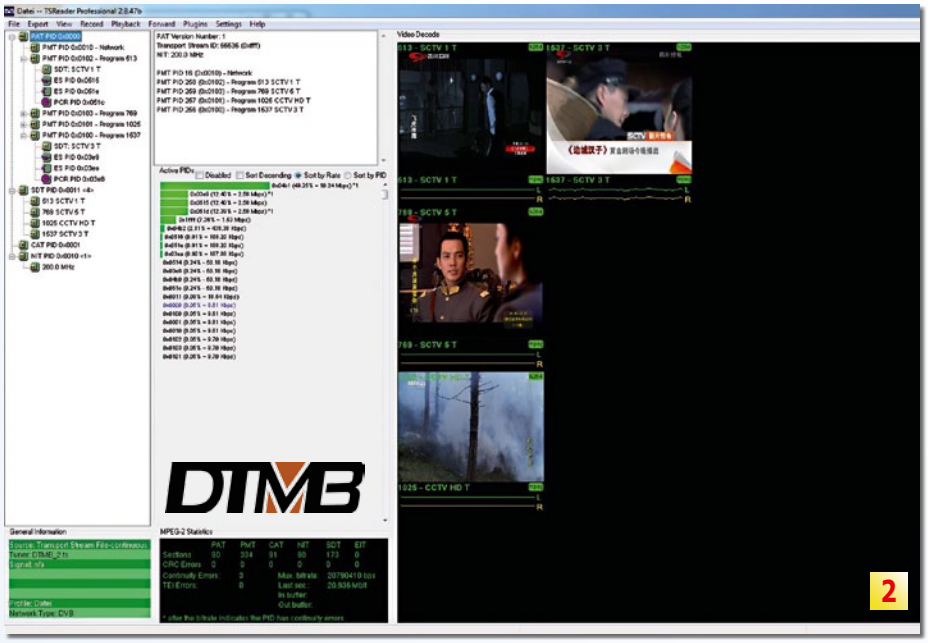
Thomas Haring
TELE-audiovision Test Center Austria

A feature-packed transport stream analyzer that is easy to use and, thanks to its profile system, can be used in any application. It can process SD as well as HD signals and gives the user a deep look inside the world of DVB/ATSC transport streams. Thanks to its many export and display functions, all of the interesting information can easily be stored and displayed.
The TSReader does not have any excessive hardware requirements so that even older PCs could be used with this program.

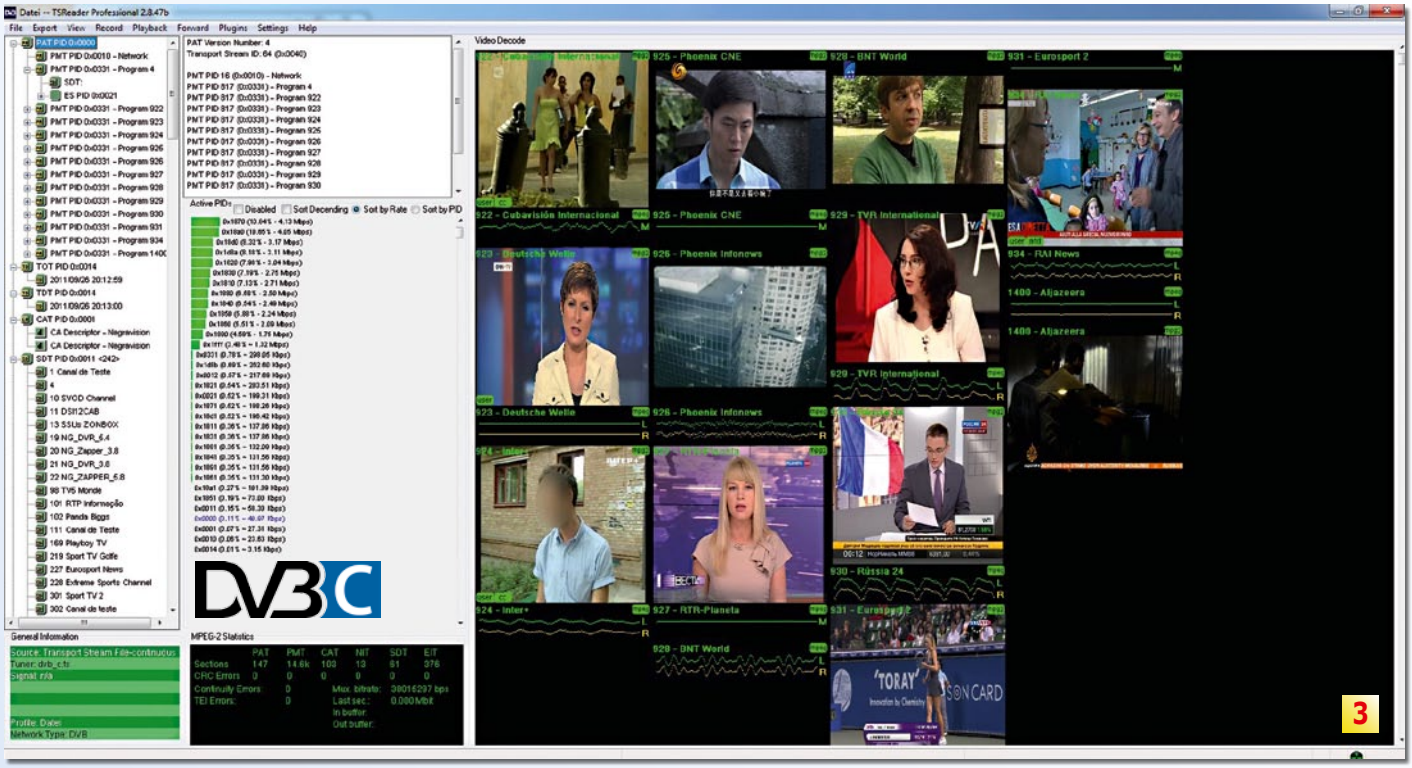
None

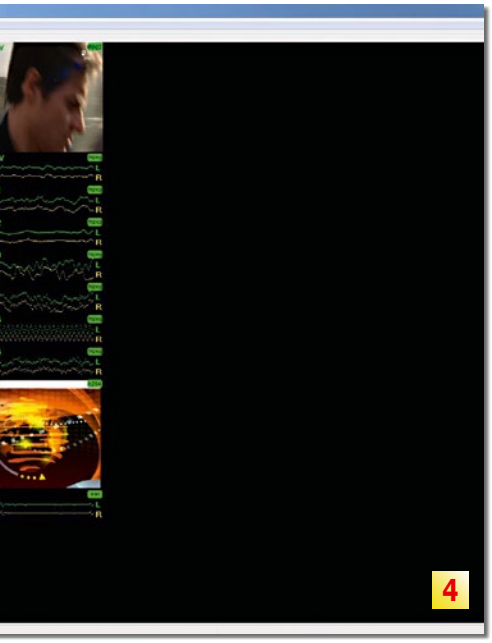

ATSC
1

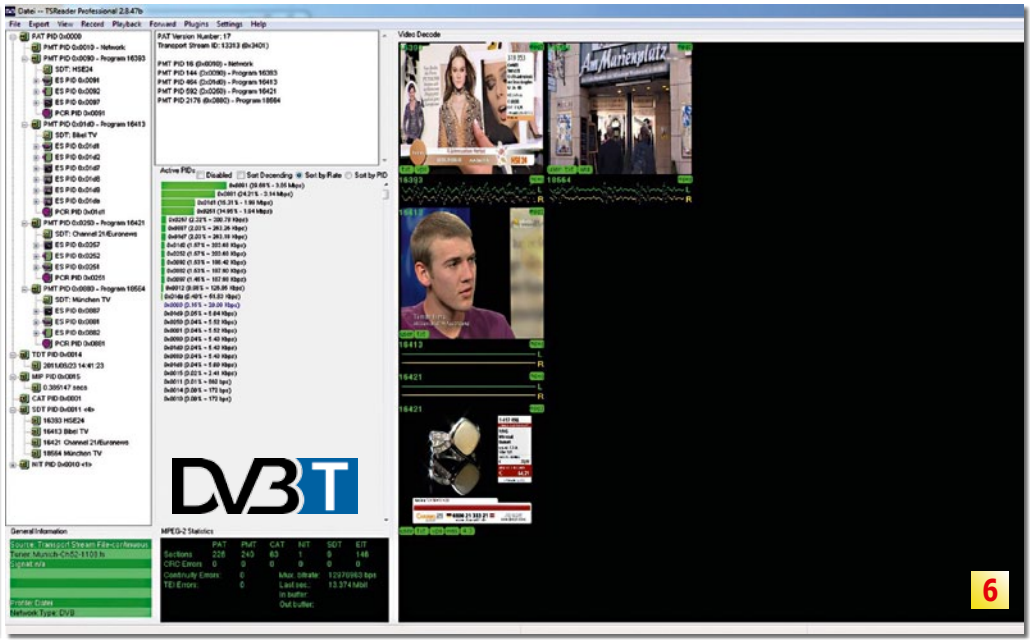

DVBS

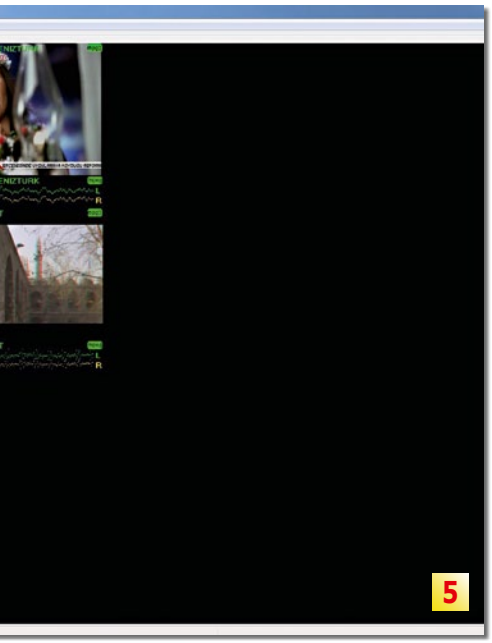

DTMB
2

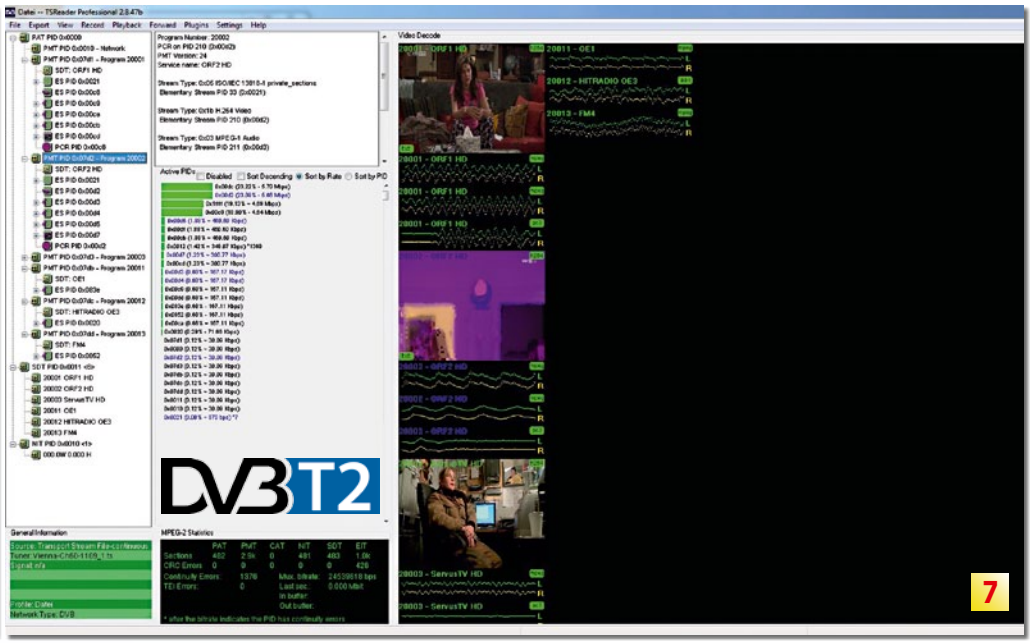
DVBS2

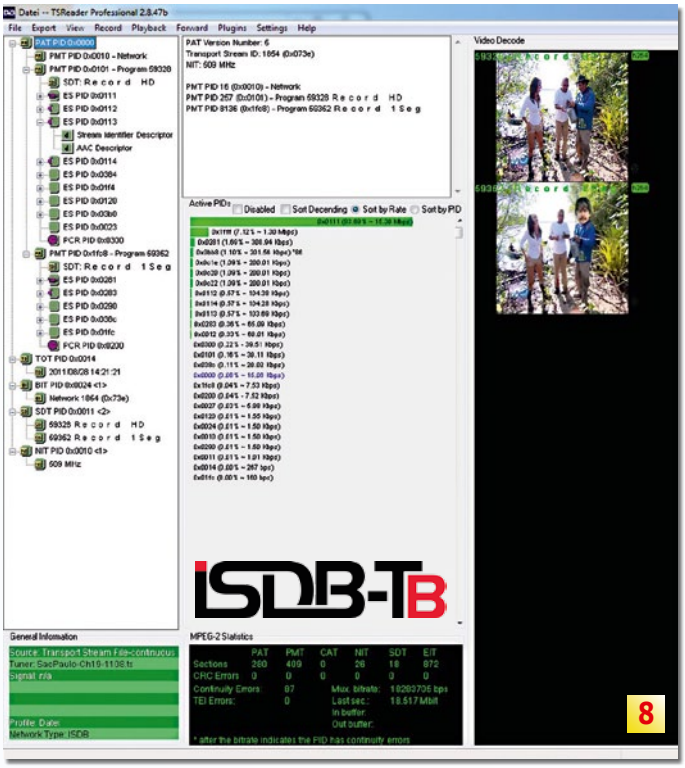

DVBC
3











TSReader

in use worldwide with different transmission standards

1. Terrestrial TV in ATSC in Las Vegas, USA (UHF 43)
2. Terrestrial TV in DTMB in Chengdu, China (UHF 40)
3. Cable TV in DVB C in Porto, Portugal (UHF 48)
4. Satellite TV in DVB S from SATMEX (12.080H)
5. Satellite TV in DVB S2 from TURKSAT (12.015H)
6. Terrestrial TV in DVB T in Munich, Germany (UHF 52)
7. Terrestrial TV in DVB T2 in Vienna, Austria (UHF 60)
8. Terrestrial TV in ISDB-Tb in Sao Paulo, Brazil (UHF 19)

http://www.
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TOP GUN
Top Gun
Cast: Tom Cruise, Kelly McGillis, Val Kilmer, Anthony Edwards
Director: Tony Scott
Overview
Tom Cruise movies
ATSC 2.0 enabled TV
Tom Cruise
(From Wikipedia, the free encyc

ATSC 2.0

- *combines various separate norms and standards into one single suite*
- *puts all the existing tv viewing features available nowadays into one set*
- *merges all variations into one*
- *enables superior video and audio quality*
- *new standard will replace current one eventually*

A Marriage of Broadcast TV with the Internet and Mobile Devices

Jacek Pawlowski

Nowadays all TV is digital, but with different standards in different regions. In North America, the first standards for digital terrestrial TV were published in the 1990s. Since then, these standards have been updated a few times and their recent versions are from 2009, 2010 or 2011. The set of standards that we usually refer to as "ATSC" actually consists of several tens of harmonized norms. The most fundamental one is "A/53: ATSC Digital Television Standard". You can find the list of all currently published A/xx standards on the ATSC web site: www.atsc.org.

However, advances in technology are so fast and the end user requirements change that quickly that a moment comes when the standardization body (in this case ATSC) comes to the conclusion that it is better to establish a new set of standards rather than introduce small enhancements in the current norms. There are simply too many new things to be covered.

A new set of standards by ATSC is now being released. This new suite is called simply ATSC 2.0. We will focus in a moment on the novelties that are to be covered by ATSC 2.0 but please note that that does not mean that all the present standards will be thrown out. ATSC 2.0 will use some of the features that are already present in ATSC 1.0 but are not normative but optional. For example: Advanced video codecs A/72 and A/73, Software download A/97 or Conditional access A/70. Why is a new standard needed? The simple answer is: because the traditional simple linear broadcasting model "one-to-many" becomes more and more obsolete today. Although it is still the most effective in moving the common content to very large numbers of viewers, there are too many alternatives that attract the end user's attention. Today's customer wants to watch what they want and when they want. They require the technology to be as flexible as possible.

How many times you felt an impulse to check something on the Internet when watching TV? How old is this actor? In what film did I see him before? Are you among those ones who watch TV and surf Internet or chat with friends at the same time? If so, imagine a system that in parallel to the normal news coverage or political discussions, sends additional data that you might be interested in to your mobile device (smartphone/tablet). You are offered the links you can click to to dig into more details on what is currently presented on your flat screen TV. It is sometimes called "Tell me more" service. Such extended information will be downloaded from the broadcaster's site on the Internet and displayed either on your smartphone, Wi-Fi connected tablet/laptop or on your TV-screen if you prefer to.

So now assume that a ATSC 2.0 enabled TV-set is by matterr of course connected to the Internet – this is in fact one of the very basic assumptions of the new system. But the additional content you might be interested in will not necessarily be downloaded from the Internet after you demand it. The TV-set will be equipped with a storage device (HDD, or flash memory) and the broadcaster can send some content before you might think of downloading it. Imagine that you are interested in a new movie just advertised on TV. Your clever provider has already sent it to the HDD of your TV-set. A new movie is just a click away from you. Can you resist it?

