Крупнейший в мире журнал о бизнесе цифрового ТВ
с 1981 года

ТЕЛЕ audiovision

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OTT
Smart TV
IP/WebTV
Streaming

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МЕЖДУНАРОДНЫЙ 11-12 2013



Отчет Компании
GLOBALINVACOM
Иван Хоррокс Горд тем, что обеспечил два миллиона домов спутниковым телевидением от оптоволоконных спутниковых конвертеров



Отчет об испытаниях
AMIKO Mini HD
Джозеф Зсиман Укомплектовывает очень маленький ресивер всеми возможными функциями



Отчет Компании
BSD форум
Маркос Бенни Успешно ведет самый большой форум по цифровому ТВ в Бразилии уже в течение 10 лет



Отчет об испытаниях
ICECRPYT
Крис Вард Представляет очень умный и в то же время простой в использовании ресивер

Отчет об испытаниях
WORK Microwave портативный тестер Satcom
Идеальное решение для точных и сертифицированных измерений





Отчет об испытаниях
AB IPBox Prismcube Ruby

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HDTS-271M

DVB-S2 + T2 HD MPEG-4 With CI/CA

- Full HD DVB-T2 & S2 Compliant
- CA slot (Optional) & CI slot (Optional)
- USB: Multimedia playback, PVR & Time shift
- HDMI 1.3/HDCP 1.2 Copy protection
- Output: HDMI, Scart (Optional) CVBS, Y Pb Pr (Optional)
- Stereo Audio output, Coaxial, USB
- Earthnet Support (Optional)

DVB T2 TERRESTRIAL | DVB S2 SATELLITE | H.264 HD | CI | CA | EARTHNET

DVB-T/T2 DVB-T2 With CI+ DTMB-TH ISDB ATSC
DVB-S/S2 DVB-S2 + DVB-T/T2 DVB-C OTT BOX Hybrid Set Box

DVB-T2 MPEG-4

- DVB-T2 MPEG4 HD
- T2 1.31 profile, support with T2 LTE
- Multi Media Player for Music/Picture/Movie
- EWS System (Early Warning System)
- 3D Image player
- HDMI full HD 1080P output

DVB T2 TERRESTRIAL | H.264 HD | FULL HD | EWS



HDT2-132A

DVB-C HD MPEG-4/H2.64 With CA

- CA Interface: NDS , Verimatrix, Novel Super TV, ABV, Suma Vision, etc.
- Mail: 1 Alert Setting: on/off the alert message. 2 View message
- AVM Setting audience view measurement On/Off in secure engineer menu
- Pairing STB and smartcard pairing Channel List view the channels
- OTA Over the air software download
- HDMI, CVBS, L/R, Coaxial, Ethernet(optional), USB

DVB C CABLE | H.264 HD | NDS | verimatrix



PCH208-B1

DVB-S2 SD MPEG-4/H.264 With CA

- DVB-S2 MPEG4 HD with CA
- DiseqC 2.0 compatible
- Multi Media Player for Music/Picture/Movie
- USB PVR
- HDMI full HD 1080P output
- CVBS, L/R, Coaxial, USB

DVB S2 SATELLITE | H.264 HD | FULL HD | CA | DiSEqC



SDS2-6381

OTT Android TV + DVB-T/T2 Combo

- OTT plus DVB-T/T2
- Android 4.0 / 4.2 / ARM Cortex A9 Dual Core 1.5GHz
- 1GB DDRIII SDRAM / 4GB NAND FLASH
- Built-in Wi-Fi module 802.11 b/g/n
- Online Live TV and VOD Flash/HLS
- HTML5 Playback and PlayReady/Widevine DRM
- Thousands of applications from network markets & specific sources

CPU DUAL CORE | H.264 HD | FULL HD | WiFi | NetTV



IV5010

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Tel: +86-755-2977 3901/2977 3996 Fax: +86-755-8659 0225 Email: market@micoelectric.com

Panodic Electric (Hong Kong) Limited

Headquarter: Unit 1703A, 17/F, Nanyang Plaza, 57 Hung To Road, Kwun Tong, Kowloon, Hong Kong
Tel: +852 2951 4538 Fax: +852 2951 4738 Email: market@micoelectric.com

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TELE-audiovision International
The World's Largest Digital TV Trade Magazine
since 1981
Alexander Wiese
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alex@tavmag.com
HQ in Munich, Germany

Дорогие читатели,

Долгое время Linux был любимой операционной системой для ресиверов цифрового ТВ. Но за последние 2-3 года мы, здесь в TELE-audiovision постоянно слышим об использовании Android систем для цифровых ресиверов, кроме того, вплоть до настоящего времени у нас была возможность представить всего лишь небольшую часть ресиверов на Android.

И в тоже время, мы постоянно спрашиваем себя укрепятся ли эти ресиверы на Android на современном рынке. И вдруг, совсем недавно начал проявлять себя совершенно новый тип операционной системы, основанной на Xbox. В этом выпуске TELE-audiovision мы представляем как раз такой ресивер, который настолько поразил нас, что мы даже присудили ему нашу награду : Инновации в TELE-audiovision.

Уже давно было ясно в каком ключе идет развитие Android-продуктов: полная интеграция всех возможных медиа в один ресивер. Теперь нам кажется, что Xbox система особенно хорошо подошла для этой задачи, хотя это утверждение имеет некоторые ограничения: в данный момент это только так кажется. Все может поменяться очень быстро.

Срок жизни программного обеспечения, не говоря уже об оборудовании, в век постоянного появления новых технологий очень короткий. Решения в виде «гибкого» программного обеспечения, как в данном случае – всегда являются лучшим выходом из ситуации – но этот вариант может использоваться любой операционной системой. На каком же критерии должны производители, а главное, конечные потребители основывать свои решения.

Ответ на этот вопрос может показаться невозможным: все зависит от того, что производитель хочет предложить конечным потребителям и что конкретно они хотят. Предсказывать это становится все труднее и труднее, хотя одна вещь абсолютно ясна: конечный потребитель хочет, чтобы работа и меню навигации приборов были настолько интуитивно понятными и эргономичными, насколько это возможно.

Для программистов здесь обширное поле для деятельности, а также в сфере создания более дружественного меню пользователя. На самом деле, все равно – какая именно операционная система стоит в ресивере.



Александр Визе
Главный редактор TELE-audiovision Международный.

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Android IPTV AML8726

Full High Definition Android IPTV +DVB-S2 OTT STB



Processor
- ARM Cortex-A9 CPU uni-core,1GHz frequency
- ARM Mali-400 GPU processor, for 3D Graphics processing
- One MediaCPU and Two MediaDSPs for AV decoding
- Full 1080P HD video decoding
- 3D Video Support
- Power Control Processor

Memory&Flash
- 1GB(32bit) DDR3 Memory
- 4MB SPI Nor Flash
- 4GB Nand Flash internal

Network
- WiFi IEEE 802.11 b/g/n
- 10/100Mbps Fast Ethernet
- 3G USB Dongle

DVB Frontend(Optional)
- DVB-S2 Supported
- Customized for other STB application

Other
- HDMI 1.4a
- 2 Host USB Ports
- OS Android4.0 or Later
- Multi languages supported
- Support USB Keyboard&Mouse, Wireless Keyboard&Mouse&RCU

Applications
- Video Movie Player(*.mkv,*.wmv,*.mpg, *.mpeg, *.dat, *.avi, *.mov, *.iso, *.mp4, *.rm etc.)
- Music Player(MP3, AAC, WMA, RM, LFAC, Ogg etc.)
- Picture viewer (JPG, JPEG, BMP, GIF, PNG etc.)
- Web Browser (HTML5 supported)
- Online VOD application
- Customized application market
- Customized applications
- Online video search
- 3D Game



HD1512 DVB-S2

- IPTV
- USB Adapter
- 3G Support
- WIFI Support
- Movie Online
- Smartphone Remote
- RSS News
- Dailymotion
- DVB-S2 Tuner
- HDMI1.3, FULL-HD 1080P supported
- PVR (Personal Video Record)
- HD Media Player
- Picture Player
- Music Player
- File Manager
- Firmware Upgrade via USB
- EBOOK
- ISO
- Youtube, Weather, Google map, N32 game
- Built-in LAN
- With CA
- Recording & Playback with External Storage Devices(USB2.0 / HDD)
- 2 USB





You can meet us at the above shows in 2013.

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& RETRO GAME CONSOLE

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SPIEL



GAME-CONTROLLER SUPPORT
VIA USB

RETRO Gamer

SuperIPTV
IPTV SOLUTION
Easily manage your linear & On Demand Content, Subscribers and Devices

BLIND SCAN

MAIN FEATURES

- **Satellite Receiver** & **Retro Game-Console (2 in 1)**
- **Game-Controller** Support
- One card reader slot **(Conax Embedded)**
- Two High Speed USB 2.0 connections
- Media Playback **(MKV, AVI, MPG, MP3, MP4, JPG)**
- **Ethernet Connection** & **USB WiFi** support (Ralink RT5370 chip)
- **YouTube** videos, Google Maps*
- **RSS Reader & Weather Forecast** functions*
- TimeShift - Stop Live TV! (USB Storage device required)
- Full HD (1080p) Output via HDMI
  RGB & CVBS video / audio output through SCART & RCA
- Easy software upgrades through USB or Network
- Program and Channel information transfer from receiver to receiver using the USB backup function

* internet connection required

OTT CONTENT

VFD Display

ecology
low power consumption in stand-by

PLUGIN SUPPORT

Full HD 1080

MULTIMEDIA PLAYBACK* AVI MKV MPG MP3 MP4 TS

audio and video codecs are subjects to availability*

weather forecast

RSS READER

ETHERNET

YouTube VIDEOS

conax · WiFi · USB 2.0 · TIME SHIFT · mp3 · DiSEqC · MKV

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11-12/2013

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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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Http://www.changhong-network.com

E-mail:stbinfo@changhong.com

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HSM1



Specifiction:

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



Feature:

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



HS1J

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



HS1C

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



HTAB

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



HTJ4

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

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

Skyworth Digital

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Add:Unit A13-16/F, Skyworth Mansion., Gaoxin Ave.1.S., Nanshan District, Shenzhen, China P.C.:518057
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Worldwide





Top 25 Countries > 3200 Readers

COUNTRY	Readers #
Brazil	31,706
Germany	27,403
USA	22,574
Italy	14,261
China	12,808
UK	12,585
Iran	12,359
France	11,663
Indonesia	10,190
Turkey	10,000
Netherlands	9,530
Algeria	9,471
Romania	8,243
Portugal	6,666
Russia	6,155
Belgium	5,956
Morocco	5,753
Spain	5,589
Hungary	5,477
Poland	5,411
India	4,821
Egypt	4,751
Bulgaria	4,563
Czech	4,200
Greece	4,194
Canada	4,036
Ukraine	3,757
Saudi Arabia	3,661
Slovakia	3,260

Readers' Breakdown

Manufacturers	4%
Distributors	9%
Wholesaler	18%
Dealers	27%
Installers	12%
Satellite Provider	2%
Cable Provider	8%
IPTV Provider	5%
Program Provider	6%
Governmental	2%
Institutional	2%
Private Enthusiasts	5%

Top 25 to 105 Countries > 130 - 3200 Readers

COUNTRY	Readers #
Argentina	3,120
Switzerland	3,100
Chile	2,943
Tunisia	2,904
Pakistan	2,774
Austria	2,766
Croatia	2,713
Iraq	2,355
Malaysia	2,347
Sweden	2,344
Australia	2,107
Israel	2,069
Venezuela	2,052
Norway	2,043
Serbia	1,945
UAE	1,580
Ireland	1,561
Colombia	1,531
South Africa	1,510
Mexico	1,476
Denmark	1,390
Thailand	1,298
Finland	1,137
Philippines	1,058
Libya	977
Sri Lanka	975
Slovenia	934
Jordan	900
Peru	864
Yemen	842
Nigeria	831
Lithuania	829
Lebanon	814
South Korea	759
Bosnia and Herzegovina	749
Syria	740
Macedonia	726
Ecuador	698
Sudan	685
Japan	644
Uruguay	622
Kenya	587
Bolivia	571
Kuwait	565
Puerto Rico	562
Panama	558
Albania	548
Cyprus	536
Qatar	511
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Top 106 to 180 Countries < 130 Readers

COUNTRY	Readers #
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Mali	131
Trinidad and Tobago	129
Tanzania	128
Uzbekistan	128
Netherlands Antilles	117
Maldives	112
Brunei	109
Malawi	106
Armenia	101
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Niger	88
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Zambia	77
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Rwanda	69
Guatemala	68
Martinique	66
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- ***Может превосходно подходить к ТВ***



A Receiver Full of Outstanding Features

Who would have guessed this: in the year 2002 two resourceful programming hobbyists began the development of an alternate operating system based on the Microsoft Xbox game console. Today, 11 years later and after a lot of development work, the first receiver from the company AB-COM built around this new software showed up on our TELE-audiovision Test Center doorstep.