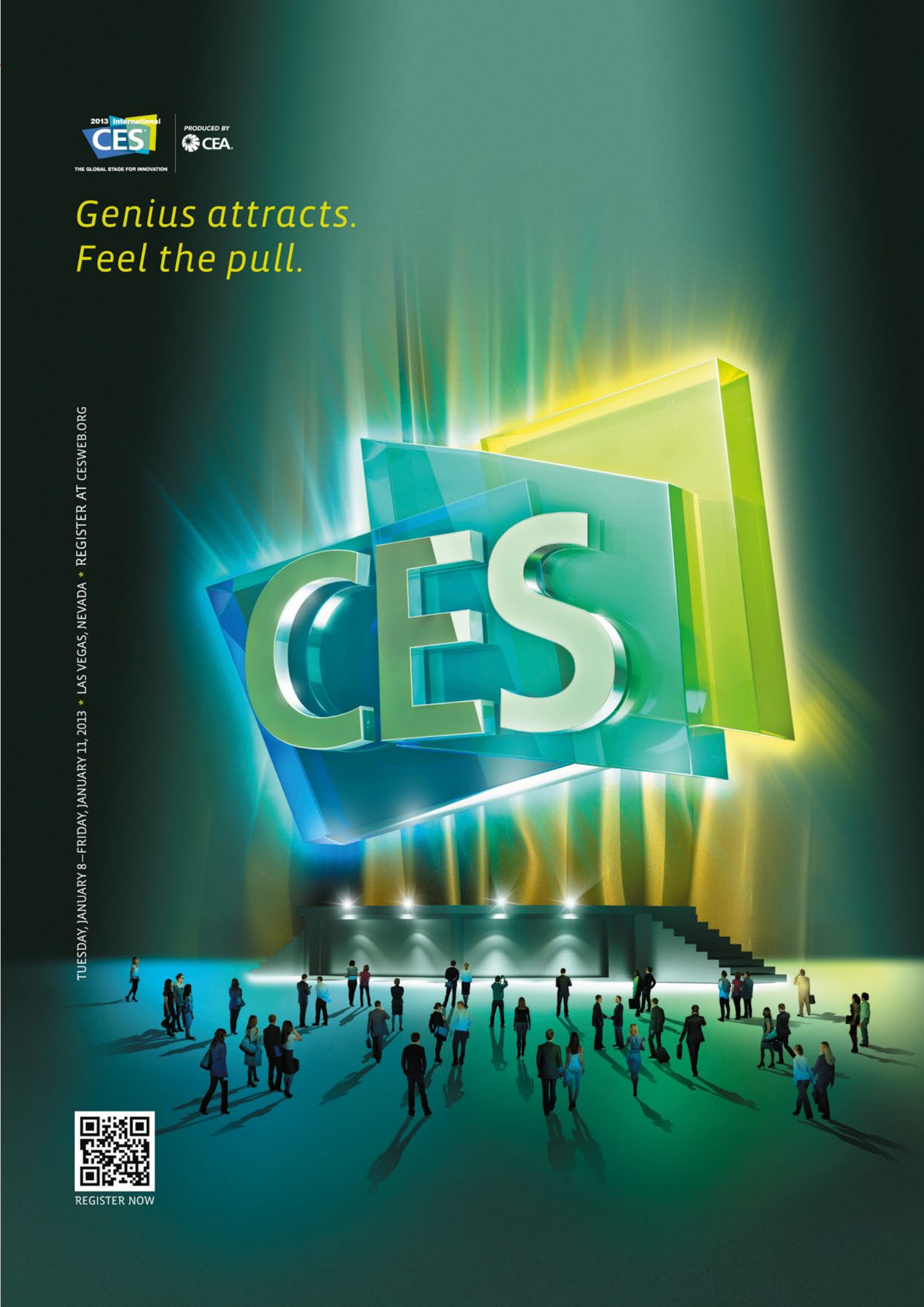
Who knows, maybe a future premium movie channel will consist of the stream of advertisements offering you movies to watch but not actually broadcasting them at a fixed schedule. It will be completely up to you what to watch and when to watch. And because the Internet connection is a two-way communication, after some time the system will "learn" what kind of movies you like most and even the advertising will be adjusted to your preferences. Sounds a bit terrifying but it already works this way on the Internet.

But the new ATSC 2.0 standard is not only about integrating TV broadcasts and the Internet. Why not watch a content stored on your phone on a large TV screen? It will not be a problem with the new standard. And the other way around: your smartphone will be able to act as a secondary screen providing supplemental information to the currently transmitted video and audio. It can also be used for other purposes like voting, buying and so on.

We focused so far on the ways of watching TV but there are also exciting technical improvements like: advanced video compression allowing transmitting even 1080P/60 Hz video over a 6 MHz channel (MPEG4), advanced audio codecs, reception of ATSC M/H content (normally dedicated for mobile devices) on a fixed receiver, 3D television and advanced interactive services.

You might say that all these things are already implemented here and there but remember that when proprietary solutions get standardized, more and more producers start to implement them in their products. You do not have to reinvent the wheel or pay a fortune to the original pioneer. When the standards are out, the new features become popular and affordable for a wide public.

Today's modern digital TV receivers already combine TV channels delivered in various ways: satellite, cable, terrestrial, Internet. The normal user does not even know, or care, what the transmission media is. However, there is no significant integration between the world of digital TV and many services typical for the Internet domain. ATSC 2.0 is a significant step toward combining these two worlds.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The Secret Special Transmission Modes

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How a tuner for VCM operates

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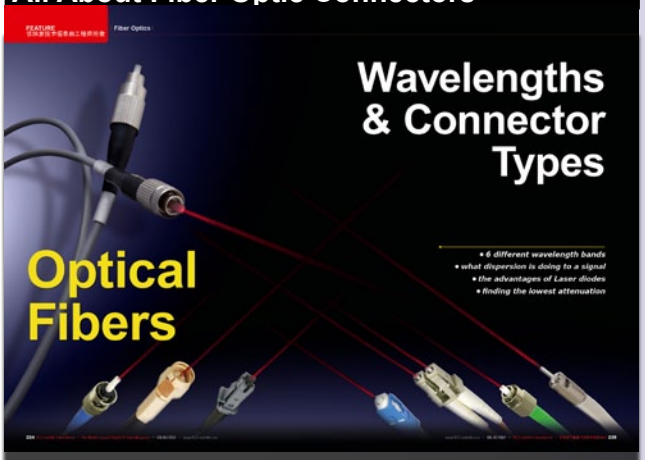
All About Fiber Optic Connectors



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DVB-S2 MIS Reception with VCM/ACM

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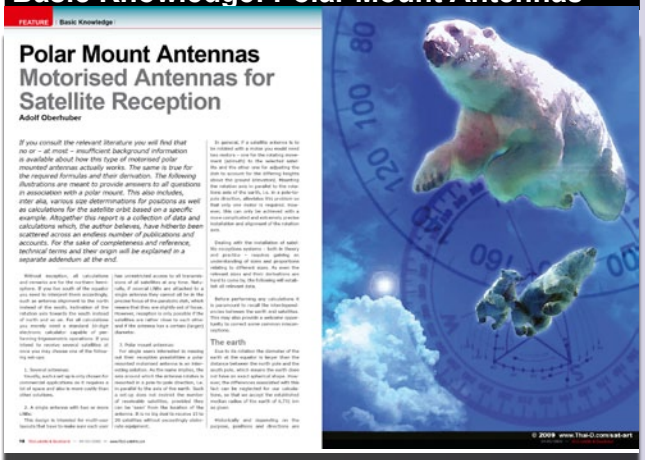
Basic Knowledge: Polar Mount Antennas



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Automatic Creation of 3D

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How a Silicon Tuner Works

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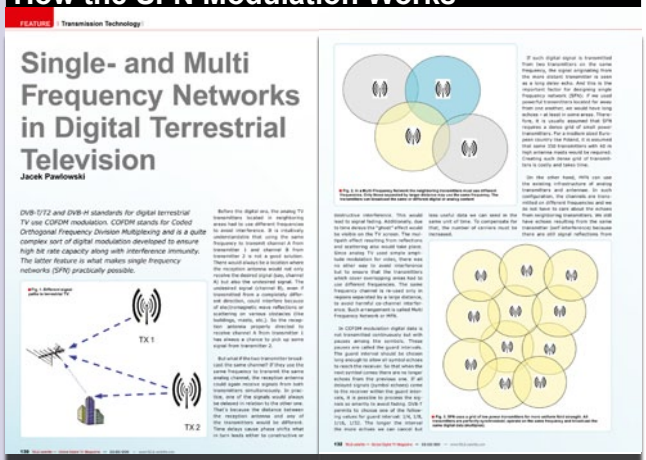
How the SFN Modulation Works



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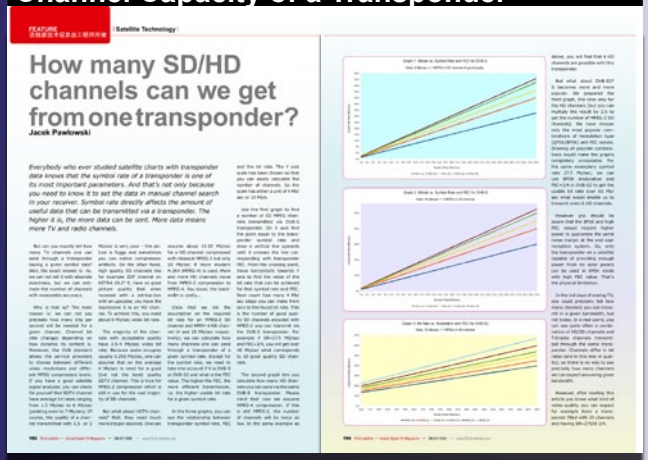
Channel Capacity of a Transponder



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How HbbTV Works

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CI+ and HD+Encryption

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How DVB-C2 Works

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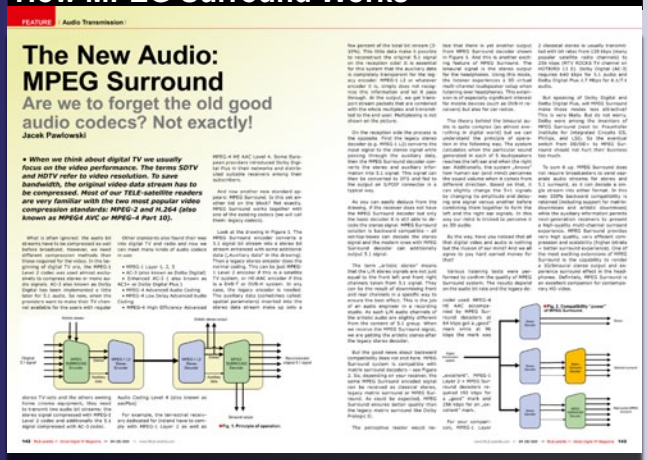
How MPEG Surround Works



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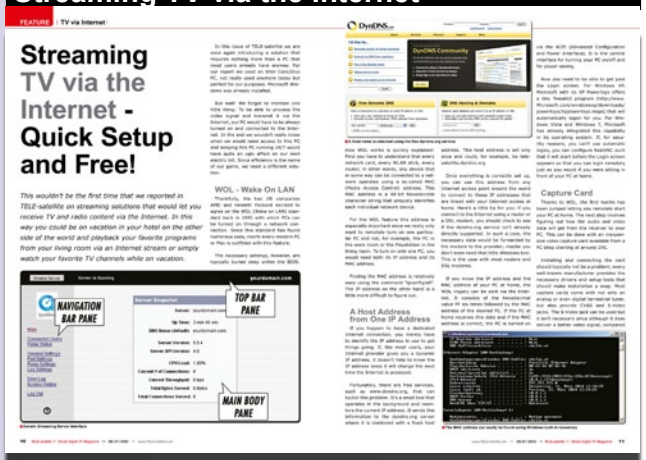
Streaming TV via the Internet



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Testing Horizon to Horizon Actuator

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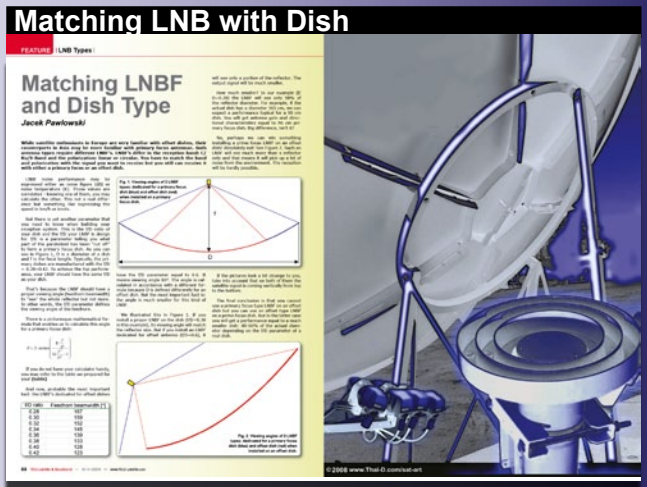
Matching LNB with Dish



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How SCR Works

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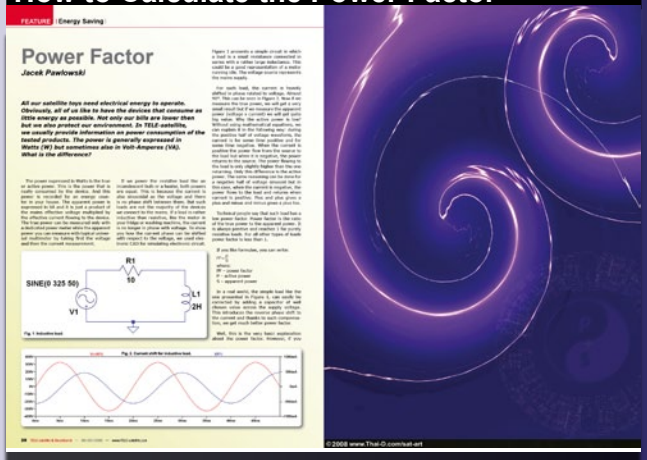
How to Calculate the Power Factor



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How Decoding Works

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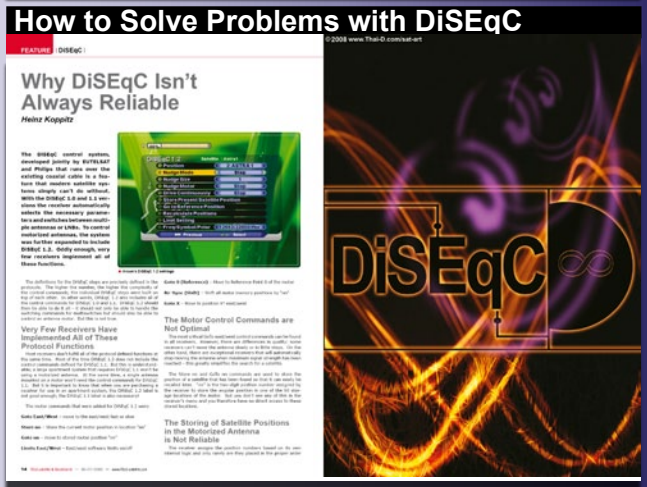
How to Solve Problems with DiSEqC



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How ABS-S Works

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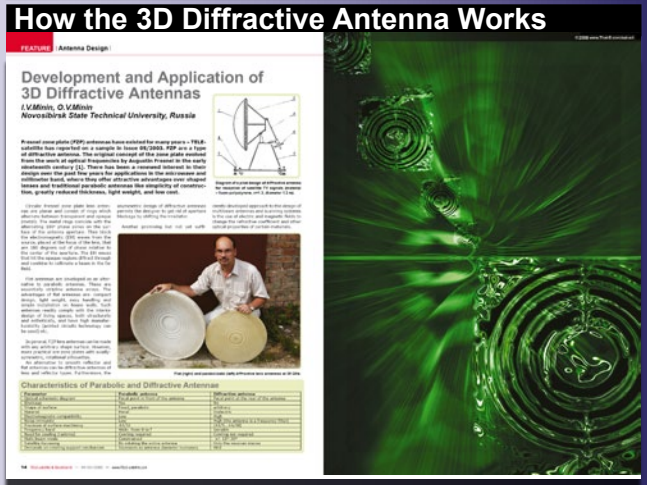
How the 3D Diffractive Antenna Works



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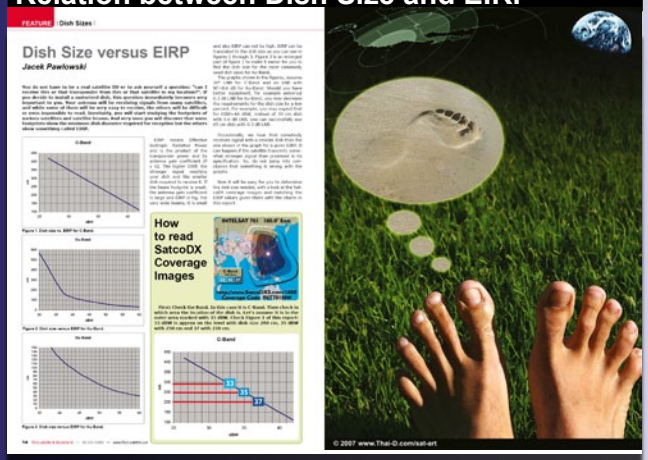
Relation between Dish Size and EIRP



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How MPEG Works

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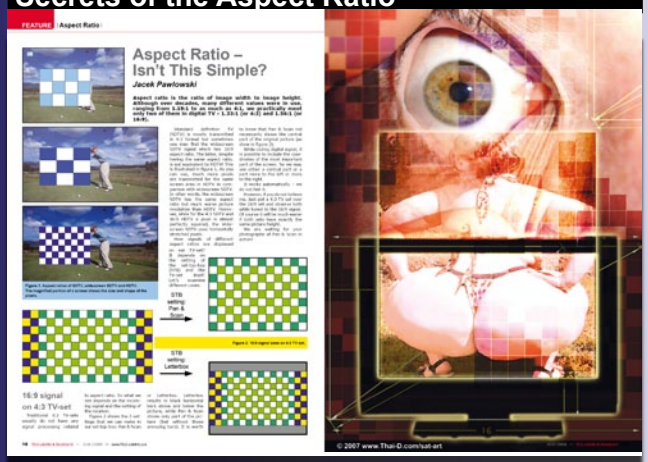
Secrets of the Aspect Ratio