Naturally, a lot has happened over the past 11 years and the Xbox Media Center from way back then only has a rudimentary role in what we are experiencing today. In the end there was not only a massive change in the hardware but, thanks to GPL (General Public License), numerous programmers also had the opportunity to show what they could do in regularly improving and expanding the system.

We here at TELE-audiovision have been wondering for quite some time when the first manufacturer would take the first step and produce a receiver using the Xbox Media Center as the operating system.

As you can imagine, we were especially thrilled to test the new AB-COM receiver. When we unpacked the box it became abundantly clear that AB-COM not only wanted to take the software in a totally different direction with their AB IPBox Prismcube Ruby, its design is also modern and exceptionally elegant.

The easily-readable VFD display is surrounded by a discreet gray housing and, along with the backlit Standby button, has a futuristic look to it. Behind a flap on the front panel AB-COM incorporated a card reader as



well as a CI slot that can accommodate all the typical modules.

The rear panel is very nicely equipped and includes two satellite IF inputs, three RCA jacks for stereo audio and CVBS video, an optical digital output, an HDMI port, an RJ45 interface, a USB port and, of course, a jack for the external power supply.

We really appreciated the flap on the underside of the receiver that can be opened by loosening a single screw. Here the user can install a 2.5" SATA hard drive using the included mounting frame.

While we're on the subject of included accessories, the package also comes with the external power supply and power cable, the hard drive mounting frame, an HDMI cable as well as a well-written initial installation guide.

Of course there's also a remote control in the box: on the top side the manufacturer placed only the most critical buttons and in some cases duplicates of some of the buttons such as the number keys. This results in a very simple control of the receiver and proved to be very practical in everyday use.

On the bottom side of the remote control you'll find a full miniature keyboard that turned out to also be quite convincing in our tests.

In general, the remote control sits comfortably in your hand and we did not even once accidentally push a button on the opposite side of the remote control during our tests.

Overall we were very impressed with the workmanship and the design of the new AB IPBox Prismcube Ruby box and if for some reason you don't particularly care for the graphite gray color of the receiver's housing, the manufacturer has indicated that other colors of the box will be available.

Just like with most of today's receivers, the AB IPBox Prismcube Ruby also comes with an installation assistant that guides the user through the setup process.

What really caught our eye was the OSD language selection; there are 51 different languages to choose from. Nearly everyone in the world should be able to find the right one for them. We also liked the fact that this receiver is fully HD compatible and can therefore provide a video signal resolution of 1920x1080.

Are you familiar with the annoying problem where the video output signal from some receivers is just a little too small or too large for the TV you're using? If you said ‚yes', then you'll be happy to hear that the new AB IPBox offers an Overscan Adjustment function as part of the initial installation that lets you individually adapt the picture output with your TV. For our test this was a big plus point!

In the next step the receiver is adapted to the existing satellite reception system. To help with this, numerous DiSEqC protocols (1.0, 1.1, 1.2 and 1.3) are available; even SCR single cable solutions are supported.

A total of 108 European, Asian and American satellites have been preprogrammed into the box with, much to our satisfaction, relatively up to date transponder data.

Each satellite that is to be received by the receiver must be individually activated and configured. If a multifeed antenna with three or four receivable satellites is being used, then this would make a lot of sense.

But if you're using a DiSEqC motorized system with, let's say, 40 receivable satellites, then this could, how-



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ever, become a cumbersome task. Nevertheless, we did like that all the entries could be custom configured completely and individually (for example, through manual LOF entry).

In the satellite settings we should also mention that the AB IPBox Prismcube Ruby also supports the repeating of DiSEqC commands. This feature is perfect whenever more than one in line multiswitch needs to be addressed.

The next step in the initial installation is the automatic channel scan. The scan can be performed on all satellites or a single satellite in FTA mode or CAS mode; it can be set to look for FTA-only channels or CAS-only

1. Initial installation - language selection

2. With 51 possible OSD languages to choose from, it truly is an all-encompassing list

3. Initial installation - video output signal settings

4. Overscan adjustment

5. Even the position of the subtitle display is customizable

6. Pixel ratio adjustment

7. Initial installation - video output signal settings

8. Antenna settings - the full variety of DiSEqC protocols are supported

9. Entries can be made either with the OSD keyboard or with one of the two remote controls

10. DiSEqC 1.3 settings

11. The preprogrammed satellite list contains 108 entries

12. Each desired satellite needs to be manually activated

13. Satellite settings

14. Channel scan settings

15. Channel scan of HOTBIRD at 13° east

6



11



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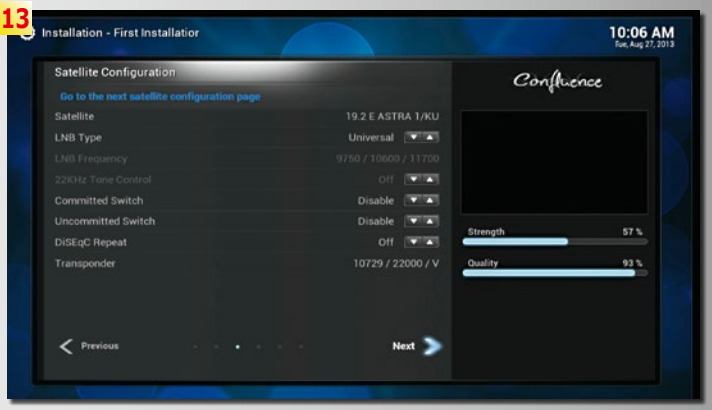
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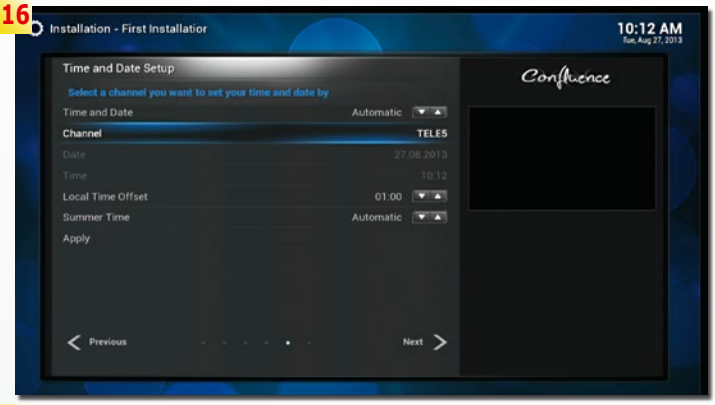
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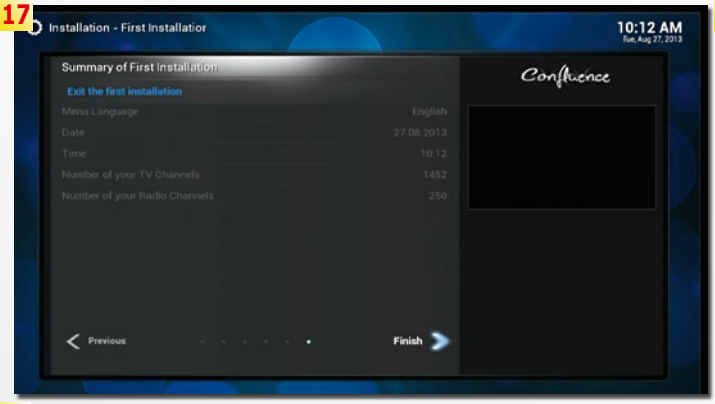
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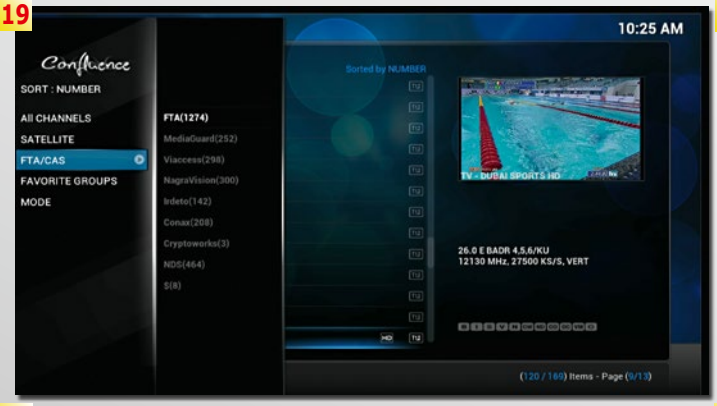
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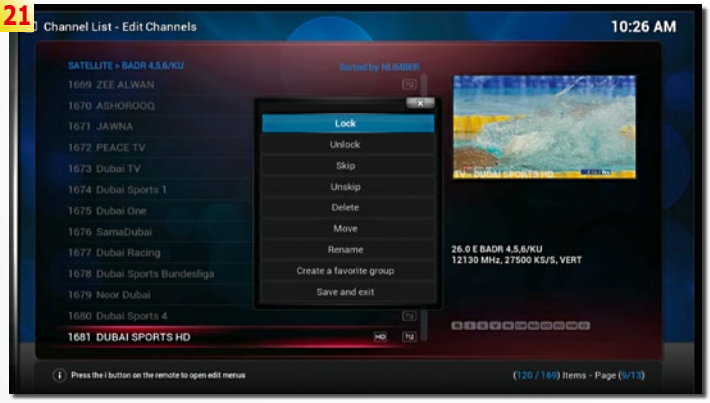
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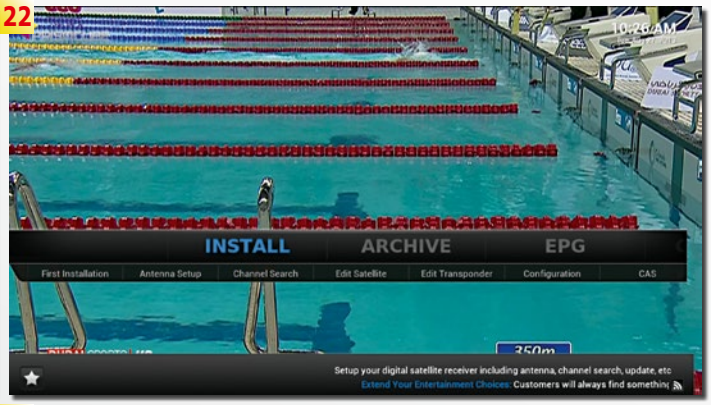
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24