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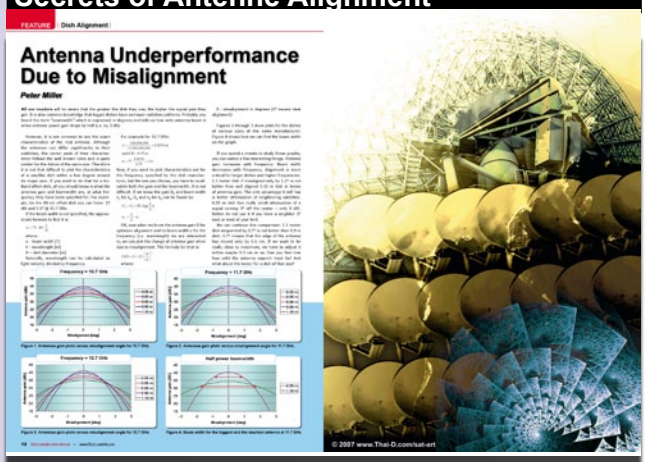
Secrets of Antenne Alignment



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How the Network Connection Works

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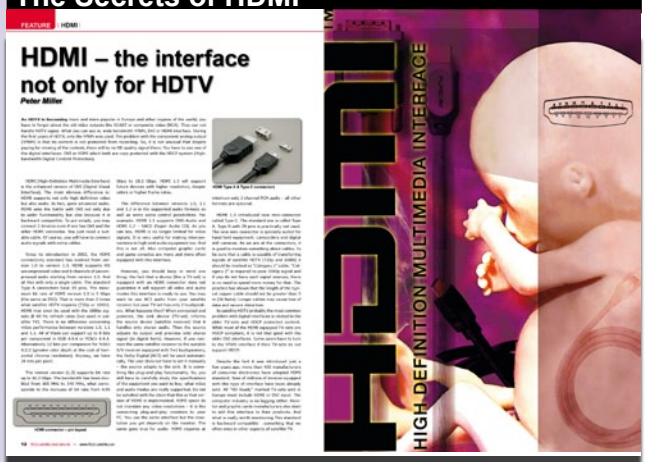
The Secrets of HDMI



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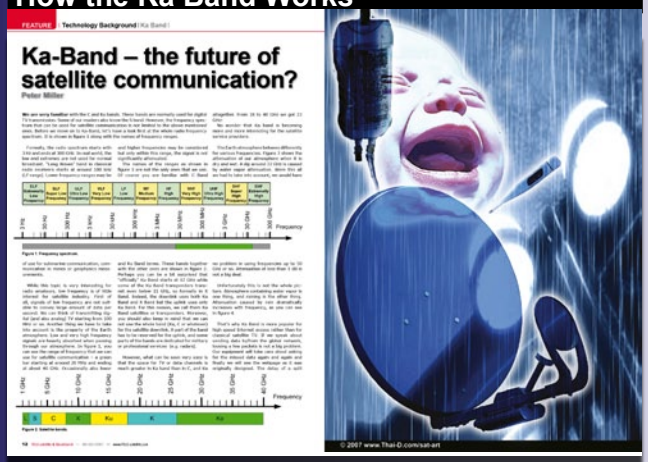
How the Ka Band Works



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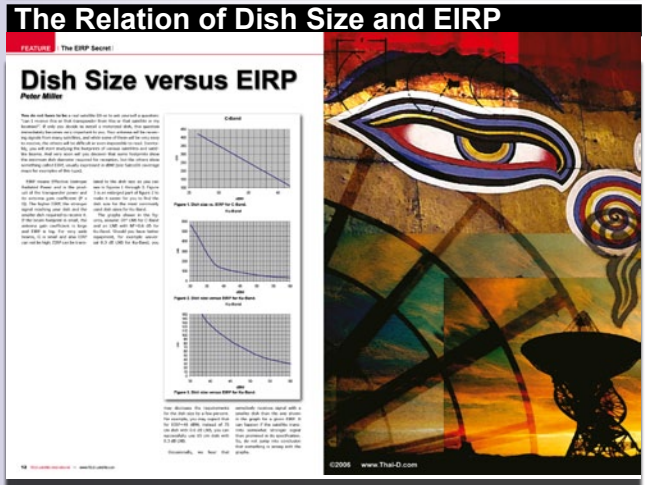
The Relation of Dish Size and EIRP



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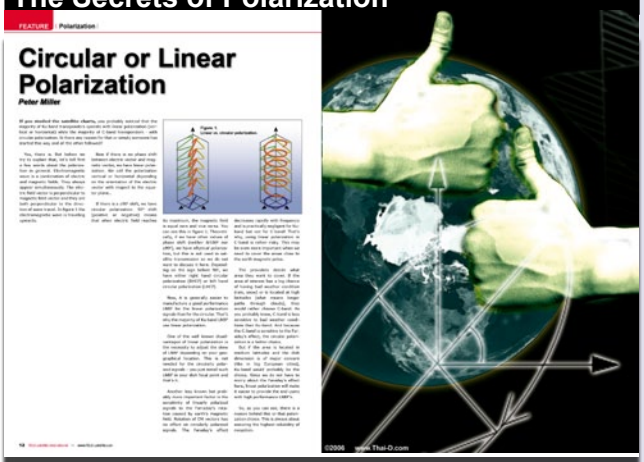
The Secrets of Polarization



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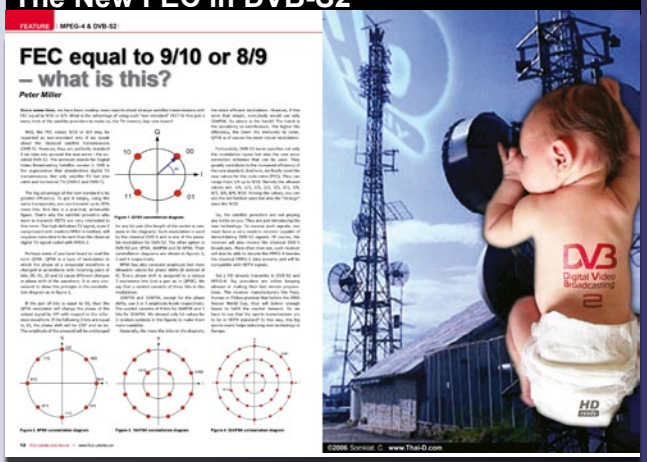
The New FEC in DVB-S2



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The Secrets of Intermodulation

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Horizon on the Way Up

■ Nine Horizon employees are currently working in the 'Allen House' in Harlow's business district. Production is actually outsourced to another company in England.

- ***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***

British Signal Analyzer Manufacturer with Numerous New Products

Paul Pickering founded the signal analyzer manufacturer Horizon back in 2001. In 2011 the company celebrated its 10-year anniversary and could be proud of the 125,000 satellite signal analyzers that they had sold thus far – see TELE-audiovision issue 10-11/2011. For the end of 2012 he is able to add another surprising figure: "By then we'll have sold 160,000 analyzers in every DVB sector." Horizon started as a manufacturer of satellite signal analyzers but over the past several years they've expanded into other sectors that now cover every other DVB frequency range.

Paul Hardcastle, who has been with Horizon for seven years and is now their Technical Director, explains to us more about their product palette. "We

Paul Pickering founded Horizon in 2001 and with enormous foresight has expanded Horizon's market niche: that would be very reliable and also easy-to-use signal analyzers for daily use by installers.

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1. Paul Hardcastle is Technical Director and developer of many of Horizon's new analyzers. He's been the technical heart of Horizon for seven years now.

2. Trevor Salter is Horizon's Service Manager and is primarily responsible for repairs and quality issues, as well as assisting customers with technical questions.

3. Technical Manager is Rob Sydee. Long-time readers will recognize him: he made it to the front cover of TELE-audiovision back in the 12-01/2007 issue. He's holding here one of Horizon's success models – the yellow color reveals that it's a satellite signal analyzer. He says, "All of our terrestrial DVB-T and DVB-T2 signal analyzers come in red housings, combo units come is green and DVB-C analyzers come in blue." The HD-TC8 (for tooway Turbo Internet-via-satelliteservices) is in a grey case.

4. Ivan Valbuena is the Senior Hardware Engineer. He checks the mechanical components of Horizon's analyzers and does a lot of the new hardware design, working with Paul Hardcastle on new products.

started with DVB-T a few years ago and since May 2012 we've also been offering signal analyzers for DVB-T2 – namely the HD-T2 series." But Horizon doesn't only have DVB-S2 and DVB-T2 products; they are currently preparing for the introduction of DVB-C signal analyzers: "That would be the HD-CM+ model for which we see the primary markets to be in South America, Canada, India and other Asian countries." DVB-C is very popular in the cable networks there and for the installers in those regions Horizon now has the right signal analyzer for them.

"We're also developing an extremely easy to use device for DVB-C, the Nano Cable, which should become available in the first quarter of 2013." The Nano Cable is Horizon's solution for those

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1. Gill Baker is Horizon's Office Manager. She lived for many years in Germany and surprises callers from German-speaking countries with her excellent German.

2.Admin Manager Susan Pickering is responsible for administration. She makes sure that all documentation is perfectly organized.

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installers who want it very easy and yet still want perfect measurements. A DVB-C2 device is also being developed. "Our HD-C2 model will make its appearance in the third quarter of 2013." Whether or not DVB-C2 will catch on remains to be seen, but Horizon is prepared if the installation of DVB-C2 networks picks up.

When it comes to DVB-S2 satellite reception, Horizon hasn't been idle there either. "Since June 2012 we've been offering the HD-S2 with an option for SCR." By the way, Horizon doesn't only have signal analyzers for the analysis of TV reception. Technical Director Paul Hardcastle highlights two unique devices: "The signal analyzer HD-TC8 has been available since 2009 and is designed to aid in the set up of the Internet-via-satellite service TOOway in the Ka-band."

This unit can also receive the Ku-band and therefore can also be used as a DVB-S signal analyzer. "Brand new is a signal analyzer for the Avanti Internet-via-satellite service that operates in DVB-S2 in the Ka-band. Switching polarizations here requires a tone generator that has been integrated into the HD-S2 Avanti signal analyzer."

So, what are the geographical target areas for Horizon? That's the right question to ask Horizon's founder and General Manager Paul Pickering. "40% of our products are exported to the USA. 10% are shipped to France and 5% to Germany." This involves mostly OEM products that are then redistributed in the respective countries exclusively under their own brand name. The remaining 45% of production is distributed under the Horizon name. "20% of our products remain here in the UK, 10% goes to South Africa and the rest of the 15% is divided between India, Australia and other countries."

The export to South Africa sounds interesting. "Right now we're delivering mostly DVB-S2 signal analyzers there", reveals Paul Pickering, "but we'll soon be expanding to include DVB-T2 analyzers as well." South Africa is actually a starting point for the further expansion into other African countries that have selected DVB-T2 as their terrestrial transmission standard. The future markets of importance have subsequently become clear: "We're expanding primarily in South America, Canada as well as South Africa."

Horizon has managed to create quite a niche for themselves in the difficult and hard-fought signal analyzer market: they are highly reliable and yet very affordable signal analyzers that are highly regarded by installers because of their ease-of-use.

And there are another two essential arguments in favor of Horizon signal analyzers that are particularly appreciated by the end users: on the one hand it's their extremely high reliability. Paul Hardcastle: "From over 160,000 units that have been delivered so far, only 6-7 units are returned to our repair shop every month." On the other hand it's the guarantee that older units can still be repaired. "We can still repair all the units that were manufactured since 2007." Those are arguments that installers love to hear in that they want to be able to rely on their instruments.

Horizon signal analyzers have become very popular with installers, and rightly so. The sales figures confirm to founder Paul Pickering that he is on the right path.

Psst, Paul Hardcastle turned his head for a moment and it gave us a chance to snap a picture of this test sample of the brand new HD-CM+ analyzer for DVB-C. It will become available soon.

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Stefaan Cornelis with one of SATSON's super products: a splitter that distributes HDMI signals to up to eight Ethernet cables.

The HDMI Professionals from SATSON

■ Didier Debey is happy: he conceived one of SATSON's success products – the Dual Viewer DSB-0200, a product for digital signage.

- ***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***

A look into SATSON's warehouse. Boxes of various HDMI products are stacked on top of each other.

The Ideal HD Solution for the Connection of Multiple TV Monitors to a Single Signal Source

The HDMI splitters can be cascaded together such that a maximum of 448 monitors can be connected. But these splitters are not just for professionals; more and more households have more than one HDTV monitor and use these splitters to connect them all via HDMI to a single receiver.

What's the future for digital TV? Is it with reception or with further distribution? For the Stefaan Cornelis/Didier Debey team the future lies clearly with the further distribution of HDMI signals. With their company SATSON, they have focused themselves in this area. Stefaan Cornelis is the head of the commercial division and Didier Debey is responsible for the technical development. We met up with both of these company heads in Halle, a city south of Brussels to find out more about SATSON.

The company has been around for some time already. TELE-satellite reported on this company back in the 04-05/2007 issue. Back then SATSON was involved primarily in receiver sales. Stefaan Cornelis explains to us, "I've been involved with satellite reception since 1992." In 2000 he founded SATSON together with his friend from school, Didier Debey, who studied electronics. Back then the company was called Sat & Sound. They successfully marketed satellite receivers along with the associated accessories.

When HDTV channels started appearing in 2005, they both recognized a new gap in the market: the distribution of HD signals in HDMI. As the years went by,

SATSON continued to focus more and more on HDMI so that Stefaan Cornelis can say today: "Our satellite products today make up only about 10% of our sales; our remaining sales are all HDMI products."

What does SATSON's product assortment look like? "We have products for the end user as well as for professional installations", we learn from Didier Debey, the man responsible for technical development and who just happens to have a wonderful example of a product that is only available from SATSON: "We developed the concept ourselves but actual production has been outsourced." It has to do with a video processor that can insert a secondary video source on top of a live video signal. "In this way, for example, a sports bar can show a live football match while at the same time adding their own ads or announcements." The DSB-0200 named device consists in principle of a video generator and an HDMI distributor that takes the combined picture and feeds it to multiple monitors in parallel. "Another application area could be hotels that, in addition to live TV, could blend in their own offerings or add advertisement pages for any operational purpose, that is, 'Digital Signage' at affordable prices."

Another product for use in professional applications is the HDMI splitter with Ethernet connection. Using a master device and as many as eight 8-way splitters, up to 448 (!) monitors could be connected in parallel with one HD signal. Didier Debey describes one of these applications: "Electronics stores that have many different TVs on display want to provide each TV with the same signal. We have the right splitter just for that purpose." Not only that: Stefaan Cornelis expands on this by highlighting that SATSON has already had great success with these HDMI splitters in Belgium: many of the country's top electronics supermarkets already use SATSON's products.

But SATSON believes that the future is not just in the professional sector. "The distribution of HDMI signals is becoming more and more important for private users as well; many private users don't have just one TV, they already have several scattered around the house." As long as the receiver and the TV are close enough together, a simple HDMI cable would be good enough. But as soon as some distance is introduced between the two devices, the problems begin to appear. "And we have two excellent solutions for this", reveals Stefaan Cornelis to us, "And the first would be HDMI via coaxial cable and the other is HDMI via Ethernet."

SATSON has numerous products for both methods. "Our best seller is this HDMI extender", says Stefaan Cornelis as he shows us two small boxes, "One is the transmitter and the other is the receiver. They can be used to span distances of up to 40 meters (about 130 feet) with either coaxial cable or with Ethernet." The great thing about this is the return-channel capability: "The remote control commands are routed back to the receiver via an IR return channel." Quite often there are two TV monitors connected to one receiver, for example, there might be one TV in the living room and the other in the bedroom. You can see where this is going: you're sitting in the evening in your living room watching TV. When you go to the bedroom, you simply take the remote control with you and continue to watch there what you were watching in the living room using the same receiver. Or, to put it another way, instead of having two separate receivers – one for each monitor, the HDMI extender lets you use just one receiver and its remote control. It's a very clever solution!

Before we finish here, we want to know where you can find SATSON products. "Distribution in Belgium and Switzerland has thus far been very successful and we're in the process of expanding distribution to other European countries." For dealers who, just like SATSON, see the distribution of HDMI signals as the future of digital TV, SATSON has the ideal products that are perfectly suited for this future. SATSON even has one more advantage: "We naturally repair all of our products ourselves", comments Didier Debey, who also happens to be in charge of repairs and technical service, "and we also provide extensive technical support such as the technical planning of larger projects." SATSON also provides technical training courses as well.

And this is how a small satellite company managed to convert themselves into a highly specialized distributor of HDMI distribution products of the future. Satellite professionals became HDMI professionals for the future of HDTV.

This is SATSON's absolute best seller: the HDMI extender kit with transmitter and receiver. It takes HDMI signals and distributes them via Ethernet. The same set is also available for signal distribution via coaxial cable.

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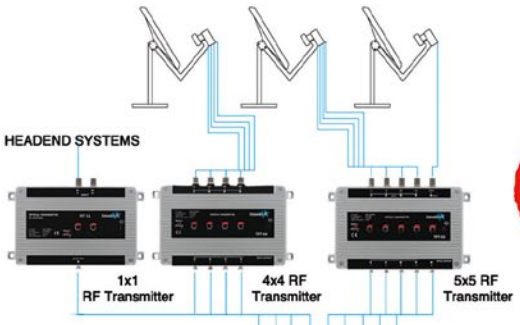

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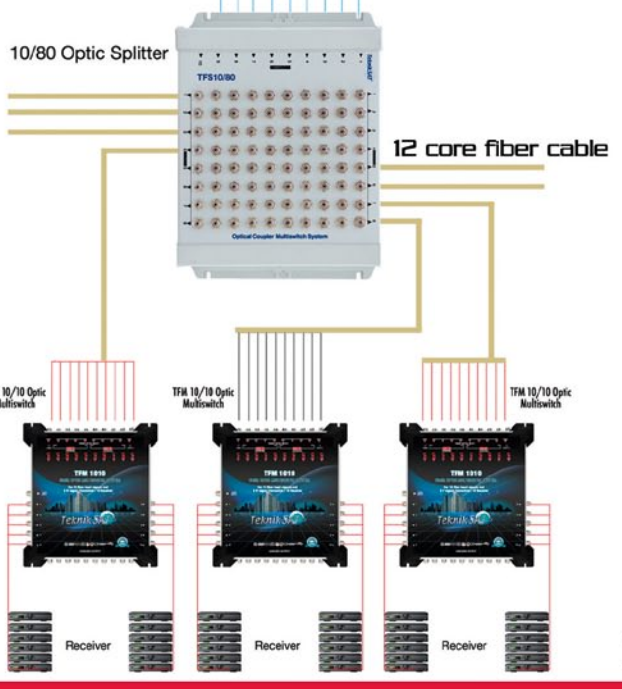

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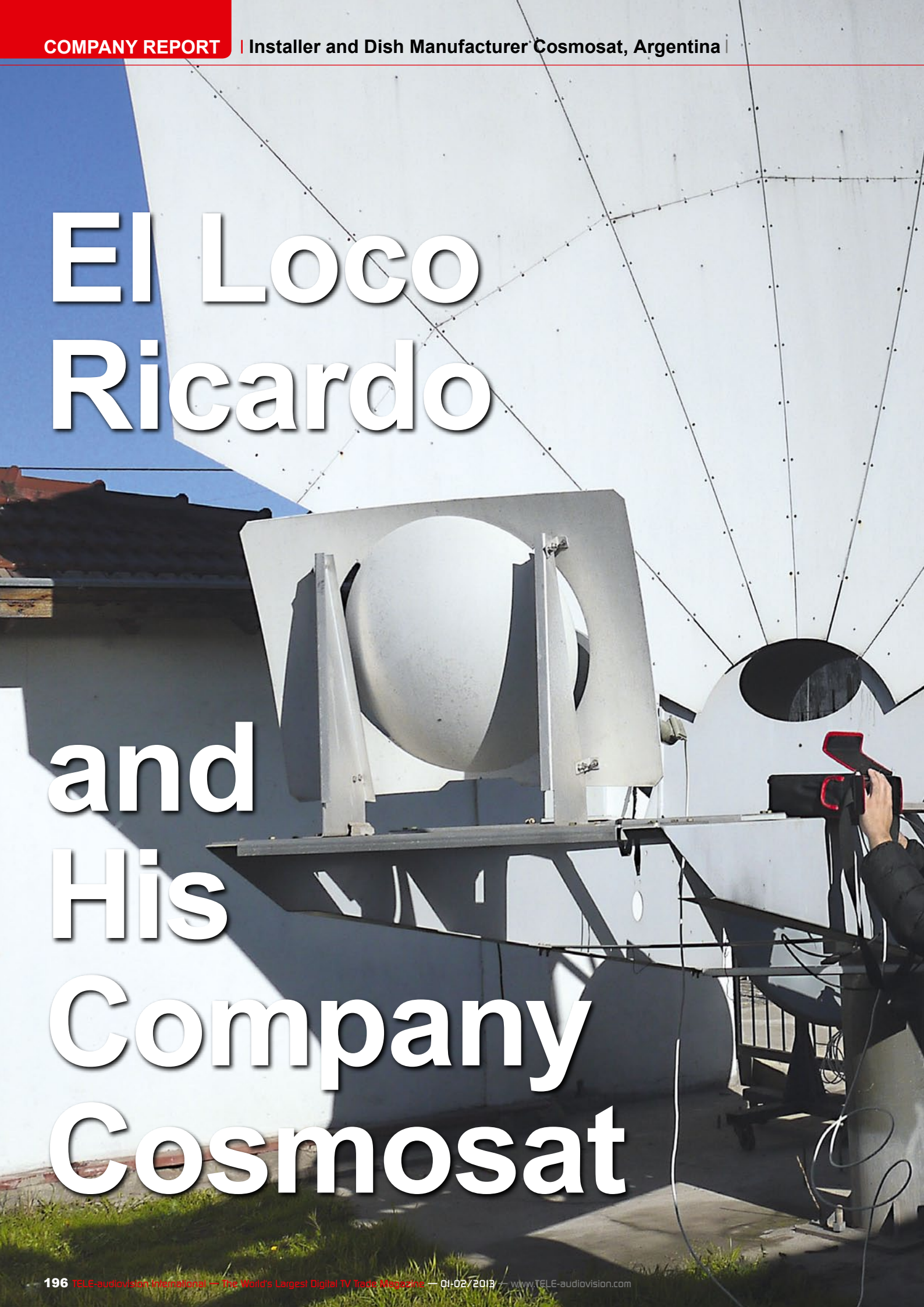

■ El Loco Ricardo in front of his 3.4-meter double reflector antenna.

- ***Learned everything about satellite reception on his own***
- ***Installs head end stations for cable operators as well as community systems***
- ***Planning his own dish production***
- ***Turned his hobby into his career***

From DXer to Dish Producer

Is this crazy or what? Ricardo has a professional 3.8-meter double-reflector dish installed in his yard and this includes a professionally cemented mounting platform. 'Crazy' in Spanish is 'Loco', hence his nickname "El Loco Ricardo", and naturally this giant 3.8-meter dish isn't his only antenna: he has a total of 11 antennas scattered around his property and on top of that there's an uncountable number of other unconnected dishes of all different

■ **Ricardo and extreme reception. He's pointing the dish to EUTELSAT at 10°W. "I might be the only one that can receive this satellite here in Argentina."**

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■ **Ricardo is using his hand to align to the right position. “Reception range spans from 116W to 10E”, comments Ricardo.**

■Ricardo in his reception shack.

sizes. Obviously, Ricardo isn't crazy but he succeeded in converting his hobby into his career. He has been living and working in Itzuzaingo, a suburb west of Buenos Aires, since 2001. He explains to us how it all started: "I was 12 years old when my father moved to Colon in the Entre Rios province." That was in 1977 and there was no TV reception there at all. So, what does an ambitious teenager do in a case like that? It's simple: he builds and builds as long as needed until he's able to receive TV from Rosario 300 km (190 miles) away. And the rest is history.

Young Ricardo was infested with DX reception and started playing around with other frequency ranges. "Back then via shortwave I could hear every receivable station from around the world and I collected QSL cards from those stations." When satellite channels started beaming down from the sky, Ricardo was one of the first in Argentina to try this new technology. He remembers: "I built my first satellite dish in 1985." He needed almost a full year to build a 2.5-meter dish but the thrill of receiving that first TV channel was even greater. He still remembers today what

■One of the standard homes as seen from the outside. Only if you look really close can you see the antenna hidden in the garden.

1

1. Ricardo still has his first analog receiver stored in his shack: it's a model from DX Antenna that he used to receive his first TV channel back in 1985.

2. Ricardo even has a bending machine in his workshop that he uses to bend mounts and attachments for dishes.

3. Ricardo's homemade device for the reception of circularly polarized C-band signals.

4. In Cosmosat's warehouse: Ricardo is very happy with the AZURESHINE dishes that he resells and also uses at his cable operator installations.

5. Also homemade: a Ku-band feedhorn.

3

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4

those first TV channels were: "It was the cable TV channel VCC and its competitor CV. It was also the state-run Canal 7 and the just-started private TV channel Canal 9." These four channels were on the INTELSAT V-F13 satellite. "I could also receive the channels on BRASILSAT A1 and GORIZONT."

It didn't take long for him to realize that his 2.5-meter dish was too small for the C-band and in 1987 he was able to acquire a 3.4-meter antenna. The following year 1988 he began working for a living and started as a technician at a TV broadcaster. He soon realized that his fellow technicians and engineers were quite familiar with the theory but didn't have all that much practical experience with reception. Ricardo on the other hand was always testing dishes and LNBs and knew exactly what size dish and what type of LNB was needed to receive a particular satellite.

After installing satellite systems in his free time for years, he finally de-

cided in 2004 to become independent: "I founded my own company Cosmosat (www.cosmosat-digital.com.ar). He focuses on installations, mostly for cable operators, and also on the installation of cable head ends and community systems. "In my first year I installed around 50 dishes, today it's more than 200 a year." In 2008 he expanded his activities to include the sale of components. "Some of these products I get from wholesalers and the others I import myself." Far more interesting are his own creations. He shows us a Ku-band feed: "I designed this myself and have it manufactured here locally." Another highlight of his handiwork is a C-band conduit for the reception of circular signals: "A friend of mine makes these for me here."

And it gets even more interesting: "I'm currently in the process of setting up a satellite dish fabrication plant." The casting molds are already finished: "Right now I'm still experimenting with the right dish material." Ricardo wants to start with the production of 1.5-meter dishes; larger sizes would come later. For his initial target market Ricardo is first looking at his home market in Argentina, "maybe later on I'll consider exporting."

Ricardo has the know-how when it comes to how satellite dishes function and he knows best what size satellite dish is needed for a particular satellite. It's valuable experience that will certainly help him market his dish production. Maybe 'crazy' Ricardo will soon become 'dish' Ricardo instead.

1. In a metal workshop of a friend Ricardo has a model of a panel that he had them build for him. He wants to start his own dish production here soon.

2. Ricardo's yard is a treasure chest for old dishes and components. To the left is a professional rectangular antenna and to the right old framework for a 3.4-meter dish. "Over here I still have old framework for a 4.7-meter antenna." In front of Ricardo's feet sits an unusual microwave antenna with various reflectors and an interference radiation grid. Ricardo loves exotic antenna shapes like these.

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SKY

■A look at some of Ricardo's dishes. On the roof of his house you'll find a 1.0-meter dish for TELSTAR 12, a 60cm antenna for GALAXY 28, an 80cm antenna for HISPASAT, a 1.5-meter reflector for AMC6 and a 100cm antenna for the AMAZONAS. An additional 1.8-meter motorized dish sits on top of his reception shack. "A total of 11 dishes are mounted here and in operation."

WORLD

of Digital TV Com

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Note: some companies may be out of business due to the fast changes in digital tv trade. We suggest to

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	Company	Country	City	Main Personalities
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	ABCOM	Slovakia	Topolcany	Juraj Masaryk
	ABCOM	Slovakia	Topolcany	Juraj Masaryk
TELE audiovision Recommended	**ALUOSAT**	**China**	**Shenzhen**	**Luo Shigang**
TELE audiovision Recommended	**AMIKO**	**Hungary**	**Budapest**	**József Zsimán, Zsolt Harangi**
TELE audiovision Recommended	**ANTIFERENCE**	**UK**	**Lichfield**	**Trevor Paintain**
	ABIPBOX	Slovakia	Topolcany	Juraj Masaryk
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	ARION	Korea	Seoul	Jason Lee
	ARION	Korea	Seoul	Sam Chang
TELE audiovision Recommended	**AZURESHINE**	**Taiwan**	**Taoyuan**	**Allen Shen**
TELE audiovision Recommended	**BOIINGSAT**	**China**	**Zhuhai**	**Haowen Chiang, Jason Chiang**
	BOMARE	Algeria	Algiers	Ali Boumediene
	BOXSAM	China	Jinhua	Xiaofeng Huang, Jeffrey Zhao
TELE audiovision Recommended	**BSD**	**Brazil**	**Jundiai**	**Marcos Bernardini (Benni)**
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	DMS	USA	Atlanta	Tim Heinrichs
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	FORTECSTAR	Canada	Toronto	David McGrath
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TELE audiovision Recommended	**GLOBALSAT**	**China**	**Zhuhai**	**Mike Miao, Alvin Sun, Josie Yang**
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TELE audiovision Recommended	**GOOSAT**	**China**	**Zhuhai**	**Mike Miao, Alvin Sun, Josie Yang**

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o cooperate with those companies marked „recommended“ in last column of list.

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HORIZON	**UK**	**Harlow**	**Paul Pickering, John McLoone**
HORIZON	**UK**	**Harlow**	**Paul Pickering**
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INFOSAT	Thailand	Bangkok	Jiraporn Tangpiroontham
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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**
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NETUP	Russia	Moscow	Abylay Ospan, Evgeniy Makeev, Konstantin Emelyanov
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PROMAX	Spain	Barcelona	José-Maria Clotet
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SATELLITEGUYS	**USA**	**Hartford**	**Scott Greczkowski**
SATSOUNDS	**Belgium**	**Brussels**	**Stefaan Cornelis**
SATSON	**Belgium**	**Brussels**	**Stefaan Cornelis, Didier Debey**
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SEATEL	USA	Concord	Lorna Brady Glover
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SONICVIEW	USA	Oceanside	Steve Falvey
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SVEC	China	Chengdu	Wang Duo, Becky, Belinda
SVEC	China	Chengdu	Wang Duo, Becky, Belinda
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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
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USATEL	Brazil	Sao Paulo	Jose Manuel Pereira, Allam Almughrabi
WORLDWIDE SATEL.	Netherlands	Purmerend	Dennis and Rob van Leeuwen
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Boiingsat China

www.boiingsat.com

LNB Manufacturer

Turnover
US$ 10-25mio

Employees
100-250

Read Full Report

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*

www.TELE-audiovision.com/11/05/boiingsat

TELE audiovision Recommended

BSD Brazil

www.portalbsd.com.br

Digital TV Information Website

Turnover
US$ 0.5-1mio

Employees
5-10

Read Full Report

COMPANY REPORT | Satellite Information Website BSD, Brazil |

Benni's BSD

- *Operates Brazil's largest digital TV website*
- *Engaged in the further education of digital TV antenna installers*
- *Planning his own IPTV channel all about digital technology*
- *Living his dream with his own worldwide radio station*

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

Deviser China

www.devisertek.com

Manufacturer of Signal Analyzers and Broadcast Measurement Instruments

Turnover
US$ 25-30mio

Employees
250-500

Read Full Report

www.TELE-audiovision.com/11/07/deviser

Dishpointer UK

www.dishpointer.com

Information Website and Software Programming

Turnover
US$ 0.5-1mio

Employees
5-10

Read Full Report

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

DVBCN China

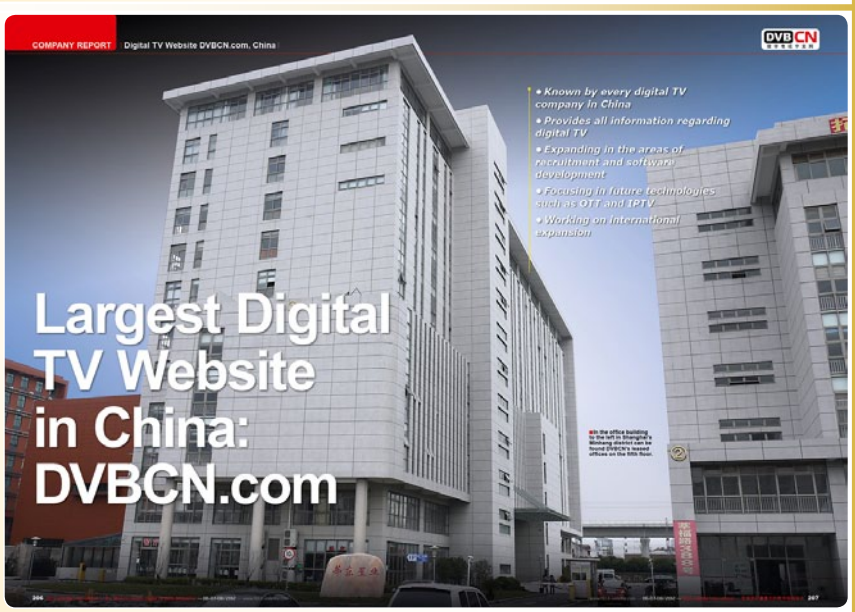
www.dvbcn.com

Digital TV Forum Website and Software Programming

Turnover
US$ 1-2.5mio

Employees
10-25

Read Full Report



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

GlobalInvacom UK

www.globalinvacom.com

Manufacturer of Fibre Optic Products

Turnover
US$ 5-10mio

Employees
50-100

Read Full Report

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

Read Full Report

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

GOOSAT China

www.goosat.com

High Quantity Manufacturer

Turnover
US$ 100-150mio

Employees
500-1000

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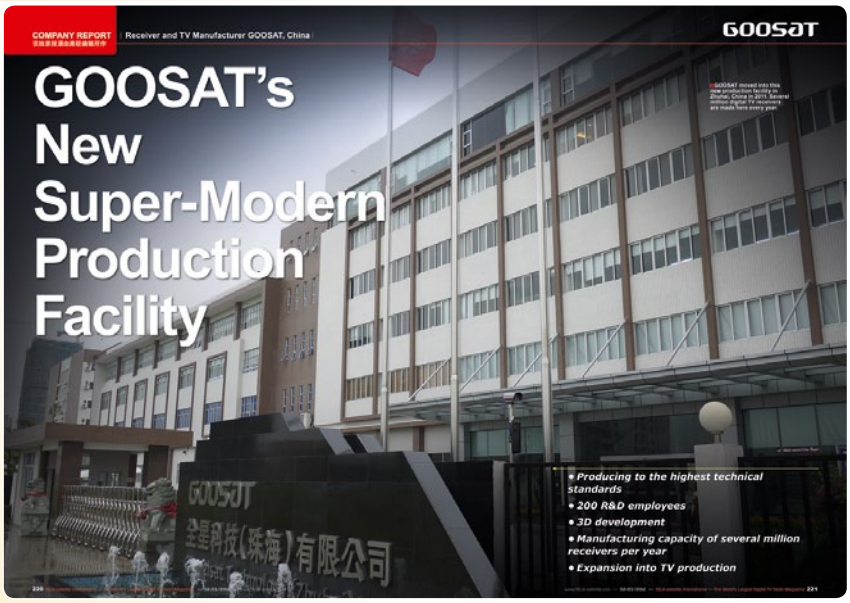

www.TELE-audiovision.com/12/07/goosat

Horizon UK

www.horizonhge.com

Manufacturer of Signal Meters

Turnover
US$ 2-5mio

Employees
10-50

Read Full Report

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

Jiuzhou China

www.jiuzhou.com.cn

Manufacturer of STB, IPTV, LNB, Fibre Optics

Turnover
US$250-500mio

Employees
1000-2500

Read Full Report

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

MFC USA

www.microwavefilter.com

HF Filter Manufacturer

Turnover
US$2.5-5mio

Employees
50-100

Read Full Report

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

Panodic China

www.panodic.com

STB Manufacturer

Turnover
US$ 100-150mio

Employees
1500-2000

Read Full Report **www.TELE-audiovision.com/12/03/panodic**

Satbeams Belgium

www.satbeams.com

Satellite Information Website and Software Programming

Turnover
US$ 0.5-1mio

Employees
2-5

Read Full Report **www.TELE-audiovision.com/10/11/satbeams**

Satson Belgium

www.satson.com

Sepcial Product for HDMI Distribution

Turnover
US$ 0.5-1mio

Employees
2-5

Read Full Report **www.TELE-audiovision.com/13/01/satson**

TELE audiovision Recommended

SatGuys USA

www.satelliteguys.com

Satellite Information Website and Forum

Turnover
US$ 0.5-1mio

Employees
5-10

Read Full Report **www.TELE-audiovision.com/12/05/satguys**

TELE audiovision Recommended

QM Qualified

Skyworth China

www.skyworth.com

High Quantity STB Manufacturer

Turnover
US$ 200-300mio

Employees
2000-3000

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

TELE audiovision Recommended

QM Qualified

SmartWi Denmark

www.smartwi.net

Manufacturer of Wireless Card Reader

Turnover
US$ 1-2mio

Employees
5-10

Read Full Report **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 **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 **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 **www.TELE-audiovision.com/10/11/spaun**

Topsignal China

www.topsignalsat.com

Satellite Dish Mass Manufacturer

Turnover
US$ 10-25mio

Employees
250-500

Read Full Report

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

Tenow China

www.tenower.com

PC Card Manufacturer

Turnover
US$ 2-5mio

Employees
10-25

Read Full Report

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

TSReader USA

www.coolstf.com

Analyzer Software and Programming

Turnover
US$ 0.5-1mio

Employees
1-5

Read Full Report

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

KartinaTV

Russian-language TV for the World

■KartinaTV has its offices in this modern office building in Wiesbaden, Germany. A total of 33 employees work here and, of those, 10 are in engineering. In an out-sourced call center a total of 60 Russian-language customer service agents work 24 hours a day to take care of subscribers from all over the world.