16. Time settings

17. After completing the initial installation, the AB IPBox displays an overview of all the selected settings

18. Channel list

19. The channel list can be refined to show channels from individual satellites, Favorites lists or encrypted channels

20. Display of buttons and their descriptions within the channel list

21. Editing the channel list

22. The AB IPBox Prismcube Ruby's Main menu

23. Manual channel scan

24. Language settings

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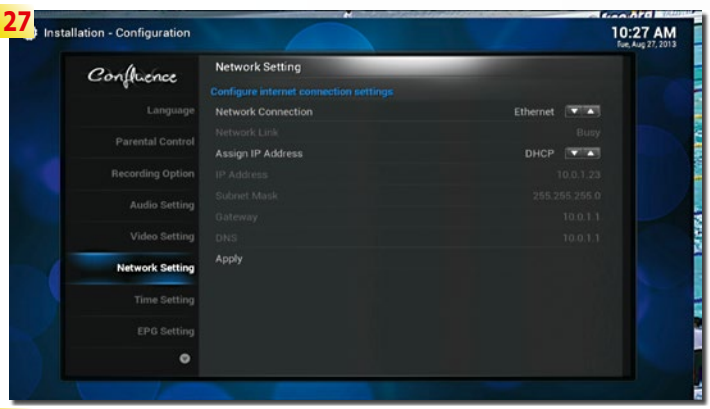
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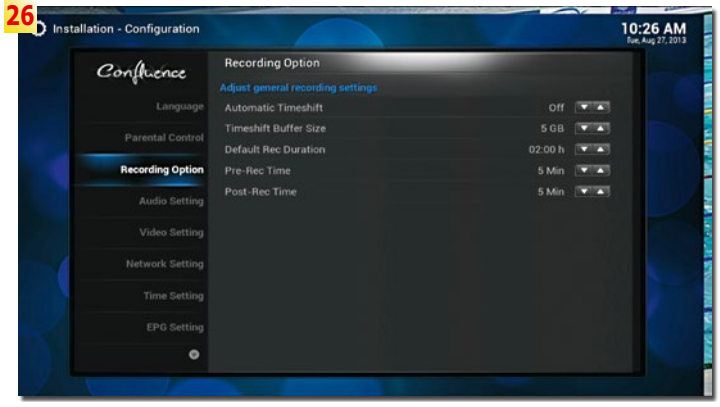
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channels as well as with or without a network scan. In just a little over four minutes the AB IPBox Prismcube Ruby completed a scan of HOTBIRD at 13° east and found 1452 TV and 250 radio channels.

To finish off the initial installation, the user has to deal with setting the time. But it's here where the new AB-COM receiver has an especially interesting feature: the user can manually select the channel from which the time signal is to be obtained. Everyone of our readers that enjoys receiving signals outside the usual DTH positions is definitely familiar with this problem: before you can blink, the time setting on the receiver changes and any preset timer recordings will no longer take place at the right time.

But for the AB IPBox Prismcube Ruby, this is not a problem. You simply select the channel that you know for certain will give you the correct time signal and from that point on the receiver will only update the time

25. Jugendschutzeinstellungen
26. Aufnahmeeinstellungen
27. Netzwerkeinstellungen
28. Suche nach verfügbaren WiFi Netzen
29. Recorder settings
30. Various settings - Deep Standby can be activated/ deactivated here
31. Info bar with the title of the current program
32. Expanded EPG information
33. Choosing the video format and audio track
34. EPG
35. Timer entries can be handled from the EPG by pushing just one button
36. EPG search
37. EPG – the channel logo is automatically displayed with popular channels
38. Favorites groups
39. On Screen Help



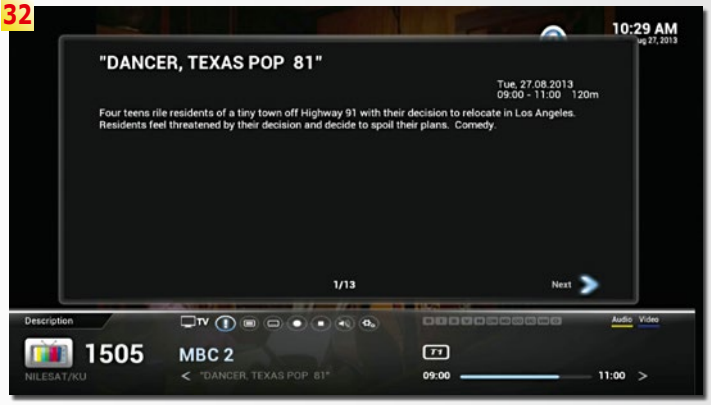
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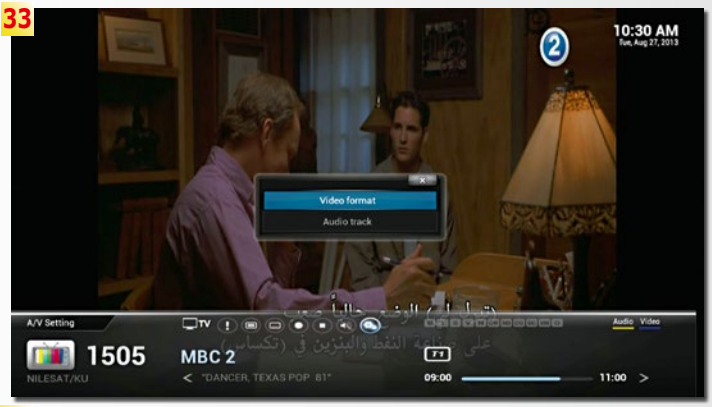
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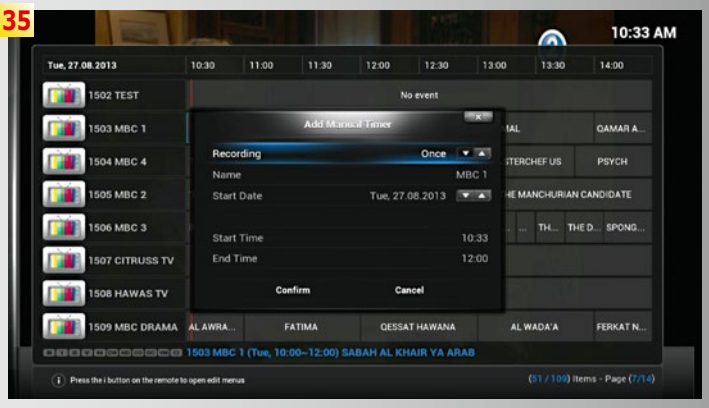
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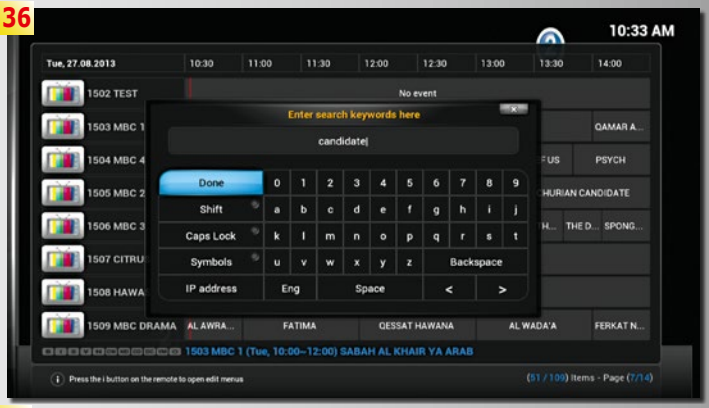
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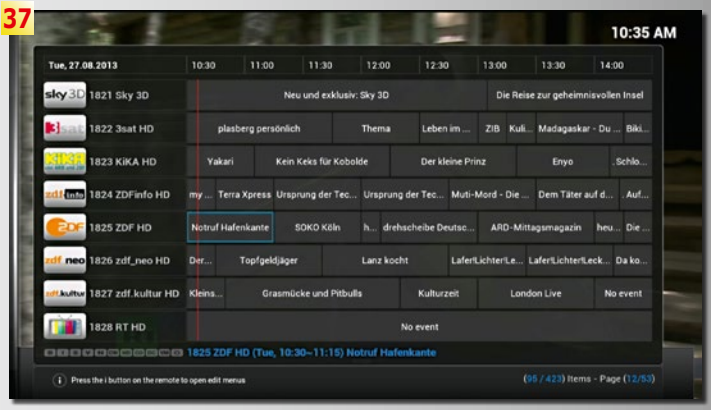
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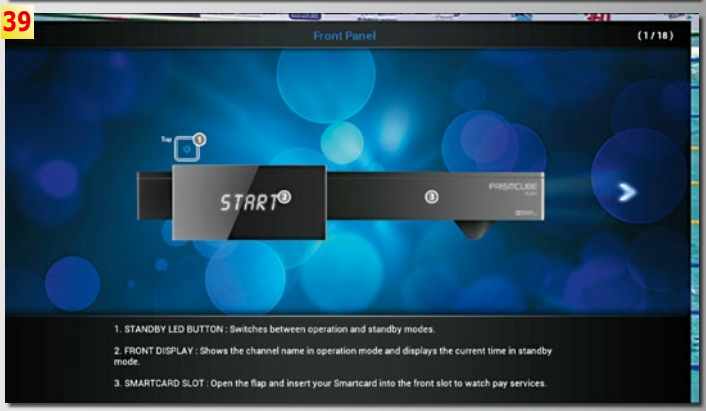
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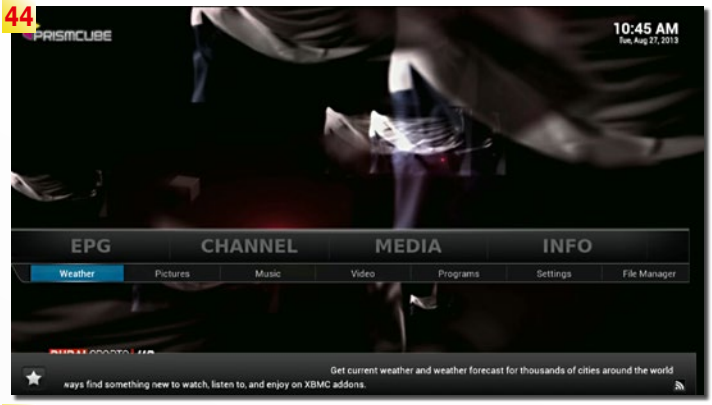
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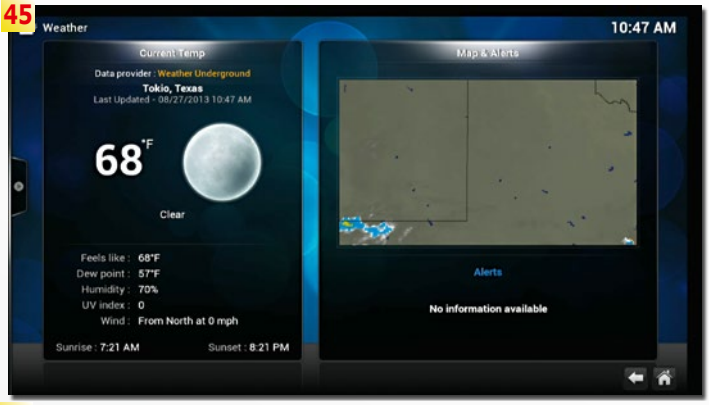
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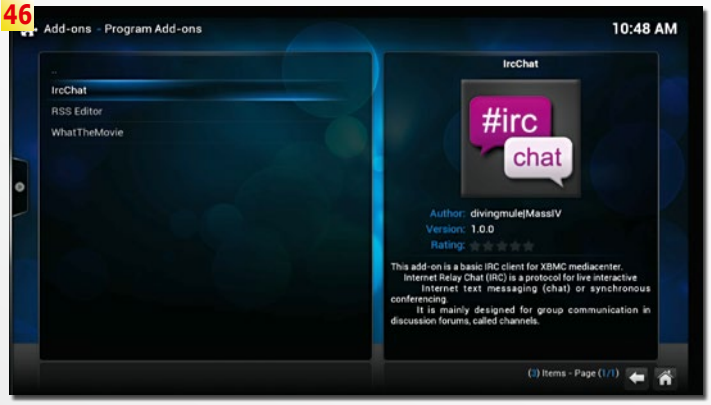
40. On Screen Help
41. Info bar – currently there are two recordings in progress
42. Ending of recordings
43. Overview of previously recorded programs
44. Main menu selection "Media"
45. Weather forecast with satellite image
46. Various Add-ons such as IRC chat are available for download
47. WhatTheMovie Add-on
48. Xbox Media Center settings