- *Worldwide distribution via the Internet*
- *Offers 150 TV channels in Russian with some in HD and 3D*
- *Applications for all common operating systems*
- *Integrated in Fulan's Spark software*

IPTV in Russian

Dimitri Dietrich is CTO and founder of KartinaTV: he came up with the idea to start an IPTV provider for Russian-language TV channels and worked on developing the necessary technolgy for that purpose.

When the company Fulan, creator of the Spark software, integrated an application for KartinaTV into their software, we reported on this programming provider – see the 04-05/2012 issue of TELE-audiovision.

Now we decided it was time to learn more about who's behind this company by paying them a visit. Oddly enough, we didn't have to travel to Russia to find them; we went around the corner to Wiesbaden, Germany. This is where KartinaTV's headquarters are located and it's also where we met up with the founder of KartinaTV, Dimitri Dietrich.

Dimitri is originally from Russia. "In 1996 I followed my parents from Russia to Germany." He studied at the technical university in Wiesbaden and while on a summer vacation in Croatia in 2007 he was surprised by the guest house owner's satellite system that was used to receive Russian-language TV channels. Dimitri's wife really liked this and convinced her husband to figure out a way to receive the same large assortment of Russian-language TV channels at home in Wiesbaden. "My wife was actually the driving force behind KartinaTV", remembers Dimitri. "My thesis at the university was all about codecs and Internet protocols; I began to set up a business plan."

Dimitri soon found an investor and in October of 2007 the company Kartina Digital GmbH was founded. On April 1, 2008, KartinaTV went on the air. Dimitri Dietrich, who today is the CTO (Chief Technical Officer) of Karti-

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naTV, explains to us how it all works: "We get the programming out of Russia from IPTV service provider World Stream. The signals find their way to Wiesbaden via fiber optic cable. We then distribute these signals to a total of six servers." Two of these servers are in Europe, two in North America, one in Hong Kong for the Asian market and another in Israel for the Middle Eastern market.

As you can see, KartinaTV is established around the world which clearly highlights the fact that the target group, Russian-language TV viewers, are all over the world. But there are those countries that have a greater focus. Maxim Wilhelm, KartinaTV's Executive Manager, tells us more: "58% of our subscribers are here in Germany, after that it's the USA with 9%, Israel with 5%, Great Britain with 4%, Finland with 3% and Ireland with also 3%." A comparatively large number of viewers can be found in Japan: "1% of

TELE-audiovision previously reported on the KartinaTV application in Fulan's Spark software in the 04-05/2012 issue.
www.TELE-audiovision.com/12/05/spark-Kartina.TV.pdf

Vladimir Martinowitsch, European Sales Manager (left) and Maxim Wilhelm, Executive Manager (right), in front of a monitor showing KartinaTV's menu.

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■ KartinaTV has marked the locations on this map of the USA where local dealers offer KartinaTV subscriptions and also where most of the subscribers can be found. It's for this reason that KartinaTV offers two streaming servers in the USA: one on the west coast and the other on the east coast.

■ Newly available from KartinaTV: this IPTV box.

our subscribers are there."

Maxim Wilhelm explains to us how the system works: "Viewers get in touch with one of our over 1000 dealers in 108 countries around the world. From there they can take out a yearly subscription after which they'll receive an access code for KartinaTV." More than 80% of their subscribers opt for the IPTV box offered by KartinaTV. The newest model even has a built-in hard drive so that viewers can record TV channels (PVR). But it's not necessary to have an IPTV box: "Our programming can also be viewed on an iPad if you download the proper application. You can also view it on a laptop." And, of course, as mentioned before, it also works with the Spark software's KartinaTV application. KartinaTV can also be loaded on SmartPhones. KartinaTV even has the corresponding applications for Android on its website (www.kartinatv.com).

All TV channels offered by KartinaTV are Russian-speaking. "We currently offer roughly 150 TV channels as well as 16 radio channels", we learn from Vladimir Martinowitsch, European Sales Manager. Not every TV channel originates in Russia. "We also have channels from the Ukraine, Moldavia, Azerbaijan, The Czech Republic, Tatarstan and Kazakhstan." KartinaTV has had several channels available in HD since January 2011 and even some 3D channels since June 2011. "We really have no influence when it comes to HD and 3D channels since this is decided by the TV channels themselves", adds Vladimir Martinwitsch.

By concentrating on the target group of Russian-speaking viewers, KartinaTV has consistently been increasing their number of subscribers.

KartinaTV's potential covers the entire world thanks to IPTV and because of consistently increasing bandwidths, more and more customers can enjoy these channels in top-notch quality. Dissemination via the Internet is thereby gaining more and more importance.

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See the Video

See DishPointer AR in action on YouTube!

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

References

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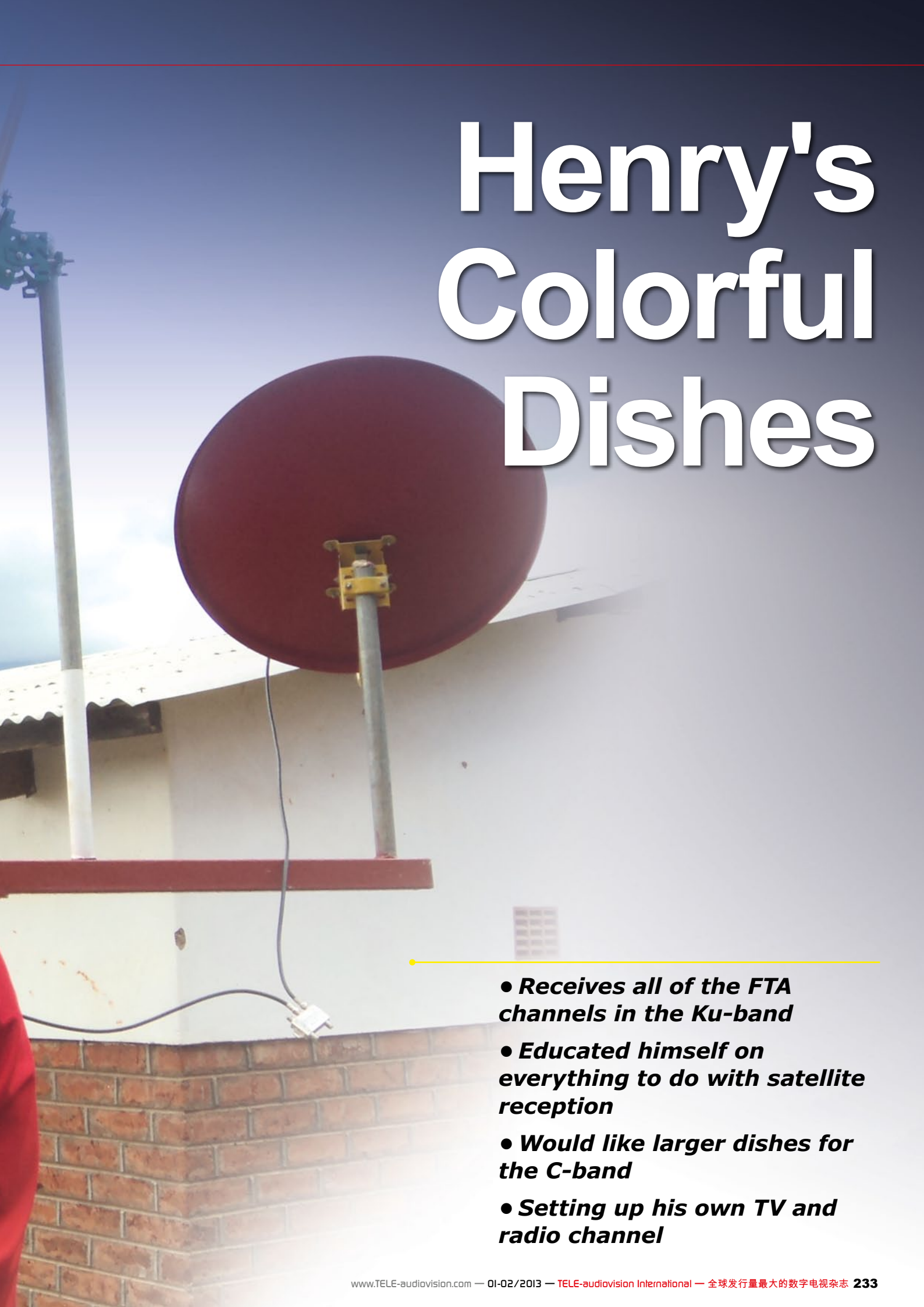
info@dishpointer.com

■ Henry Kapitapita is a satellite DXer in Malawi in southeastern Africa

Henry's Colorful Dishes



- ***Receives all of the FTA channels in the Ku-band***
- ***Educated himself on everything to do with satellite reception***
- ***Would like larger dishes for the C-band***
- ***Setting up his own TV and radio channel***

Satellite DXer in the Warm Heart of Africa

Henry Kapitapita has been a satellite DXer since 2002. His home is located in the city of Zomba in Malawi's southern region in southeastern Africa. The country's slogan is "From the Warm Heart of Africa". Malawi has roughly 14 million inhabitants and is surrounded by Zambia, Mozambique and Tanzania. Henry describes to us the first satellite he received. "That was the PAS 7/10 satellite at 68.5 east which today is called INTELSAT 7/10."

Henry was always interested in TV reception and when he found out that

■Henry adjusting one of his satellite dishes

you could receive TV channels from a distance of 36,000 km (22,300 miles), he simply couldn't resist. "I'm very handy and extremely interested in technology", explains Henry who for many years worked as the IT Manager at the Chancellor College of the University of Malawi. Today he runs his own company: Ashley Media. "We specialize in multimedia production such as radio and TV documentaries, programs and advertisement. We are also involved in the organization of digital libraries. We scan documents, books as well as audio and picture data for the Internet and also for the Archives."

Henry bought all of the components

■ **Henry installing a new LNB**

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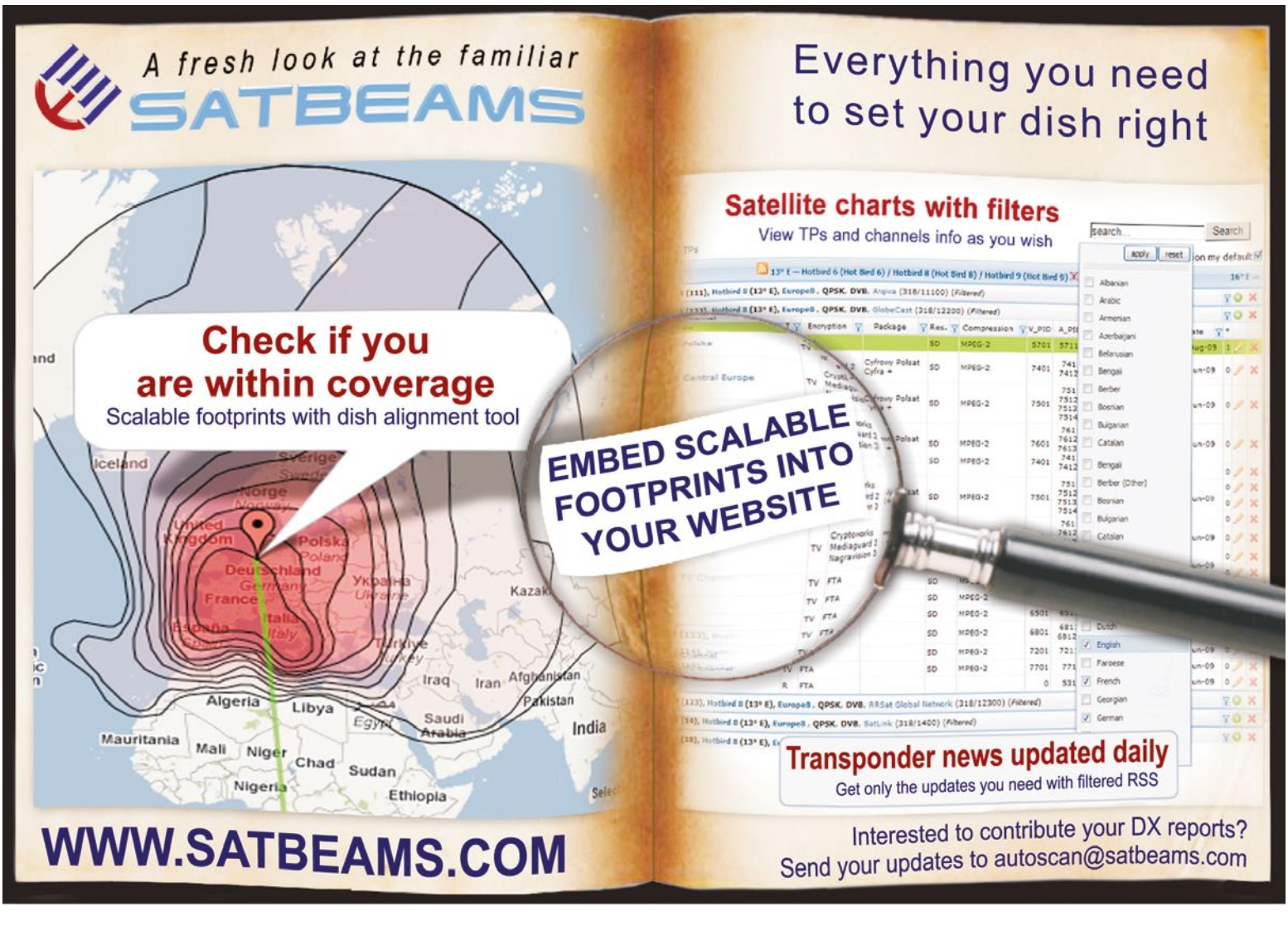

for his satellite system from local dealers in the neighboring larger city of Blantyre in southern Malawi.

"I'm always turning my dishes to receive other satellites. At the moment my white dish is pointed to EUTELSAT W4 from which I can receive the Afro Music Channel and the MGM Channel. The yellow dish is aligned with NSS5 and lets me receive Malawi's local public TV channel: MBC TV. The red dish is pointed to INTELSAT 7/10 at 68.5 east. From this satellite I can receive the South African channels SABC 1, 2, 3 God Channel and a number of other FTA channels."

Henry uses three satellite receivers. "My favorite channels are the SABC channels and also CCTV News and EBRU TV from EUTELSAT W4." Naturally, Henry would like to install more satellite antennas with larger diameters. "I would love to be able to receive the C-band but larger dishes are hard to come by here." Henry is already planning for the future: "As soon as licenses become available, I want to be able to redistribute these TV channels." He is also planning to become a programming provider himself: "I'm getting ready to start my own TV and radio channels: Youth Broadcasting Station (Youth TV and Youth FM). I have nearly the complete studio and transmission equipment ready to go; the only thing missing is the official broadcasting license."

Until that time comes, Henry keeps himself happy with his colorful dishes and the experience that he has thus far gained: "I can find any satellite within two minutes."

Satellite DXer Henry Kapitapita in his shack. He uses three satellite receivers.

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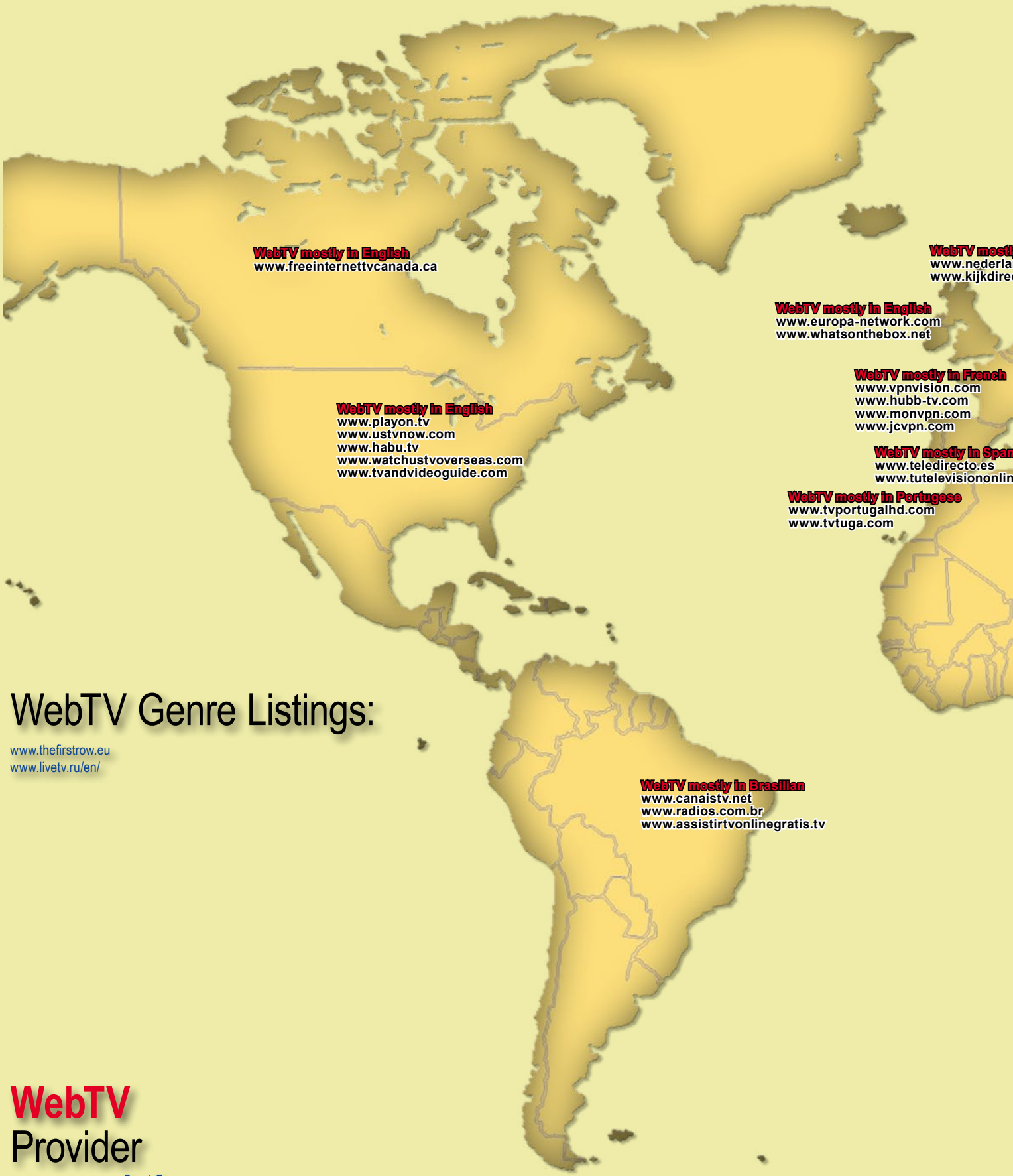

WebTV Genre Listings:

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www.livetv.ru/en/

WebTV Provider around the WORLD

WebTV Channel Listings:

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www.wwitv.com
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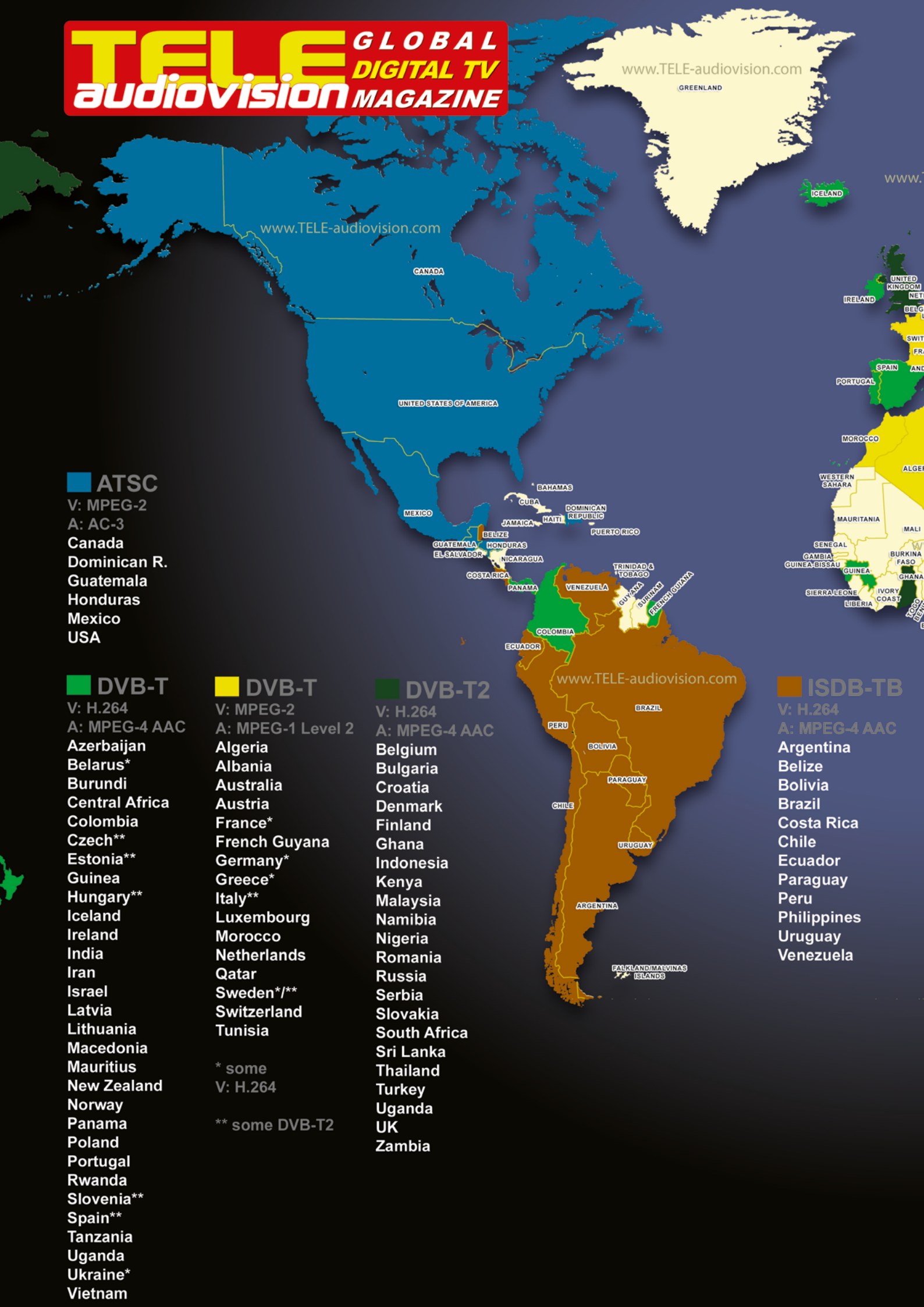

ATSC
V: MPEG-2
A: AC-3

Canada
Dominican R.
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DVB-T
V: H.264
A: MPEG-4 AAC

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DVB-T
V: MPEG-2
A: MPEG-1 Level 2

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Germany*
Greece*
Italy**
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Morocco
Netherlands
Qatar
Sweden*/**
Switzerland
Tunisia

* some
V: H.264

** some DVB-T2

DVB-T2
V: H.264
A: MPEG-4 AAC

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ISDB-TB
V: H.264
A: MPEG-4 AAC

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Uruguay
Venezuela

Digital Terrestrial Television of the World

Dominant System per Country

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

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

* some
V: MPEG2

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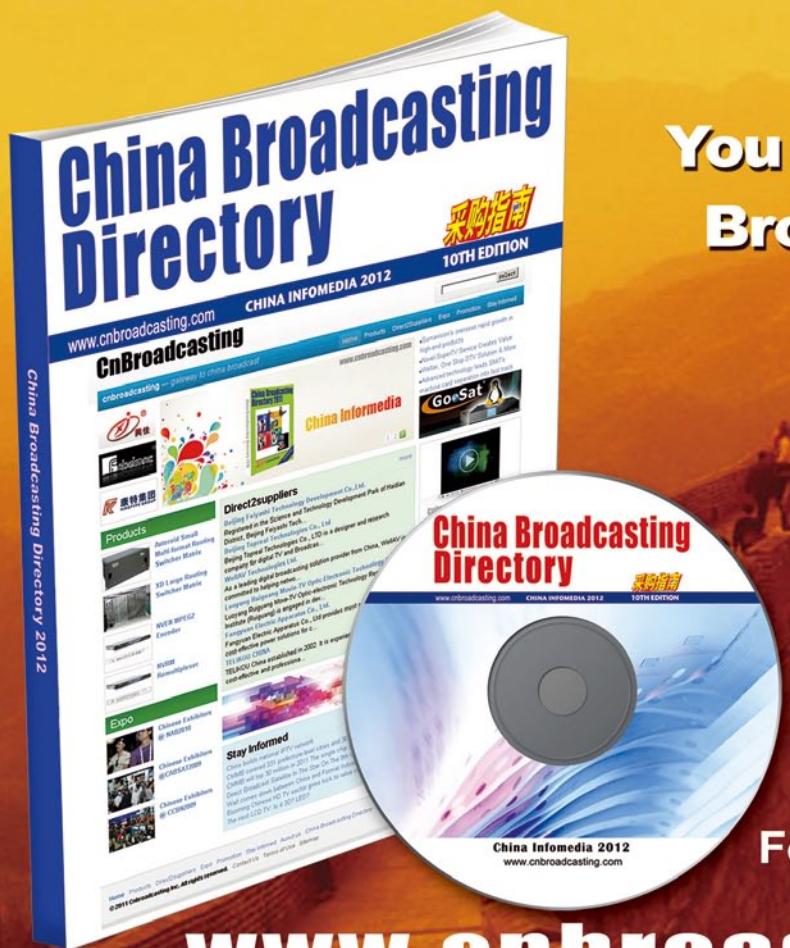

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30 Years Ago

Satellite News 1983

German PTT started to plan for a German satellite system, called "Deutsches Fernmedesatellite System DFSS".

Brazil plans to start two satellite in 1985. The TV transponders are only planned for point-to-point transmissions to facilitate better new coverage.

The Indian satellite INSAT 1A stopped working after only 6 months in orbit. Preparations for INSAT 1B has been stalled.

Italy schedules its own DTH satellite for 1986, transmitting one channel in Italian language and one international channel.

Luxemburg's project LUX-Sat continues its planning, despite numerous financial hurdles.

Sweden's TELE-X satellite, to be positioned on 5East, will carry 5 channels, two for data transmissions and 3 for DTH. At the same time the scandinavian project Nord-Sat has been given up.

Sat-TV aktuell

Redaktion:
Rainer Bärmann * c/o TELE-audiovision * Postfach 801965 * D-8000 München 80

BUNDESREPUBLIK DEUTSCHLAND

Ab Frühjahr 1983 wird beim Bundesministerium für das Post- und Fernmeldewesen eine Projektleitung "Deutsches Fernmeldesatelliten System (DFSS)" eingerichtet werden. Für die technische Seite des Projekts werden beim FTZ in Darmstadt 25 Dienstposten ausgeschrieben. Näheres kann aus dem Amtsblatt 5 vom 6.1.83 entnommen werden.

BRASILIEN

Brasilien will ab 1985 zwei Telefon- und Fernsehsatelliten in Betrieb nehmen. Die TV-Transponder werden vermutlich nur für Punkt-zu-Punkt Verbindungen genutzt, um dem flächengrößten Land Südamerikas eine aktuellere Berichterstattung zu ermöglichen. Für TV-Direktempfang besteht in diesem Land noch kein Bedarf, da terrestrische Frequenzen im UHF-Bereich noch nicht ausgeschöpft sind.

INDIEN

Der indische Fernsehsatellit 'Insat 1A' funktionierte nur sechs Monate: Anfang September trat durch ein nicht mehr schließendes Sicherheitsventil der gesamte Brennstoffvorrat aus und der Satellit 'hauchte' sein ursprünglich auf 7 Jahre geplantes 'Leben' aus. Die Vorbereitungen für 'Insat 1B', der im Juli d.J. gestartet werden sollte, sind zunächst eingestellt.

ITALIEN

Der für Februar 1986 geplante Direktempfangssatellit für Italien soll von der RAI betrieben werden. Die beiden Sendekanäle sollen ein Italien- und ein Europa-Programm ausstrahlen und mit entsprechendem Aufwand auch im deutschsprachigen Raum zu empfangen sein.

LUXEMBURG

Trotz großer finanzieller Probleme zur Durchführung des 'LUX-Sat'-Projekts werden die Absichten zur Gestaltung des abzustrahlenden Programms dennoch immer klarer. Wenn es soweit überhaupt kommt, so sollen je ein Kanal in deutscher, einer in französischer und einer in englischer und flämischer Sprache senden. Je ein weiterer Kanal wird für einen Teletext-Dienst, ähnlich Videotext, und einem Radioprogramm rund um die Uhr verwendet werden.

SCHWEDEN

Der für den geostationären Parkplatz 5 Grad Ost vorgesehene "Tele-X"-Satellit wird von der Eurosatellit GmbH gebaut werden. Neben anderen europäischen Firmen sind beim Bau AEG-Telefunken und der Super-Riese Thomson-CSF beteiligt. Der von der Trägerrakete Ariane-III zu transportierende Satellitensender soll eine Bandbreite für 5 TV-Kanäle haben, von denen zwei zur Datenübertragung verwendet werden. Die drei DBS (Direct-Broadcasting-System)-Kanäle sollen Schweden, Finnland und Norwegen auf nichtkommerzieller Basis versorgen.

SCHWEIZ

Nachdem im Herbst letzten Jahres die erwartete Konzession zum Bau des 'TEL-Sat' vom Schweizer Bundesrat nicht erteilt wurde, durchwanderten die Argumente für und wider alle daran beteiligten Entscheidungsgremien. Schließlich fand am 6.12.82 im Nationalrat eine allgemeine Aussprache über Satellitenrundfunk statt, in der sich alle vertretenen Parteien zum Satellitenrundfunk bekannt haben, die bürgerlichen Parteien für eine privatwirtschaftliche Nutzung und die linken Parteien für eine Nutzung durch den Staat. Wie von der SATTEL-TEC verlautete, erwarte man Entscheidungen frühestens Ende Februar.

SKANDINAVIEN

Der für 1988 geplante 'Nord-Sat' wird aller Vermutung nach doch als eine Sternschnuppe enden. Nachdem Norwegen, Schweden und Finnland nun ihre Karten für 'Tele-X' (siehe unter Schweden) auf den Tisch gelegt haben, bleiben in der alten 'Nord-Sat'-Gruppe nur noch Dänemark und Island übrig.

SPANIEN

Das spanische Fernsehen RTVE hat mit INTA, dem spanischen Weltraum-Institut, einen technischen Kooperationsvertrag geschlossen. Der spanische Fernsehsatellit soll Ende 1988 mit der Trägerrakete Ariane-III gestartet werden. Von den fünf Sendekanälen sind zwei für RTVE vorgesehen und drei für andere Konzessionsträger.

HINWEIS:

Eine sicherlich wichtige und interessante Veranstaltung für Sat-TV-Interessierte findet vom 5. bis 7.Juli 1983 in London unmittelbar neben dem weithin bekannten TV-Sender "Alexandra Palace" statt. Nähere Informationen sind unter folgender Anschrift zu erfragen:

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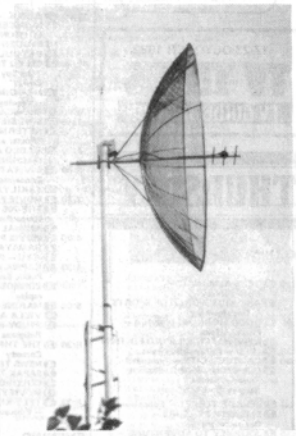
LONDON INTERNATIONAL
SATELLITE TV AND CABLE TELEVISION SHOW
Alexandra Pavilion, Alexandra Palace, London UK
EXHIBITION AND CONFERENCE
5-7 JULY 1983



Unser Foto zeigt einen UHF-Spiegel eines TV-DXers in Südafrika zum Empfang des sowjetischen EKRAN-Satelliten-Systems auf 714 MHz (s.a. TAV-11, S.18). Der Elevationswinkel ist in Südafrika fast 0°.

TAV im Radio in der "Radioshow" von Radio Benelux
jeden Freitag, 20 bis 22 Uhr, auf 101.2 MHz zu hören im Raum Aachen, Köln, Bonn etc

FRÜHSTÜCKSFERNSEHEN

Am 17.Januar 1983 begann die BBC mit "Breakfast TV": Fernsehen schon zum Frühstück. Erstmals in Europa sendet ein TV-Dienst ein eigens produziertes Frühprogramm.

Das BBC-Programm beginnt schon um 0630 Uhr Lokalzeit und endet um 0900 Uhr. Das Programm ist "relaxed", soll heißen locker und 'wenig anstrengend'. Es werden vor allem Informationen gebracht.

Nachrichten werden jede halbe Stunde beginnend ab 0630 Uhr gesendet und Schlagzeilen alle 15min dazwischen. Ein Wetterbericht kommt jeweils um 0631, 0657, 0727, 0757 und 0827 Uhr. Sport-Kurzmeldungen gibt's um 0642, 0718 und 0818 Uhr. Regionale Neuigkeiten/Wetter/Verkehrsmeldungen werden um 0645, 0715, 0745 und 0815 ausgestrahlt. Eine Zeitungsschau und Vorschau auf Ereignisse des Tages stehen um 0732 und 0832 auf dem Programm. Zwischen den Kurzsendungen laufen längere Infosendungen wie "Getting Britain fit" um 0645 und 0700 Uhr, die Vorschau auf das Abend-TV-Programm zwischen 0715 und 0730 und daran anschließend Urlaubstips bis 0745 Uhr. Darauf folgend ein "Breakfast time gossip" bis 0800 und natürlich auch Horoskop von 0830 bos 0845 mit anschließenden Kochrezepten bis 0900. Damit sind die zweieinhalb Stunden Morgenfernsehen voll ausgefüllt.