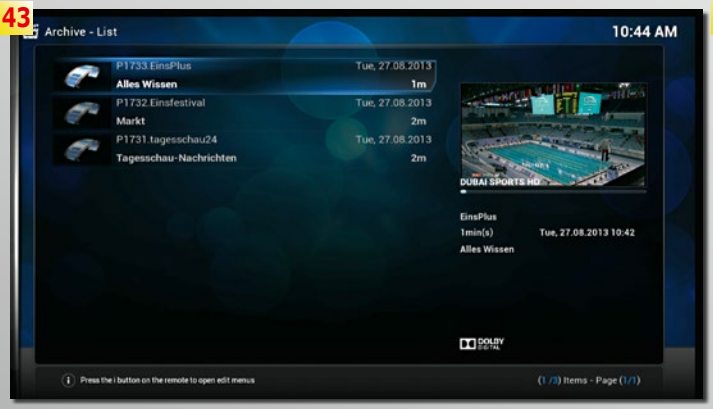














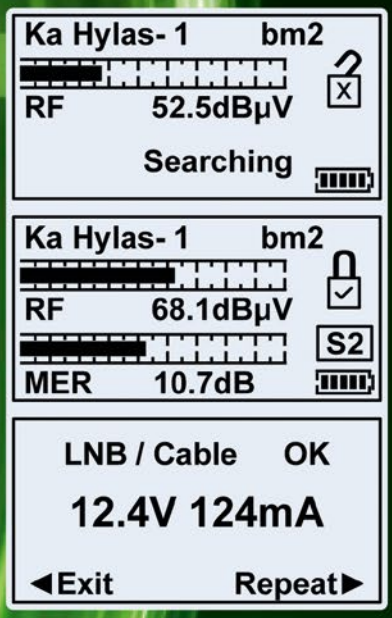
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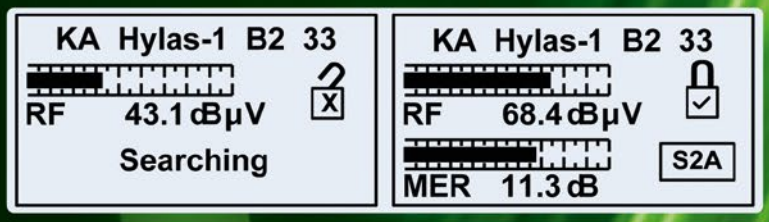


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The HD-S2A developed for Avanti Broadband features tone functions for Hughes Ka-Band ODU polarisation selection.

The cost effective Nano S2A

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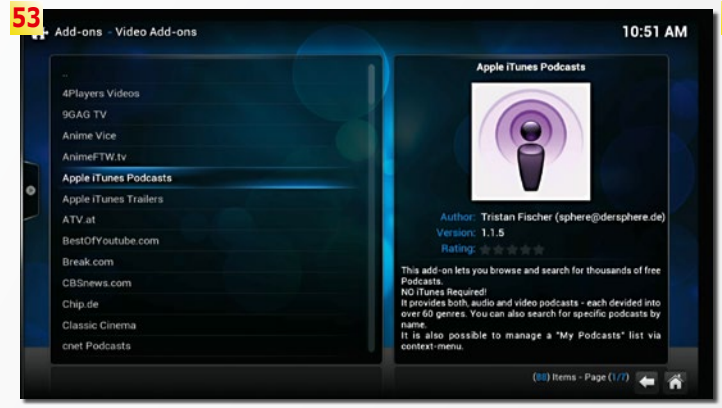
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from that one channel.

Even though the new AB-COM receiver runs using the Xbox Media Center as the operating system, at first glance it doesn't look any different than any other standard receiver.

As usual, a push of the OK button opens the channel list that can be refined with another push of a button to show only channels from individual satellites, Favorites lists or those that are encrypted. It's also just as easy to sort the list alphabetically and if desired, all the HD channels can be moved to the top of the list.

If this new receiver is used with a motorized antenna, after a channel scan the channel list will undoubtedly be stuffed with hundreds if not thousands of channels. That would mean it'd be time to bring a little organization to the list.

Thanks to the cleverly designed menu, all you need to do push the ‚i' button on the remote control to access a variety of channel editing tools such as deleting, moving, renaming or locking with a PIN code.

We also liked that the receiver blends in a functional description of each of the buttons so that user will always know what each button

49. File Manager

50. The Prismcube.com Add-ons contains an assortment of Add-ons for music, video, programs, service programs, subtitles and pictures

51. Flickr Add-on

52. Subtitle Add-on

53. Apple iTunes Podcast Add-on

54. Even the libraries from various TV channels can be accessed

55. Vimeo Add-on

56. Photo viewer

57. The integrated music player supports all the standard formats

58. Media access can take place not only locally but also via network (such as UPnP)

59. Display of UPnP servers available via network

60. Playback of media files via network

61. Access to the Greenpeace libraries

62. The AB IPBox Prismcube Ruby even provides access to the Soundcloud music service





is used for.

What kind of a PVR receiver would this be without an EPG? Naturally, AB-COM also thought about this and incorporated an exceptionally designed electronic program guide (EPG).

The current and upcoming programs of eight channels can be displayed at the same time for the next seven days as long as this information is made available by the provider.

A nice little side detail: with the more popular channels the box blends in the channel logo in the EPG and the Info bar! Thanks to the automatic EPG Grabber Function, the EPG data from every channel is available at anytime for those channels that are not being watched.

The user can set a specific time where the receiver will automatically activate itself and, using the EPG Grabber function, access the EPG data from any selected channel and store it in the receiver's internal memory. In this way the user also has a search function within the EPG available that can be used to find a favorite program or a favorite actor. And as expected, timer entries can be handled directly from the EPG.

The Info bar that is displayed after switching channels shows the channel logo and channel name as well as the title of the current program.

Through the use of a variety of symbols the user can directly access subtitles, language selection as well as the integrated OSD teletext decoder. Even the starting and stopping of a recording can be done through the dedicated symbols in the Info bar or through the corresponding function buttons on the remote control.

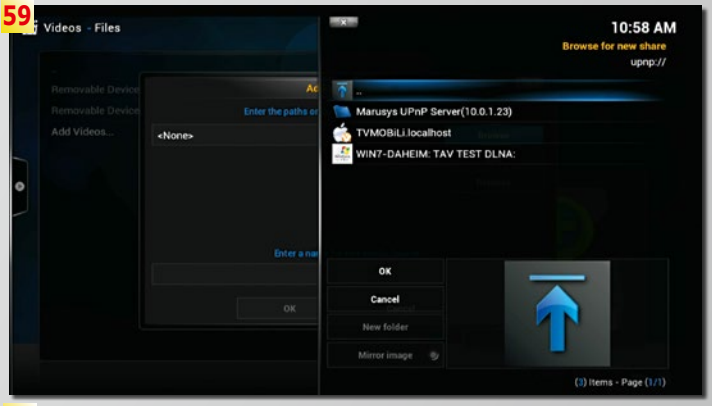
Thanks to the freely selectable size of the Timeshift cache memory, you no longer have to worry about an unexpected visitor or telephone call; the current program will simply be paused so that you can restart it when you're ready.

The PVR can record two channels at the same time

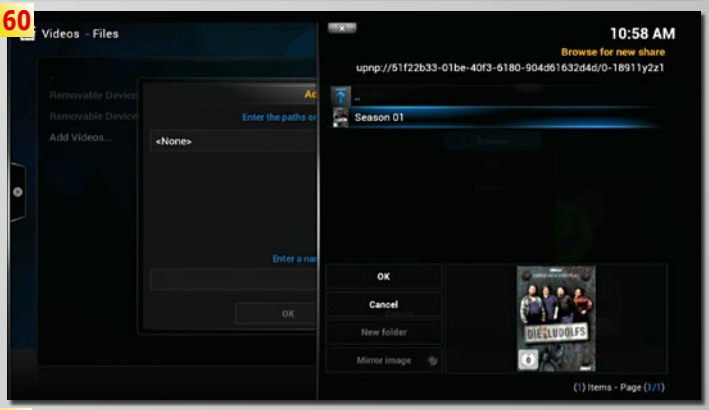
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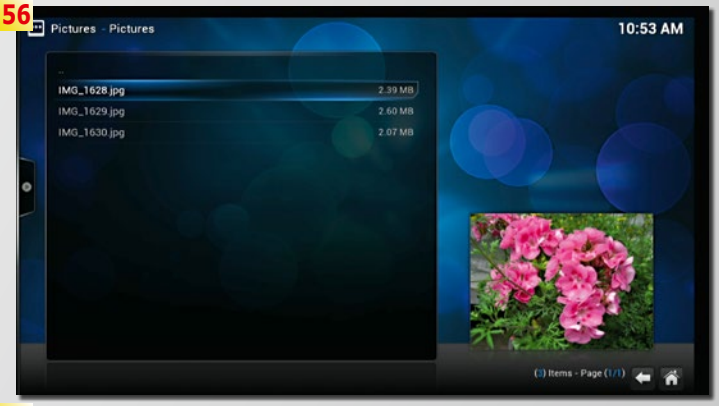
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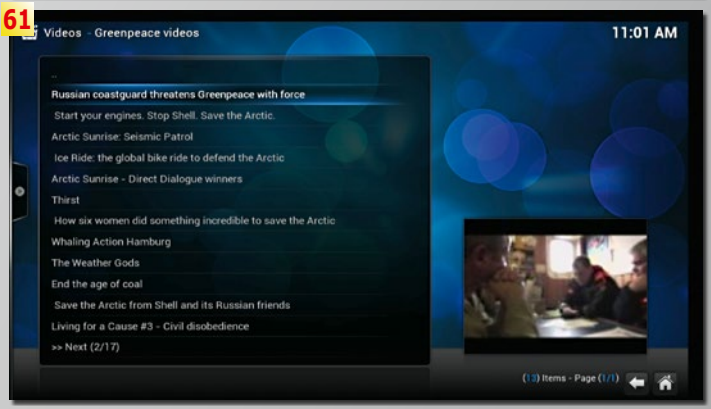
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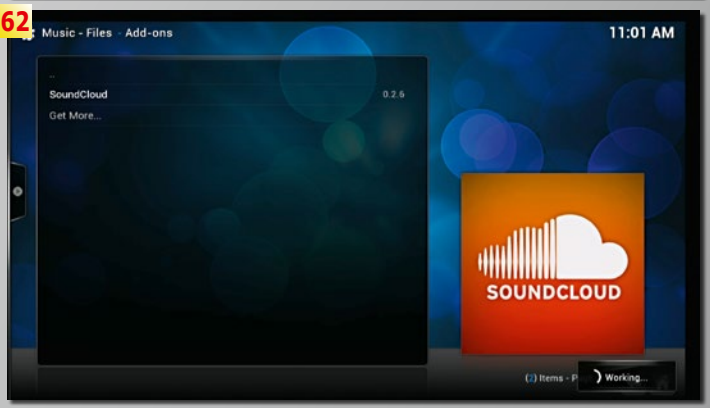
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62



while a third channel lands in the Timeshift cache memory. Excellent!

Regarding the AB IPBox Prismcube Ruby's picture and audio quality, we had absolutely nothing to complain about in our tests. Even the channel switching time of roughly one second was sufficiently fast. The AB-COM's built-in tuner was sensitive enough such that there were no problems receiving weak signals or narrow-band SCPC signals. We had no trouble receiving signals from BADR 26° east and TURKSAT 42° east.

The PNX8496-1250DMIPS CPU with 4 GB NAND Flash as well as 4GB DRAM all adds up to a receiver that has no trouble reacting quickly to remote control commands and also can play back high resolution content without any difficulties. The Linux based Xbox Media Center was perfectly matched with the hardware such that this new receiver left us with a very positive impression.

The Settings menu can be accessed from the AB IPBox's Main menu and essentially provides access to the same choices that were available in the initial installation. There are a few extras like a manual channel scan, the ability to edit satellite and transponder entries as well as network settings. We definitely liked that this box comes with a built-in WiFi receiver that lets you quickly and easily set up a link to the local router without having to plug in some kind of WiFi dongle.

The freely selectable extra before and after recording time guarantees that you won't miss any of your favorite recorded programs if for some reason the provider doesn't stick to their published broadcasting times.

If you want to save energy, you can activate the Deep Standby function. In this mode the receiver uses almost no energy at all but it would then need about 80 seconds of power up time before it would be ready to use again.

And then there's the numerous Xbox Media Center's multimedia functions that are available to the user. In our tests we were able to not only play back music in the

MIDI, AIFF, WAV/WAVE, MP2, MP3, AAC, AACplus, AC3, DTS, ALAC, AMR and WMA formats, we were also able to watch videos in the AVI, MPEG, WMV, ASF, FLV, QuickTime, MP4, VOB, DivX, WEBM and RealMedia formats. This is an excellent representative assortment of supported formats.

Even the photo viewer can show pictures in BMP, JPEG, GIF, PNG and TIFF. It doesn't matter if you want to use the AB IPBox Prismcube Ruby as a jukebox or rather to view Internet videos or show your family and friends the latest pictures from your vacation, this new AB-COM receiver will get the job done.

And you're not limited to locally available media; the Xbox Media Center also supports the following network protocols: UPnP, NFS, SMB/SAMBA/CIFS, HTTP, HTTPS, FTP, RTSP as well as TCP, UDP, SFTP and RTP. You can therefore access almost anything that is available via a network cable.

In our tests we didn't have any problems playing back local media or media from network access via UPnP or SMB, the AB IPBox automatically recognized all of the available servers and played back the content without any difficulties.

To round off the thus far enormously capable AB IPBox Prismcube Ruby, there are additional Add-ons that can be download from the Internet. These small programs expand the receiver's video, audio and tools capabilities with, for example, YouTube or Vimeo access, access to the libraries of different TV channels, the ability to use Soundcloud or other audio services or to simply start an RSS reader or an IRC client.







The selection of usable Add-ons is huge and they are all easy to install thanks to the ability to directly download them from the Internet.

And regarding Internet downloads: since the manufacturer is constantly working on software improvements, these, just like the Add-ons, can be updated directly from the Internet with the push of just one button. It really doesn't get any easier than this.

In case you should have any questions regarding the operation of the new ABCOM receiver, the manufacturer has made available an extremely practical help function that can be accessed directly from the receiver's Main menu.

Here you'll find not only explanations on the use of the remote control and the individual connections, there's also detailed illustrated explanations of the most critical receiver functions.

We found the AB IPBox Prismcube Ruby's 3D GUI (Graphical User Interface) to be for the most part intuitive and excellent. If desired the user can even customize the display with skins downloadable from the internet.

63. Soundcloud access
64. SCPC reception on TURKSAT at 42° east

EXPERT
OPINION

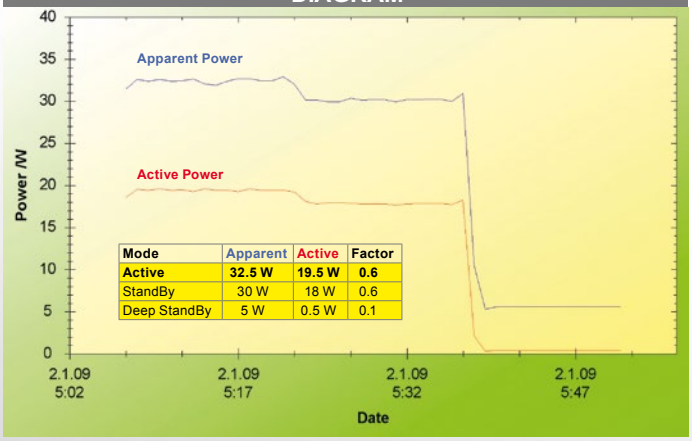


+
- **Perfect incorporation of the Xbox Media Center as an operating system for a standalone receiver**
- **Thanks to its many multimedia features, this receiver combines the functions of a classic PVR with those of a media player**
- **Innovative and modern design**
- **Uncomplicated installation of 2.5“ SATA hard drives**
- **Modern and cleverly designed software that is easy to understand and can be used by anyone**
- **Ideal receiver for the whole family**

–
- **A HW looped-through tuner output is not available.**



ENERGY
DIAGRAM



The first 15 minutes active operation, the second 15 minutes Fake Standby, the third 15 minutes Deep Standby


DEVISER
CHARGER
POWER
DRAIN
CNR
TV-Cabo
08:10
POWER: 54.2 dBuV
0 20 40 60 80 100 120
CNR: 39.4 dB
0 5 10 15 20 25 30 35 40
CH: 33
FREQ: 570.00 MHz
BW: 8.00 MHz
POWER: 54.2 dBuV
CNR: 39.4 dB
Channel Type: DVB-C
S7000
FUNC
ENTRY
1 ABC
2 DEF
3 GHI
0
4 JKL
5 MNO
6 PQR
7 STU
8 VWX
ESC

ТВ анализатор Deviser S7000



- *Также хорош, как и дорогостоящие коммерческие анализаторы*
- *Спектральный анализ для определения транспондеров в режиме реального времени очень быстрый*
- *Интегрированная функция дистанционного управления – через ПК или мобильный телефон*
- *Идеален для синхронизированных моторизированных антенн, благодаря интегрированной каскадной диаграмме*
- *Возможны измерения эхо-сигнала*



Часть 2: Практический тест

Professional Combination Signal Analyzer for All Digital TV Standards

■TELE-audiovision's Technical Editor Vitor Martins Augusto using the Deviser S7000

DEVISER

Deviser TV Analyser S7000

Part 1: Analyzer Functions

- *Very large, high resolution display*
- *Suitable for MPEG2 and MPEG4*
- *Real-time spectrum for quickly identifying active transponders*
- *Can be remotely controlled via PC or mobile phone*
- *Very ergonomical and practical operation*



■ Part 1 of this test report appeared in the 09-10/2013 issue of TELE-audiovision. It can be read online here:
www.TELE-audiovision.com/TELE-audiovision-1309/eng/deviser1.pdf

TOPSIGNAL DIGITAL

Professional satellite dish & LNB manufacturer



Marine Antenna

Mobile Antenna

KU 60

KU 60

KU 75

KU 75

KU 90

TQU11

TTU11

TSU11

T8U11

TQU13

TSU13

TQB11

TSB11

Ningbo Senfu Machinery & Electric Manufacturing Co. Ltd.
ADD: Lin Gang Industry Development Zone
Ninghai, Ningbo, China
Tel: +86 574 82815260,61,62
Fax: +86 574 82815263
Email: info@topsignalsat.com

www.topsignalsat.com

While we introduced the functions of this new Deviser S7000 analyzer in the previous issue of TELE-audiovision, in this second part we want to reveal to you the results of our actual testing and also present our comparison to a number of other reference analyzers.

The Deviser S7000 is an amazing signal analyzer that can demodulate, measure and analyze nearly every possible TV signal. There are numerous familiar measurements and then also a number of seldom used measurements available to the technician.

The integrated transport stream analyzer also makes this device interesting for use in head-end stations since, for example, it would be able to troubleshoot any problems in newly muxed transport streams. To properly test all of the different functions in the S7000, we created a number of different scenarios in our test center and constructed tasks for the analyzer to deal with.

The first thing you'd expect with a professional analyzer is very high precision; you want to be able to trust the values that are measured. That's why we measured a number of different signal sources with five different reference analyzers and compared the results to the S7000. The five reference analyzers that we used were higher-end devices.

As you can see in the following table, the S7000's measurement values are very similar to those of the five reference devices.

The fact that that Deviser is serious about its measurement precision is confirmed not once but twice in the S7000's configuration menu: you can see the date of the most recent calibration and there's also the ability to synchronize the S7000's measurement values on your own so that you can, for example, guarantee that all of your company's analyzers will perform identical measurements.

Exercise: Fine-tuning a Motorized 100cm Offset Antenna

Aligning an antenna with the S7000 is extremely easy since this analyzer confirms its own position through the included GPS antenna and automatically displays elevation, azimuth and LNB skew for the selected satellite.

The setup of the new antenna therefore turned out to be unspectacular and the strongest satellites could immediately be received after which a fine-tuning of the antenna was all that remained to be done.

And it's here where the Deviser S7000 could really prove itself; the presentation of waterfall diagrams makes this otherwise cumbersome job a piece of cake.

Simply move the antenna from one limit to the other and then have a look at the resulting waterfall diagram: it instantly becomes clear how many satellites can be received and at what signal level. The following holds true for the northern hemisphere: if the satellites to the east have a strong signal while the satellites to the west are weaker, then the entire antenna including the motor has to be moved to the left.

If it's the other way around, then the antenna would be moved to the right. If the outer satellites are strong while the central ones are weaker, then the inclination of the motor would need to be lowered and the inclination of the antenna raised.

If reception of the central satellites is good and the outer ones weak, the opposite needs to be done. This procedure was previously presented in the 02-03/2012 issue of TELE-audiovision - see Table 2.

The great thing about a waterfall diagram is that you can see in a single glance the reception of the entire horizon. With a little bit of practice and feeling it would even be possible to use the waterfall diagram to identify individual satellites and after a little time you'll know how far the antenna would need to be turned to optimize reception.

There's no question: when aligning a satellite antenna, regardless if it's motorized or not, a real-time spectrum is by far the best aid that an analyzer could offer. And, beyond that, if the spectrum is presented as a waterfall diagram, it would be heaven.

Thank you, Deviser, for incorporating such valuable display tools; we can no longer do without them.