Die IBA wird nicht zurückstecken und plant in Kürze die Eröffnung eines eigenen Frühstücksfernsehens. Zum geruhsamen Frühstücken verbleibt dann wohl nur noch das Büro...

D-Small

Aktuell * Aktuell * Aktuell * Aktuell

Nach Redaktionsschluß aber noch rechtzeitig vor Zusammenstellung:

Das neue Vierte Britische TV-Programm "Channel 4" wird nach einer ganz aktuellen Umfrage lediglich von 3% der Zuseher eingeschaltet! Weiters sind die einzelnen IBA-TV-Gesellschaften durch die hohen zusätzliche Abgaben wegen Channel-4 in erhebliche finanzielle Nöte geraten. Die Gesellschaft "Border TV", zusätzlich geschwächt durch einen Streik, steht vor dem Zusammenbruch. Dennoch begann auch die IBA mit "Frühstücksfernsehen" und zwar am 1.Februar '83.

Info: R-Bunney

Noch eine Bemerkung zum optischen Testbild der BBC ("testcard 'F'"), wie es z.B. Foto 67 oder 68 der TAV-Serie "Regionaltestbilder" zeigt: Das abgebildete Mädchen ist Carole Hershey, Tochter eines BBC Ingenieurs. Sie ist heute 22 Jahre alt.

Die hier abgebildeten Fotos stammen von David Small. Er ist gerne bereit, TAV-Lesern Farbabzüge der Originale gegen Unkostenerstattung zur Verfügung zu stellen (Auch von anderen Testbildern aus Großbritannien). Anfragen (IRC beilegen) an: David Small * 19, Cobden Street * Wednesbury * West Midlands * WS10-9RL * Großbritannien *

Fotos: Links zwischen den Programmen gezeigte ID von neuen 4.Programm. Zum Sendeschluß explodiert die "4" in Stücke, ähnlich dem rechten Bild, das zu Beginn des 4.Programms oft gezeigt wurde, um die Zeit aufzufüllen als noch nicht genügend Werbung zur Verfügung stand.

BERLIN und DDR

Neues von FFB BFBS FSA

FFB

Und schon gehört unser Bericht über das französische Fernsehen FFB in TAV-10 (S.20) zur Historie: Seit 17.1.1983 überträgt FFB nicht mehr simultan das 1.Französische Fernsehprogramm TF1 sondern einen Zusammenschnitt aller drei französischen Nationalprogramme. Gesendet wird allabendlich von 2000 bis 2300 Uhr.

Grund für die Programmänderung ist nach FFB-Angaben der technische Funktionsabfall des Satelliten "Symphonie", über den bislang TF1 in Berlin empfangen wurde. Seit 17.1. wird nun der Satellit OTS (allen TAV-Lesern von TAV-11 her bekannt) benutzt, was allerdings nur mit zeitlichen Einschränkungen möglich ist.

Info: T-Martin

Oben: Satelliten-Empfangsspiegel von FFB auf dem für Unbefugte gesperrten Militärgelände am 'Quartier Napoleón'.
Links: Jetzt schon historisches ID-Bild von FFB (TF1 wird nicht mehr simultan ausgestrahlt)

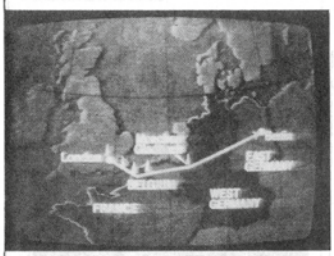
Fotos: Oben T-Martin (Redaktion Zitty), Links: J-Klassen

BFBS:

Am 13.12.1982 konnte BFBS eine noch zum Teil provisorische Direktleitung von London bis zum Endpunkt in Berlin einweihen. Erstmals waren an diesem Tag die BFBS-Zuseher bei den BBC "9 o'clock news" (unser Foto) life dabei. Weitere tägliche Direktübernahmen sind die "ITN-News at 5.45" um 1845 Lokalzeit und am Samstag von 1315 bis 1815 die BBC-Sportsendung "Grandstand".

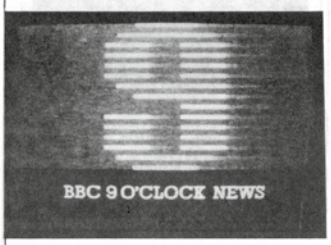
In einer Sondersendung an diesem Tag teilte BFBS weiters mit, daß in den nächsten Jahren der Anteil der Life-Sendungen noch erhöht werden soll. Schwierigkeiten gäbe es dabei mit Zeit-Überschneidungen der vier britischen Programme sowie dem Herausschneiden der Werbung aus den Programmen der IBA und C4.

Info: M-Woldt



BFBS "British Forces Broadcasting Service". In Berlin von Jürgen Klassen aufgenommene TV-Bilder. Links oben aus der Sondersendung anläßlich der ersten Lifeübernahmen aus dem Heimatland: Gezeigt wird die Richtfunkstrecke von London bis zum Endpunkt in Berlin-W. Rechts oben: Programmankündigung; erstmals die BBC-News life um 2200 bzw um 0900 pm britischer Zeit (Foto links unten). Foto unten rechts: Wetter von BFBS für die "Britische Zone".

Alle Fotos: J-Klassen



FSA:

Wieder Neues über die TV-Sender der Sowjet-Armee, von uns "FSA" getauft (Fernsehen der Sowjet-Armee).

Offiziell ist nach wie vor nichts zu erfahren, daher gehen wir auf diese Sender etwas ausführlicher ein. Offensichtlich hat man Größeres vor: von mehreren der Kleinsender wurden/werden Eigenprogramme beobachtet! Eine Verbindung der Sender untereinander besteht offenbar nicht, denn die beobachteten Eigenprogramme waren/sind überall anders.

So berichtet aus W-Berlin Michael Woldt, daß der Sender auf Kanal 11 bis Anfang November 1982 ein optisches Testbild (siehe Foto) vor und nach der Übernahme des TSS-Programms ausstrahlte. Auf Kanal 12 dagegen wird nach Sendeschluß die Nachrichtensendung "Zeit" wiederholt - vor allem am Wochenende konnten auch andere Filme beobachtet werden, vermutlich ebenfalls Wiederholungen aus dem Moskauer Programm. Bei diesem Sender steht wohl ein Videorecorder herum, der ausprobiert wird.

Zum Kanal-11-Sender macht OM Woldt noch einige Angaben: "Der Sender scheint sich noch in der 'Aufbauphase' zu befinden. Seit meinem ersten Empfang des Senders Ende August '82 hat sich die Bildqualität verbessert. Zuerst wiesen die Ausstrahlungen noch teilweise ziemlich starke vertikale und horizontale Instabilitäten auf. Jetzt sind die Sendungen einwandfrei in SECAM zu empfangen. Der Ton scheint noch einige Schwierigkeiten zu machen. Meistens ist er stark verrauscht, konnte aber auch schon in einwandfreier Qualität empfangen werden."

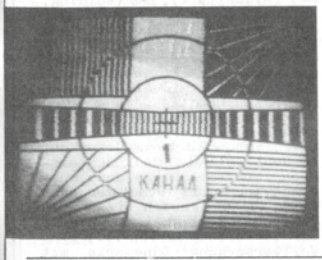
OM Woldt vermutet, daß der Sender für das sowjetische Armeelager links und rechts der Fernstraße 5 (Transit Berlin-Hamburg) im Bereich Döberitz bestimmt ist. Auf den Gebäuden des Lagers kann man mehrere vertikal polarisierte VHF-Antennen sehen, die alle in die gleiche Richtung zeigen. Die Sendeleistung wird im 100W-Bereich liegen.

Thomas Martin von der Redaktion der Stadtzeitung "Zitty" beobachtete, daß der Sender auf Kanal 21 rund um die Uhr in Betrieb ist und in programmfreien Zeiten allerhand verschiedene Test sendet, darunter Uhren, das UEIT-Testbild und diverse andere Testmuster.

Und aus der DDR berichtet OM André Tatter, Autor unseres ersten Berichts über FSA in TAV-8/9, über weitere neue Senderstandorte und Kanäle:

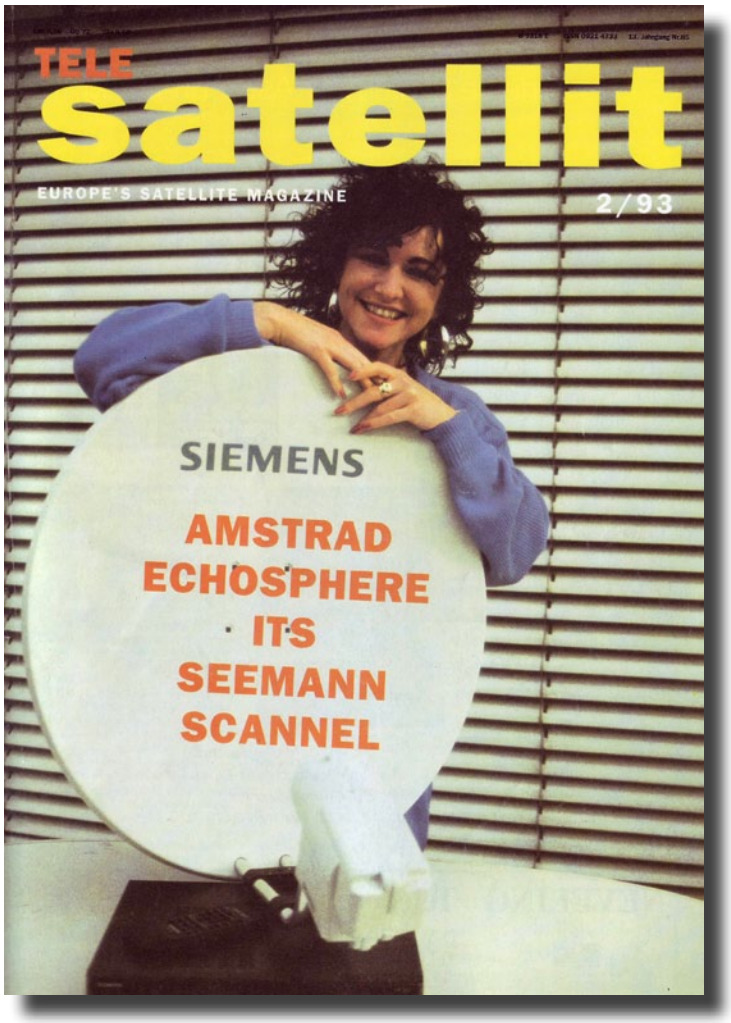
"Ein weiterer Kleinstsender steht in Berlin mit Sendungen auf Kanal 9 mit horizontaler Polarisation. Ob er momentan in Betrieb ist, ist unklar. Der Berliner Umsetzer auf Kanal 21 steht in 'Wünsdorf'. Noch ein Berliner Sender strahlt auf Kanal 29, ebenfalls horizontal. In Karl-Marx-Stadt gibt es ebenfalls TSS für die sowjetischen TV-Konsumer; er belegt dort den Kanal 28 horizontal, wie schon in TAV-10, S.22, erwähnt. Der Sender in Dresden-Übigau benutzt jetzt weder Kanal 30 (TAV-8/9) noch 31 (TAV-10) sondern 32. Ein weiterer sendet in der Nähe des Bahnhofs in Neuruppin, Kanal entweder 11 oder 12. Seine Sendeantenne befindet sich auf einem 25m hohen Mast. Die 3-Element-Yagi in vertikal zeigt in Richtung Nordost. Zu guter letzt: der Sender in Roßlau ist momentan außer Betrieb."

Eine aktualisierte Karte wird TAV demnächst veröffentlichen.

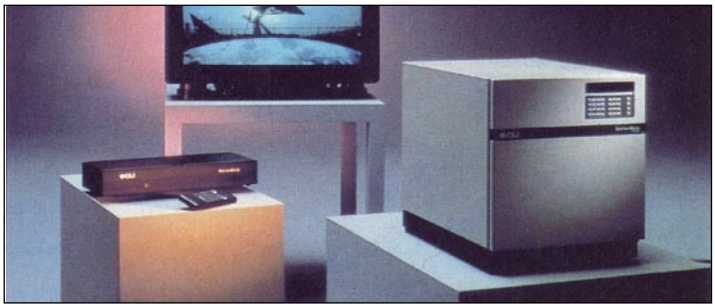


FSA "Fernsehen der Sowjetarmee". Die Fotos zeigen links das optische Eigen-Testbild, wie es auf Kanal 11 beobachtet werden konnte, und rechts ein Dia von TSS, ebenfalls via FSA.

Fotos: Links M-Woldt Rechts J-Klassen



20 Years Ago



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10 Years Ago

Günter Leunert, Germany

e-mail: GuenterLeunert@sat-club.org
http://www.sat-club.org/equip.htm

Günter Leunert was born in 1941 in Germany. His profession is type-setter.

Since he was 5 years old, he is interested in radioreception. When he was 8 years old he built his first dectector. In the school he was in the circle „jong radiotechnician".

After the Berlin Wall fell in 1989 he bought all the Magazines over satellitetechnology. After this he bought his first satellite dish, then he receive the programs from Astra Satellite 1A-1C from his balcony. 1998 installed he his second Offsetareal with an Universal-LNB. As a digitaldecoder he used 2 Set-Top-Boxen from the 1st Generation from the companies Radix and Micronik. He spents ca. 14-15 hours each week with his hobby.

Radio is his interest. He bought 1995 his first Receiver „Astrastar AX1" then he wanted to receive Digitalradio. At the moment he receives 482 TV-Stationen and Feeds and 394 Radiostationen. Also he has a lot of favorite Programs, because he belongs to the WRN-Listenerclub.

His equipment contains:

Dish1: 1.10.mtr., 3 LNB
Dish2: 0.80 mtr. 2 LNB
Dish 3: 0.80 mtr. 2 LNB
Sat-Receiver: Amstrad 2001 analog
Decoder1: Micronik 1200 S DVB
Decoder2: Nokia 9800 S DVB
DigitalRadio: Astrastar AX1

Günter Leunert joined SAT CLUB International in January 2002. He also got free of charge his own e-mail account and 50 MB for his own homepage (http://www.sat-club.org/~gl)

A Wolf in Sheep's Clothing? The "Dreambox" DM 7000-S

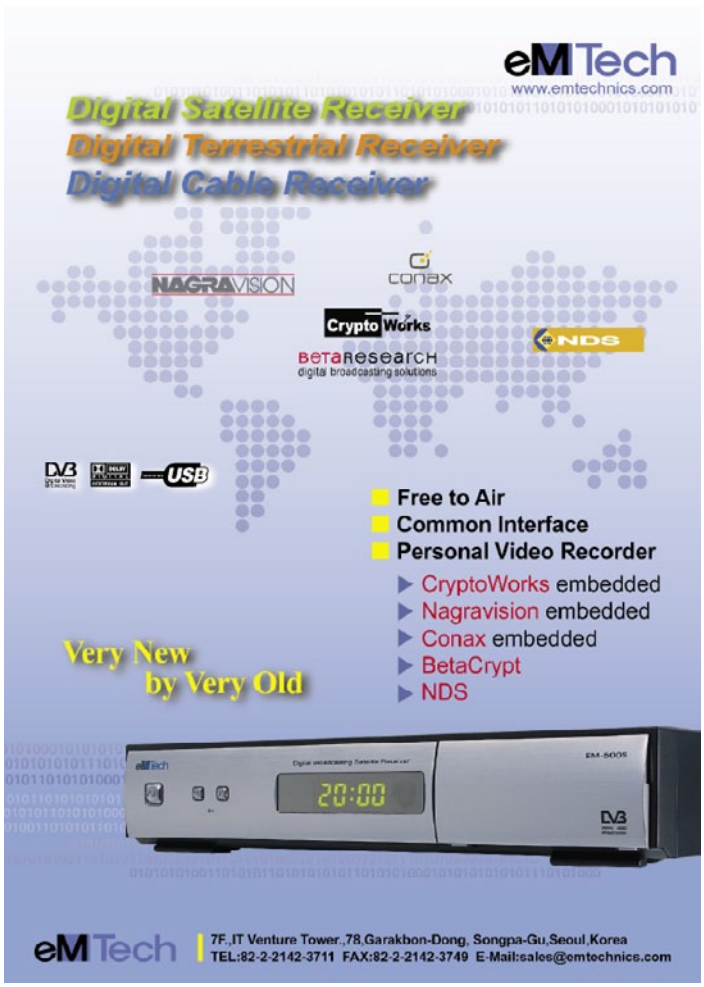
The DM 7000-S doesn't look any different than all the other "normal" set top boxes when it is turned off. But when it is turned on, the first thing that pops into view is the blue, approx. 5 x 3 cm, liquid crystal display (LCD) on the right side of the front panel. It shows either the current channel with all of its relevant data or the selected menu. There's also three buttons for channel selection and Standby. But it gets much more exciting when you take a look under the flap on the left side of the front panel. A slot for a DVB common interface is standard. Two additional slots are for SmartCard readers. Both slots operate under "DreamCrypt", a self-programmable encryption system. Owners of digital cameras should be able to recognize the next slot: a compact flash reader for use with a cameras memory card. This makes it possible to view pictures on the TV while at the same time saving them on the optional hard drive. If desired, the dealer can handle the installation of the hard drive.