Modulation	Measurement	Deviser S7000	Reference 1	Reference 2	Reference 3	Reference 4	Reference 5
DVB-S	Power	76.9 dBµV	75.6 dBµV	77.0 dBµV	73.0 dBµV	76.0 dBµV	75.0 dBµV
	MER	14.9 dB	-	12.5 dB	12.0 dB	17.1 dB	14.9 dB
	CBER	<1.0E-6	-	3.6E-6	1.7E-6	2.0E-4	<1.0E-6
	VBER	<1.0E-8	<1.0E-8	<1.0E-8	-	<1.0E-7	<1.0E-9
DVB-S2	Power	76.3 dBµV	-	76.0 dBµV	-	76.1 dBµV	74.6 dBµV
	MER	13.3 dB	-	16.8 dB	-	17.1 dB	14.8 dB
	CBER	4.4E-0	-	7.0E-4	-	2.0E-4	4.4E-4
	LBER	<1.0E-8	-	<1.0E-8	-	<1.0E-7	<1.0E-7
DVB-T	Power	56.5 dBµV	-	-	56.5 dBµV	55.0 dBµV	56.5 dBµV
	MER	>30 dB	-	-	30.3 dB	34.3 dB	30.7 dB
	CBER	2.1E-02	-	-	6.1E-5	3.0E-5	<1.0E-6
	VBER	1.9E-03	-	-	-	<1.0E-8	<1.0E-9
DVB-C	Power	52.9 dBµV	49.0 dBµV	-	51.0 dBµV	51.1 dBµV	51.3 dBµV
	MER	35.1 dB	29.5 dB	-	23.4 dB	>36 dB	29.5 dB
	PRE-BER	<1.0E-9	<1.0E-8	-	1.3E-3	<1.0E-9	<1.0E-7
	POST-BER	<1.0E-9	-	-	-	<1.0E-9	<1.0E-9
Analog	Video	57.5 dBµV	59.9 dBµV	-	58.0 dBµV	58.1 dBµV	57.7 dBµV
	Audio	42.3 dBµV	-	-	41.5 dBµV	41.5 dBµV	39.7 dBµV

Table 1: Comparison of the S7000's measurement values to five other professional analyzers in our TELE-audiovision test lab.

Waterfall

1. The waterfall diagram shows the spectrum encoded with colours over a period of time. If the antenna is rotated, it is possible to clearly see the individual satellites and their transponders. Also, this gives a clear indication on the signal level of each satellite: in the picture you can see that some satellites have a very low signal.

2. Deviser implemented an additional visualization in the S7000: a combined view of the spectrum and the respective waterfall diagram.

3. This is ideal to adjust the antenna. The picture shows the variation of the reception – this allows to fine tune the antenna for maximum gain.

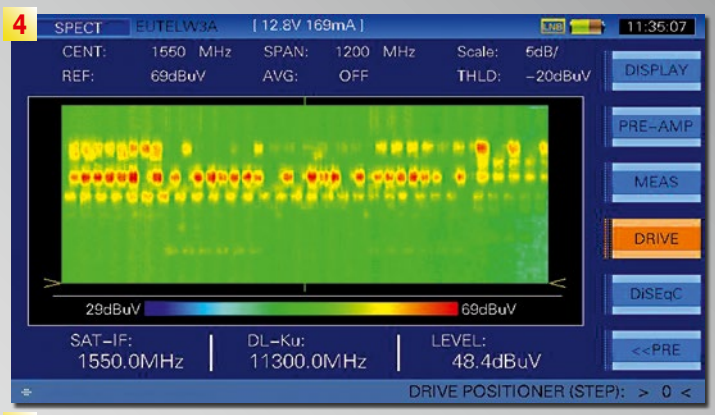
4. This picture shots that satellites located east show a much better signal than satellites in the west. This means the inclination of the motor is wrong.

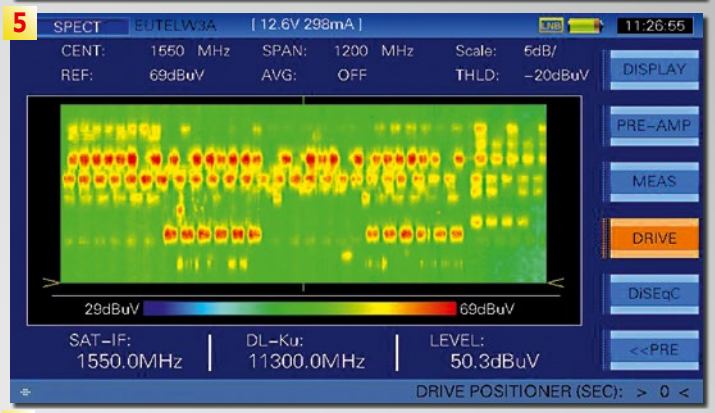
5. After correcting the motor inclination, all satellites are received with a similar signal level.

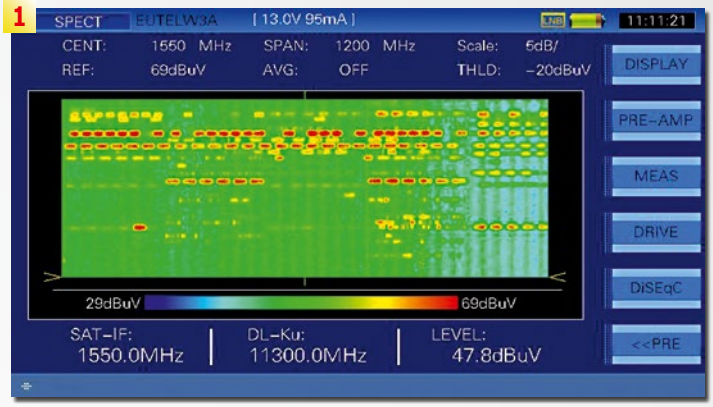
6. The motor handling is extremely well implemented on the Devisor S7000. You can choose between a fully dedicated menu featuring all required DiSEqC-commands (1.0, 1.1 and 1.2), as well as theSaTCR (Sat Cable Routing) mode, used to provide the satellite signal to multiple users with a single cable.

7. Alternatively you can stay in the spectrum modus and rotate the dish using the DRIVE option. When it is active, the left and right keys are used to rotate the dish, while the up and down keys are used to switch between a continuous move and a stepped move. The pictures shows the results of the fine tuning – no doubts it has never been as easy to obtain the perfect alignment.

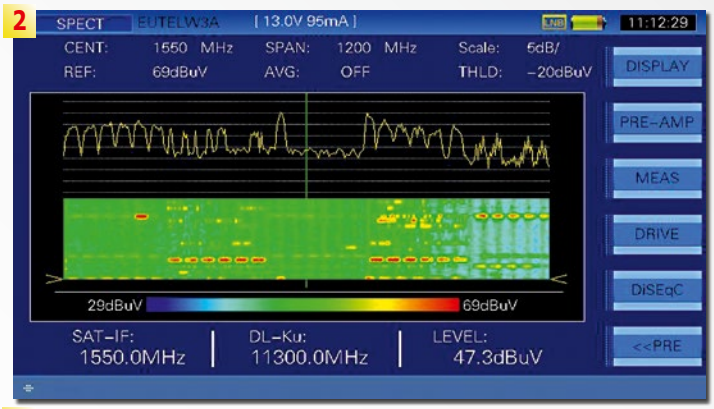
8. As a reward it is possible to enjoy a bit of live radio fromEutelsat W3A

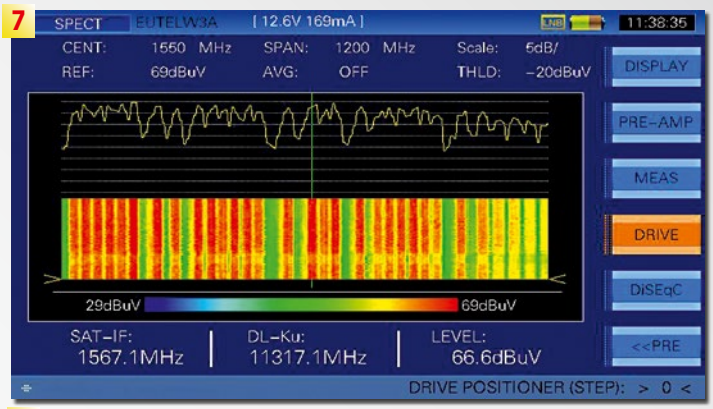


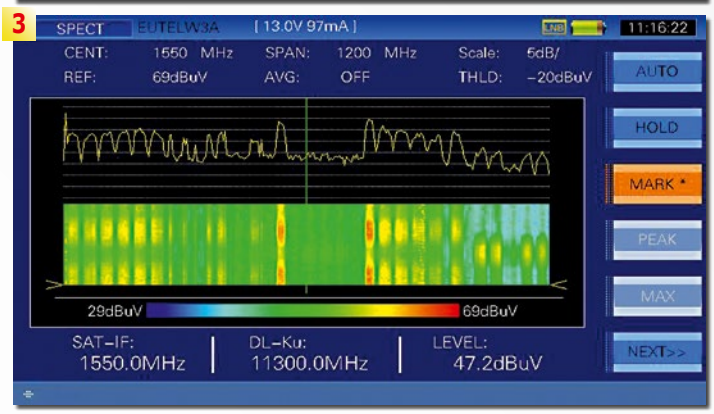
















■ Checking a Multiswitch with the Deviser S7000

Exercise: Troubleshooting - Interference in a Home's CATV Distribution

In our Portuguese test center CATV and satellite TV are available over a common cable. The coax cable from the CATV provider is first run through a splitter with one of the outputs going to a DOCSIS modem to provide broadband Internet access. The second splitter output goes to a multiswitch that takes the CATV signal of 50-850 MHz and combines it with the satellite signal of 950-2100 MHz from Astra 19.2E, Hotbird 13.0E and Hispasat 30.0W.

All of a sudden, only weak, static-filled analog CATV could be received at all the cable jacks while the satellite signal could not be received at all.

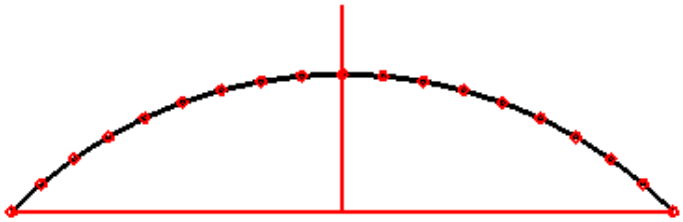
Here comes the S7000. On the first cable port there was no digital cable signal at all and also no satellite signal. Using an analog transponder the problem was quickly found: the coax cable was not correctly connected to the cable port.

Nevertheless, there still was intermittent interference. A Barscan of the CATV channels showed a significant reduction in the signal level/performance (depending on whether it's an analog or digital signal) and the constellation diagram showed widely scattered clouds rather than the usual focused image points for each quadrant.

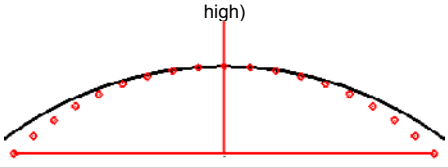
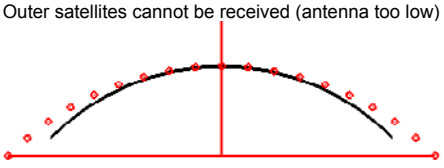
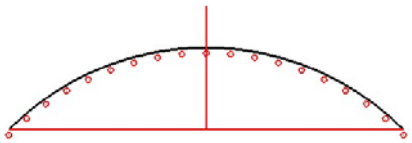
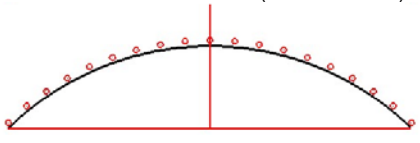
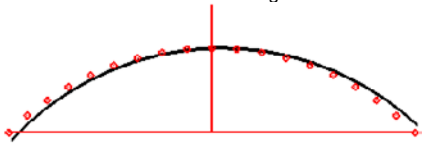
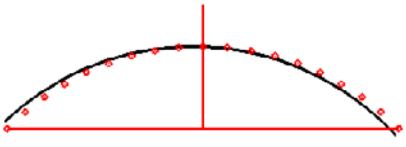
This situation could also be measured on another antenna jack and this led to the conclusion that the problem was not with the cable or the antenna jacks. Next the distribution cabinet was opened and the analyzer was connected directly to one of the multiswitch outputs. Once again the same problem was observed.

Since the attached satellite antenna and especially the LNBs have not been serviced in some time, we began to suspect that one

■ **Table 2: Correct alignment of the motor and antenna: all the satellites are on the antenna's arc**



Faulty alignment of the motor and antenna

	Too high	Too low
Motor axis inclination	Outer satellites cannot be received (antenna too high) 	Outer satellites cannot be received (antenna too low) 
Antenna inclination	No satellites can be received (antenna too high) 	No satellites can be received (antenna too low) 
Motor alignment	Left satellites can't be received because antenna is too low; right satellites can't be received because antenna is too high 	Left satellites can't be received because antenna is too high; right satellites can't be received because antenna is too low 

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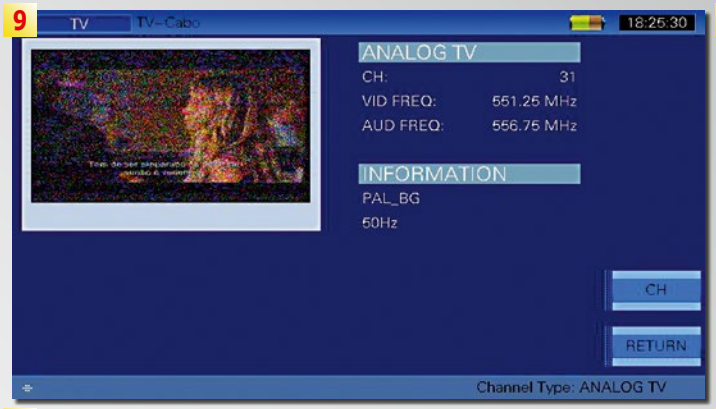
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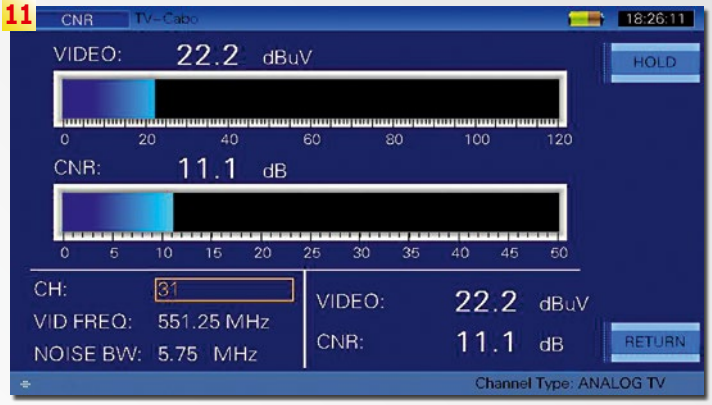
info@perfectvisionmfg.com | +1.501.955.0032

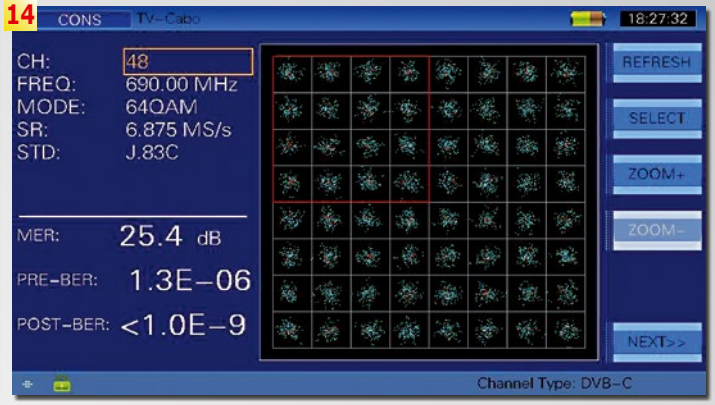












or more connectors had become oxidized or that an LNB was defective. The LNBV output cables were therefore connected individually to the S7000 and discovered that each of the polarizations from the three Quattro LNBs could be perfectly received.

Could the multiswitch be defective? When the CATV cable was connected directly from the splitter to the analyzer, some light could now be shed on the problem: interference could also be seen here even though the multiswitch wasn't being used. The problem could then only be with the signal from the provider; or could it be the splitter?

When the cable from the provider was directly connected to the analyzer, there

CATV

9. An analogue picture like this is normally an indication that something is definitely wrong with the cable. And yes: even today it is still important to be able to measure analogue CATV channels and to show a live picture.

10. The video and audio signal level is far too low.

11. Same problem with the channel to noise ratio.

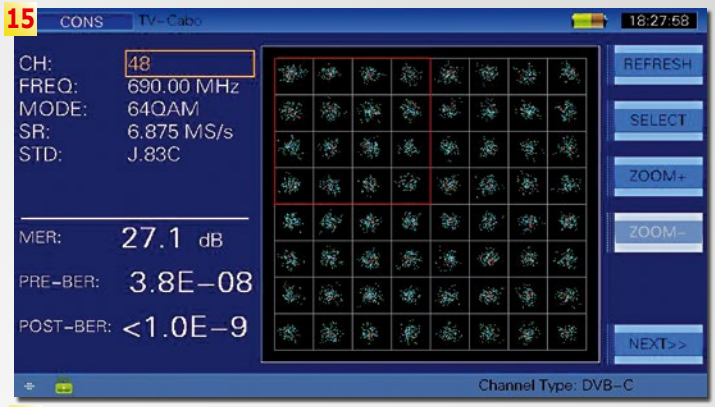
12. After opening the aerial socket and reconnecting the coaxial cable properly, reception was apparently back to normal.

13. Still I was getting intermittent picture interferences. There was another additional problem.

14. The constellation diagram shows a less defined and concentrated cloud – a clear indication that the signal modulation was not OK.

15. The culprit was a defect signal splitter. After exchanging it, the constellation diagram showed perfectly concentrated clouds.

16. The signal quality was back to normal and without any interferences.





AB IPBox PRISMCUBE

Satellite and XBMC Multimedia Center



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was no problem receiving analog and digital cable TV signals. The problem was definitely with the splitter and not with the provider. Fortunately, there's always a few replacement parts lying around so after replacing the splitter with a new one, everything once again functioned normally.

In these fault scenarios it was demonstrated how beneficial it would be to have an analyzer like the S7000. It has no trouble analyzing DVB-C signals in all the different modulations as well as analog and DVB-S/S2 signals. The real-time spectrum display makes it possible to identify intermittent interference and, of course, the combined waterfall display is largely preferred since at the same time as the spectrum this is also retained over a period of time. In this way tendencies, among other things, could be recognized. This could be especially useful if the signal only slowly rises or falls off.

The multiswitch could be controlled through the perfect DiSEqC implementation and the modulation quality could be checked thanks to the constellation diagram. During the tests cables were connected and disconnected without any hiccups to the S7000. All in all, the analyzer has shown itself to be very robust.

The S7000 is the perfect technician's tool for troubleshooting problems at a customer site. All the required functions are without exception correctly implemented and function as expected.

Exercise: Designing a DIY DVB-T antenna

In many regions DVB-T is implemented as an SFN (Single Frequency Network). All broadcasters transmit one or more transponders on the same frequencies. The huge advantage here is that the remaining frequency spectrum is left for other applications. The user can move the receiver around within the region (for example, in a car) without having to change the frequency even when reception is from another transmitter.

In this test we wanted to find out if the stub antennas included with the USB receiver - in this case it's T-dipole antennas - are matched to the country-specific DVB-T frequency. For this reason a T-dipole antenna was constructed out of wire. The length of the wire was calculated precisely for the Portuguese DVB-T frequency of 754 MHz. The formulas for the DIY T-dipole are:

For a DVB-T frequency of 754 MHz you get an outer conductor length of 94mm and an inner conductor length of 96mm.

The outer conductor length can be achieved by simply pulling back the shield on the cable to the proper length while the insulation for the inner conductor is simply removed.

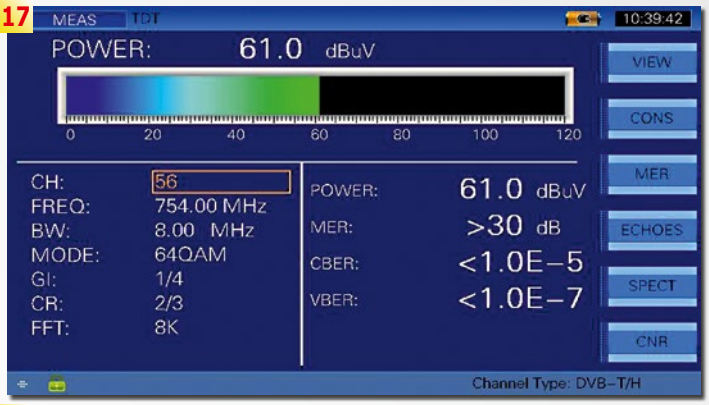
And there you have it, a DIY (Do-it-Yourself) DVB-T antenna for SFN reception. You can find a variety of construction ideas for these T-dipole antennas on the Internet and even for double-quad antennas that promise even better reception.

But here's the question: is our DIY antenna really better than the included stub antenna? The answer can be seen in Table 3.

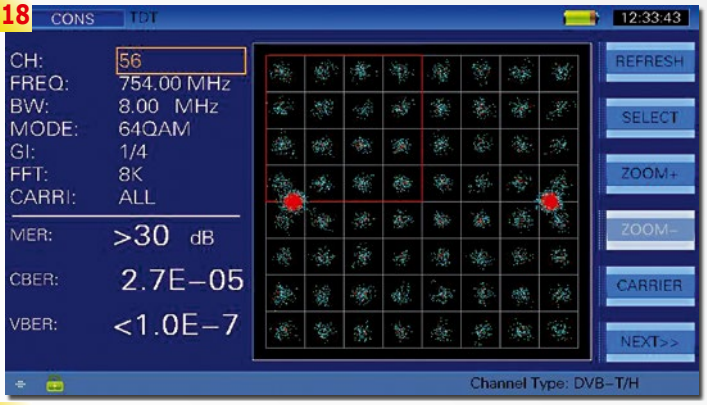
Sure enough, it pays to use a specialized T-Dipole antenna. However, our experiments have shown that you can simply cut off the metal sheathing.

If the inner conductor is left at the correct length, the reception results are even better thus making the building and optimization of the antenna that much easier. The Deviser S7000 answered our question completely. Through its high measurement precision and speed we were quickly able to get the answers we needed regarding the reception capabilities of the antennas.