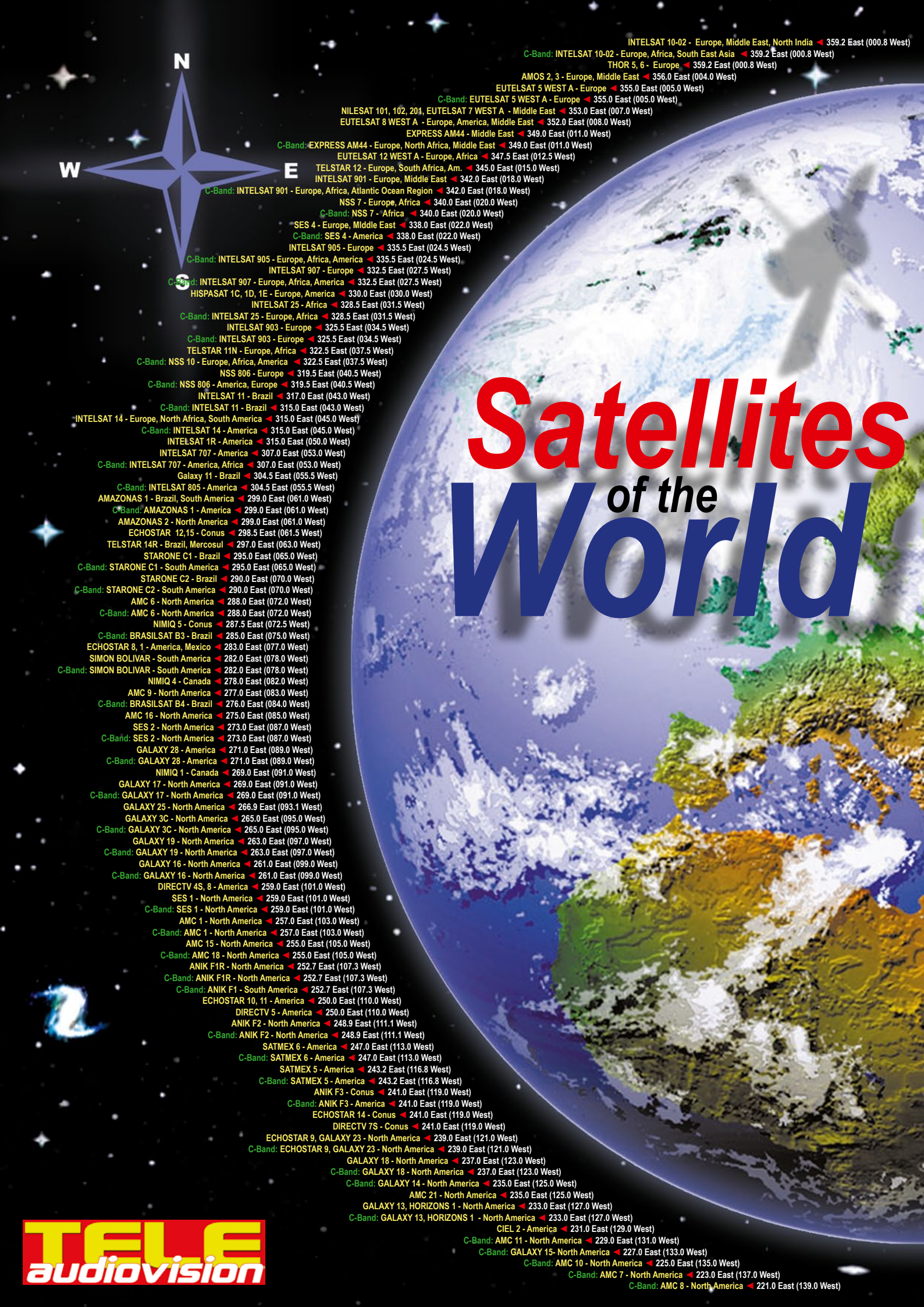
Any IDE hard drive up to 200 GB is supported. The manufacturer of the DM 7000-S, Dream Multimedia TV GmbH, offers an installation kit (IDE, Power and installation hardware) for about US$ 20.00 (20 Euros).

Digital Terrestrial and Satellite Reception

The solution is simply ideal. National and regional programs are delivered terrestrially in high-quality digital format and can be received with a small antenna while the rest of the world comes into your home via satellite. KAON has introduced a new digital receiver for both DVB-S and DVB-T.

The DVB-S section of the KTSC-510 is good for 4080 channels. With its two CI slots that can accept a variety of CA modules, it can be used for PayTV reception as well as for FTA reception. The silver-colored cabinet has a pleasant design. The entire front panel can be opened up to reveal the two CI slots. Seven buttons permit not only channel switching directly on the receiver but also its complete programming. On the rear panel two Scart connectors serve to link video and audio to a TV and a VCR. Video and analog stereo audio are also available via three RCA jacks. A matching cable (RCA-RCA) is included in the package. As is now becoming standard, the IF signal is looped-through. Older TV sets without audio/video inputs can be connected via the receiver's PAL modulator. The manufacturer did decide to include USALS compatibility. Next to DiSEqC 1.0 and 1.2, USALS, in connection with a DiSEqC motor, greatly simplifies the programming of orbital positions by locating these positions automatically.




N
W
E
S
Satellites
of the
World
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)
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 ◄ 243.2 East (116.8 West)
ANIK F3 - Conus ◄ 241.0 East (119.0 West)
C-Band: ANIK F3 - America ◄ 241.0 East (119.0 West)
ECHOSTAR 14 - Conus ◄ 241.0 East (119.0 West)
DIRECTV 7S - Conus ◄ 241.0 East (119.0 West)
ECHOSTAR 9, GALAXY 23 - North America ◄ 239.0 East (121.0 West)
C-Band: ECHOSTAR 9, GALAXY 23 - North America ◄ 239.0 East (121.0 West)
GALAXY 18 - North America ◄ 237.0 East (123.0 West)
C-Band: GALAXY 18 - North America ◄ 237.0 East (123.0 West)
C-Band: GALAXY 14 - North America ◄ 235.0 East (125.0 West)
AMC 21 - North America ◄ 235.0 East (125.0 West)
GALAXY 13, HORIZONS 1 - North America ◄ 233.0 East (127.0 West)
C-Band: GALAXY 13, HORIZONS 1 - North America ◄ 233.0 East (127.0 West)
CIEL 2 - America ◄ 231.0 East (129.0 West)
C-Band: AMC 11 - North America ◄ 229.0 East (131.0 West)
C-Band: GALAXY 15- North America ◄ 227.0 East (133.0 West)
C-Band: AMC 10 - North America ◄ 225.0 East (135.0 West)
C-Band: AMC 7 - North America ◄ 223.0 East (137.0 West)
C-Band: AMC 8 - North America ◄ 221.0 East (139.0 West)
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o digitalnoj TV

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Dünyanın en büyük Ticari Dijital
TV Dergisi

Global Readership

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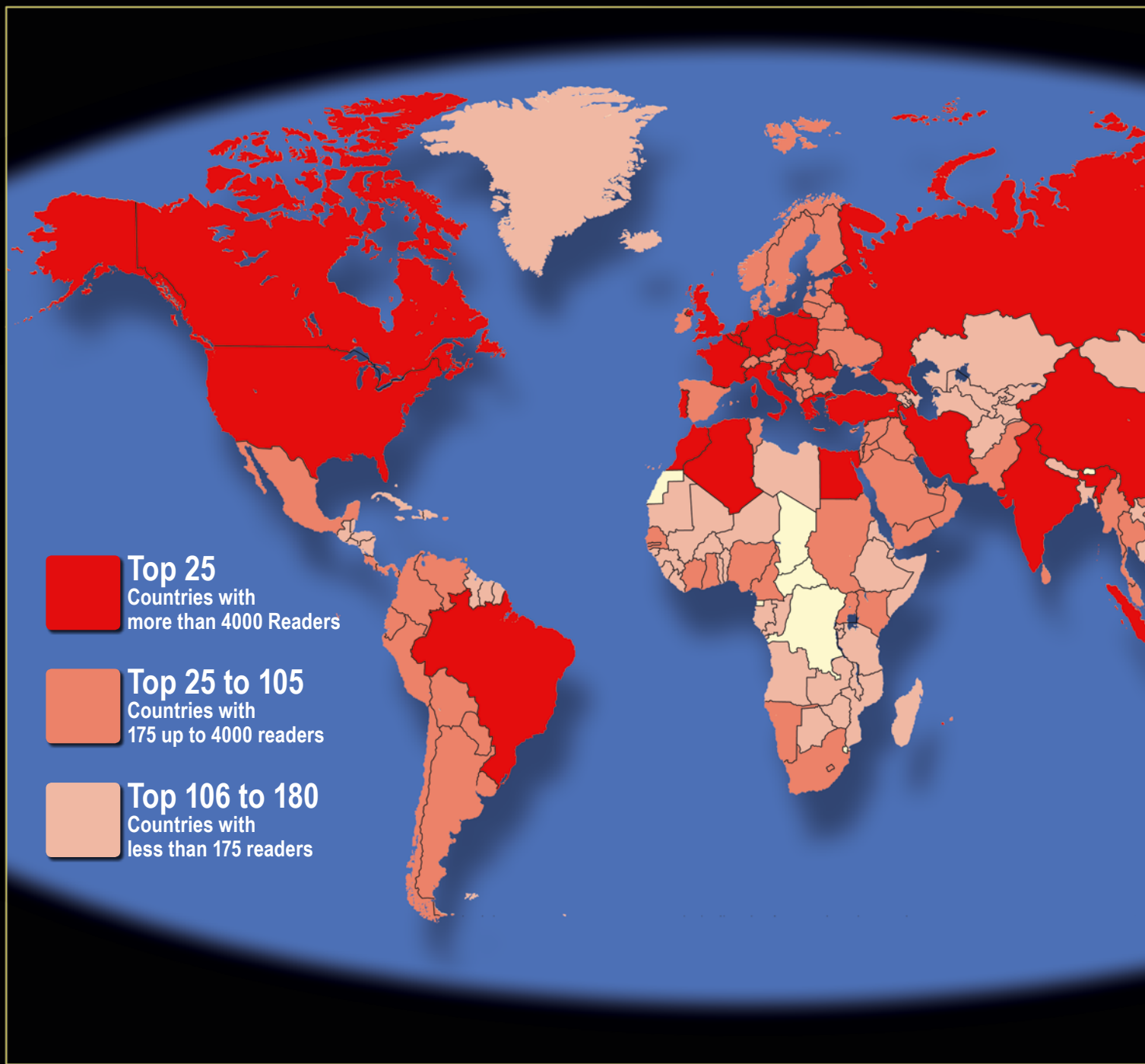

Total Readership: >350 000 W

GLOBAL DIGITAL TV MAGAZINE

gazine

Worldwide

Top 25 Countries > 4100 Readers

COUNTRY	Readers #
Brazil	31257
Germany	28365
USA	23189
	20000
Italy	14030
UK	12987
Iran	12977
China	11335
Indonesia	10865
Netherlands	10048
	10000
France	9784
Turkey	9636
Algeria	8731
Romania	8367
Hungary	5807
Belgium	5586
Poland	5569
Morocco	5417
India	5365
Russia	5272
	5000
Portugal	4648
Spain	4536
Greece	4495
Czech Republic	4447
Egypt	4412
Canada	4121
	4100

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 > 185 - 4100 Readers

COUNTRY	Readers #
Bulgaria	4091
KSA	3704
Slovakia	3558
Ukraine	3471
Switzerland	3007
Chile	2863
Tunisia	2851
Pakistan	2843
Austria	2830
Argentina	2826
Croatia	2824
Sweden	2490
Malaysia	2470
Iraq	2388
Israel	2183
Norway	2119
Australia	2106
	2000
Serbia	1977
Venezuela	1788
UAE	1654
South Africa	1619
Ireland	1602
Denmark	1427
Thailand	1349
Colombia	1308
Mexico	1225
Philippines	1125
Finland	1074
	1000
Sri Lanka	995
Nigeria	919
Jordan	889
Lebanon	874
Lithuania	870
Bosnia and Herzegovina	819
Yemen	809
South Korea	805
Libya	792
Syria	787
Macedonia	728
Slovenia	724
Sudan	710
Peru	703
Japan	636
Kenya	618
Kuwait	573
Cyprus	567
Albania	563
Panama	558
Puerto Rico	550
Uruguay	546
Ecuador	530
Latvia	512
Qatar	511
	500
Bolivia	499
Taiwan	489
Hong Kong	486
Moldova	473
Paraguay	468
Oman	460
New Zealand	432
Luxembourg	428
Senegal	410
Georgia	347
Mauritius	329
Vietnam	324
Cote de Ivoire	319
Ghana	304
Bahrain	294
Belarus	280
Estonia	273
Singapore	247
Aruba	218
Dominican Republic	218
Iceland	211
Bangladesh	208
Uganda	198
Kazakhstan	194
Ethiopia	192
Cameroon	186
	185

Top 106 to 180 Countries < 185 Readers

COUNTRY	Readers #
Malta	176
Barbados	166
Myanmar	163
Montenegro	159
Palestinian Territories	144
Trinidad and Tobago	135
Netherlands Antilles	134
Mali	133
Tanzania	131
Afghanistan	126
Costa Rica	116
Brunei	114
Maldives	114
Malawi	113
Suriname	112
Zimbabwe	111
Armenia	108
Botswana	108
Mauritania	101
	100
Azerbaijan	96
Namibia	95
Niger	92
New Caledonia	91
Zambia	83
Madagascar	77
French Polynesia	72
Angola	69
Rwanda	69
Guatemala	68
Martinique	66
Haiti	64
Burkina Faso	62
Uzbekistan	62
Gambia	60
Congo	59
Kyrgyzstan	59
Honduras	56
Guyana	52
Jamaica	51
	50
Reunion	49
Benin	48
Nepal	48
French Guiana	47
Guadeloupe	46
Cambodia	44
Seychelles	44
Mozambique	43
Djibouti	42
Tajikistan	38
Cape Verde	35
Comoros	34
Togo	34
Nicaragua	33
Palau	33
El Salvador	31
Gabon	30
Bermuda	29
Greenland	29
Monaco	27
Mongolia	26
Dominica	25
Macau	23
Bahamas	22
Turkmenistan	21
Burundi	20
Somalia	18
Timor-Leste	17
Cuba	16
Laos	16
Belize	14
Fiji	13
Congo	12
Isle of Man	12
Papua New Guinea	12
	10

Source:
Google Analytics
as of 09-10/2012

TELE-audiovision Deadlines

Issue	**TELE-audiovision 01-02/2013**	**TELE-audiovision 03-04/2013**	**TELE-audiovision 05-06/2013**	**TELE-audiovision 07-08/2013**
#	1301	1303	1305	1307
Editorial Deadline	2 November 2012	28 December 2012	1 March 2013	3 May 2013
Advertisement Deadline 广告截止日期	**9 November 2012**	**4 January 2013**	**8 March 2013**	**10 May 2013**
Hardcopies	21 December 2012	15 February 2013	19 April 2013	21 June 2013
Online	4 January 2013	1 March 2013	3 May 2013	5 July 2013

Digital TV Exhibitions

8 - 11 January 2013
2013 International CES
Manufacturers, developers and suppliers of consumer technology hardware, content, technology delivery systems and related products and services
Las Vegas Convention Center, Las Vegas Nevada, USA
Opening Hours:
8 January: 10:00am - 6:00pm
9 - 10 Jan.: 9:00am - 6:00pm
11 January: 9:00am - 4:00pm
www.cesweb.org

16 - 18 January 2013
Convergence India 2013
New Delhi, India

29 - 31 January 2013
Integrated Systems Europe
Amsterdam The Netherlands

7 - 9 February 2013
CSTB 2013
Key professional media event covering all the cutting-edge formats and trends of TV and telecommunication: digital cable, satellite, free-to-air TV; IPTV; OTT TV; HDTV and 3DTV; mobile TV; TV content; multi-service networks; satellite communications, etc.
IEC "Crocus Expo", Pavilion 1
Moscow, Russia
www.cstb.ru

26 -28 February 2013
AndinaLink 2013
Cartagena de India, Colombia

19 - 21 March 2013
CABSAT 2013
Premier Broadcast & Satellite Platform in the ME & North Africa
Dubai International Convention and Exhibition Centre, Dubai, UAE
Opening Hours:
19 - 20 March: 10:00am - 6:00pm
21 March: 10:00am - 5:00pm
www.cabsat.com

19 - 21 March 2013
IPTV Forum
London, UK

21 - 23 March 2013
CCBN 2013
China Content Broadcasting Network Exhibition - largest broadcasting technology and equipment expo in the Asia-Pacific region
Beijing International Exhibition Center, Beijing, China
Opening Hours:
21 - 22 March: 9:00am - 5:00pm
23 March: 9:00am - 4:30pm
www.ccbn.tv

13 - 16 April 2013
HKTDC Spring
Hongkong, China

8 - 11 April 2013
NAB Show 2013
For broader-casting® professionals
Las Vegas Convention Center, USA
Opening Hours:
8 - 10 April: 9:00am - 6:00pm
11 April: 9:00am - 2:00pm
www.nabshow.com

4 - 6 June 2013
ANGA 2013
Cologne, Germany

18 - 21 June 2013
CommunicAsia 2013
CommunicAsia2013 will feature a comprehensive range of the latest products, technologies and solutions, and offer an enhanced platform for business networking and partnership opportunities.
Basement 2, Levels 1, 4 & 5
Marina Bay Sands, Singapore
Opening Hours:
18 - 20 June: 10:30am - 6:00pm
21 June: 10:30am - 4:00pm
www.communicasia.com

6 - 9 August 2013
ABTA 2013
São Paulo, Brasil

September
AndinaLink 2013
San Pedro Sula, Honduras

13 - 17 September 2013
IBC 2013
RAI Convention Centre, Amsterdam
The Netherlands
Annual event for professionals engaged in the creation, management and delivery of entertainment and news content
Opening Hours:
13 September: 10:30am - 6:00pm
14 - 16 Sept.: 9:30am - 6:00pm
17 September: 10:30am - 4:00pm
www.ibc.org

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NDS | irdeto | viaccess (a France Telecom company) | conax | HDMI (High Definition Multimedia Interface) | NAGRAVISION (Kudelski Group) | DOLBY DIGITAL PLUS | OPERA software