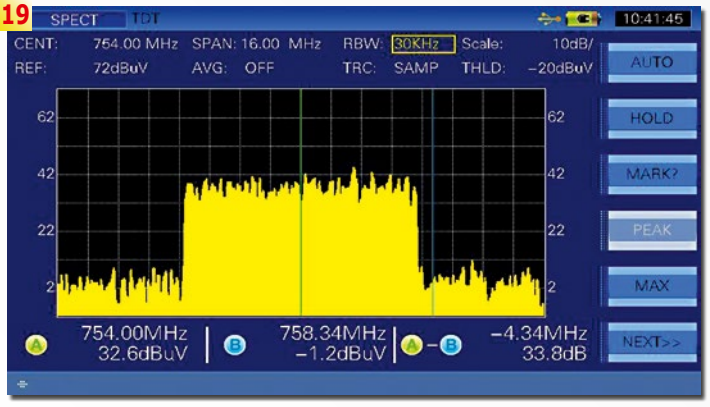
17



18



19



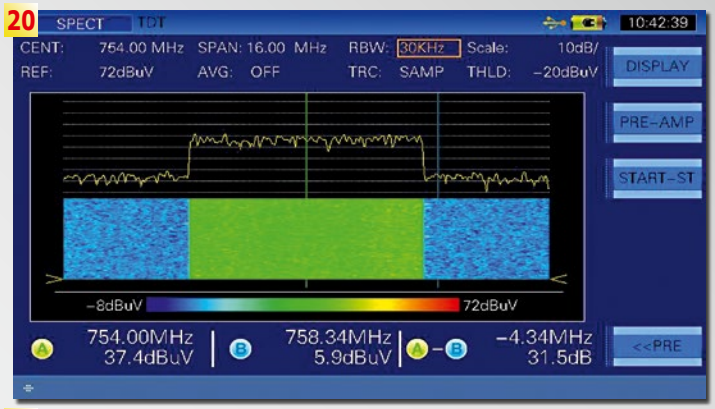
$$\text{Length of Outer Conductor (mm)} = \frac{(C/F) * 0.95}{4}$$

$$\text{Length of Inner Conductor (mm)} = \frac{(C/F) * 0.97}{4}$$

Formula 1: The formla to calculate a DIY T dipol antenna

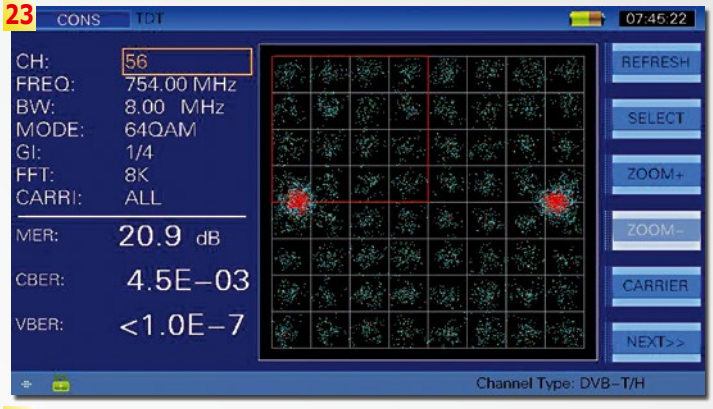
754 MHz	Televés TDT Roof Antenna	Original Antenna	Optimized DIY T-Dipol Antenna
Leistung	61.0dBµV	41.7dBµV	46.2dBµV
MER	>30 dB	23.8 dB	23.8 dB
CBER	<1.0E-5	2.2E-3	3.4E-3
VBER	<1.0E-7	<1.0E-7	<1.0E-7

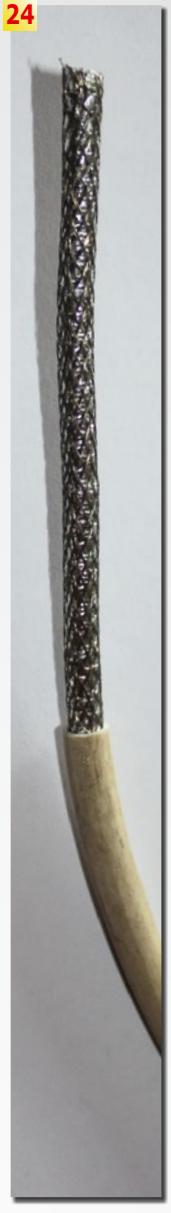
Table 3: DVB-T measurement comparison using the Deviser S7000





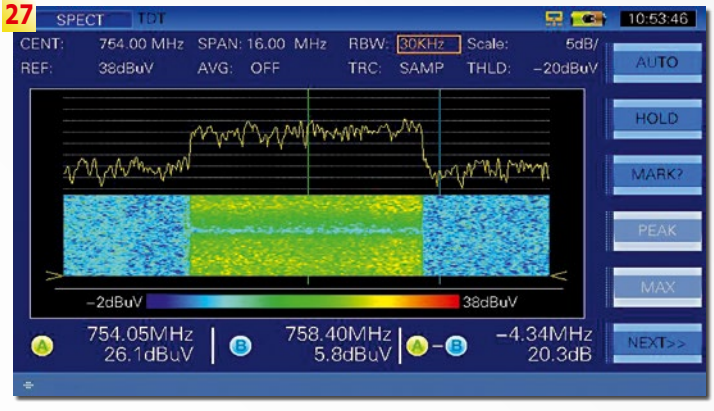












DIY DVB-T Antenna

17. DVB-T Signal of our external antenna. Reception is quite good.

18. A good indicator for DVB-T reception quality is the constellation diagram. As long as all dots are closely within the centre of each square, everything is fine.

19. The Deviser S7000 allows to set the resolution bandwidth in spectrum mode. This is unique among the meters I have tested so far. A smaller bandwidth will feature higher resolution, while a bigger bandwidth will result in a slower spectrum refresh rate. Because we are looking at the specific DVB-T transponder at 754 MHz, a span of 16 MHz is sufficient and thus even the lowest resolution bandwidth setting will produce a real time refresh rate. The resolution is so good, that you can practically see the carriers.

20. The same signal, but in combined spectrum and waterfall diagram view. This allows to monitor the spectrum over a period of time, while simultaneously monitoring the spectrum in high detail.

21. A generic rod antenna provided with a USB DVB-T receiver: this antenna was not designed specifically for a certain frequency; its length does not match the SDN frequency of 754 MHz as used in Portugal.

22. As a result, the signal power is only 41.7 dbµV and the CBER is rather low, though still correctable since the VBER is under 1.0E-7.

23. Looking at the constellation diagram using the generic rod antenna, it is obvious that the signal quality is far from perfect.

24. First step of the DIY antenna: strip the rubber off the cable, maintaining the length calculated for the SFN frequency.

25. Flip the mesh back and leave the inner wire with the correct length: you just got yourself the “poor-man’s” DVB-T antenna.

26. Amazingly, the signal power is on average 5 dBµV higher than with the generic antenna.

27. Again, using the waterfall diagram it is easy to adjust the antenna so that reception is maximized. It is strange to think on how it has been possible in the past to fine tune the alignment of the antenna without this functionality. One thing is for sure: the waterfall diagram is an outstanding aid for installers.

Echo Measurement

The Deviser S7000 can also perform Echo measurements, critical for DVB-T/H. This makes it possible to optimally erect an antenna such that the interference caused by a second, more distant transmitter can be eliminated.

When this second transmitter lies outside of the so-called Guard interval, annoying runtime delays are the result that the demodulator can no longer compensate for. This leads to interference and, at worst, a total loss of reception. A technician armed with the S7000 can solve this problem in which, for example, he can set up two antennas and offset them such that the incoming interference signals would simply cancel each other out.

The principle behind this is that both antennas are aligned to the nearest transmitter and the interference coming from the distant transmitters would involve turning the antenna to receive them.

If the offset of the two antennas is selected cleverly, then the signals from the two nearby antennas would add to each other while the signals from the distant transmitters would cancel each other out.

Since these types of interference echoes did not exist near our test center this type of interference was not a problem here although with the S7000 it would have been very easy to set up such a "double antenna".

The ability to confirm your actual position with the included GPS antenna is actually quite interesting. In this way you could use the S7000 to create regional reception maps.

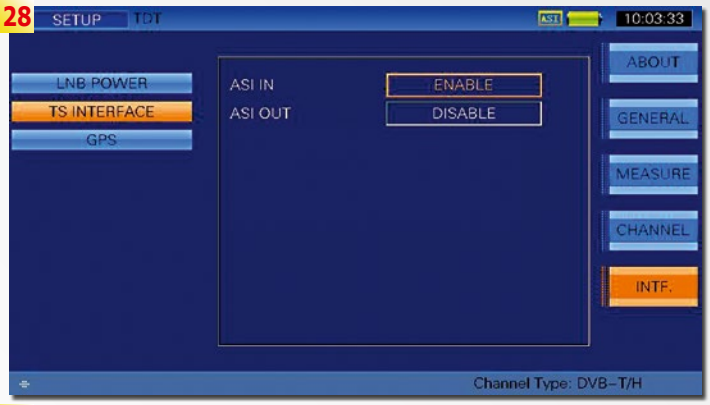
Too bad you can't save signal strength measurements automatically with the local position so that they could later be uploaded to a PC or exported in Google Maps format. Deviser will most likely incorporate this function in a future firmware update. This would allow you to drive around a selected region and at the end you'd have an automatically generated field strength map.

Exercise: MUX analysis of a self-generated transport stream

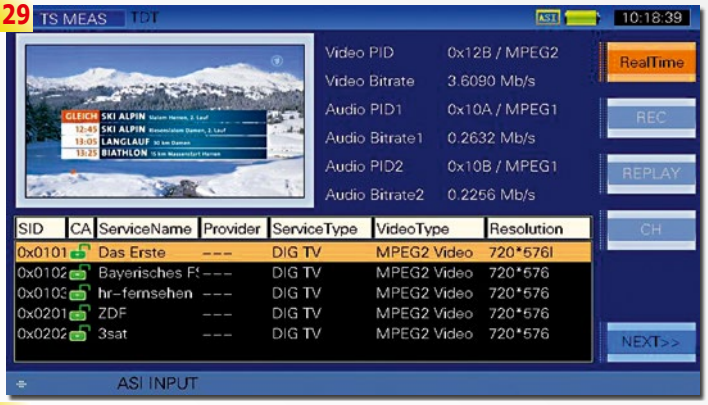
To test the Deviser S7000 as a TV analyzer, a scenario was set up in a head-end station. A professional IRD with an integrated multiplexer receives a transponder via the built-in DVB-S2 tuner and from a second IRD via the ASI-IN interface. The two transponders are then muxed together into a new transponder that is sent to the ASI output.

The S7000 was connected to this output with the goal

28



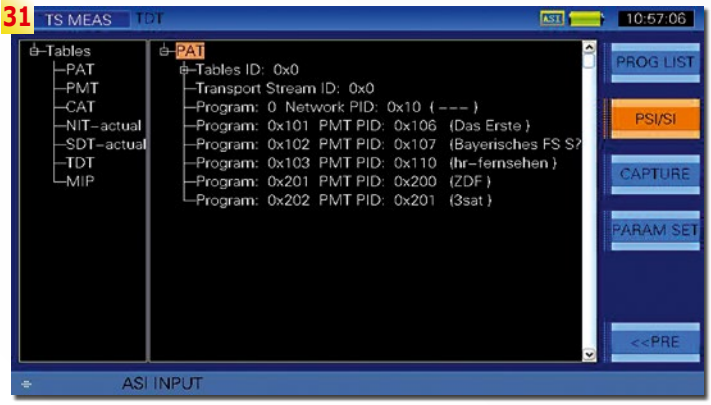
29



30



31



Mux TS Analyser

28. In order to use the Transport Stream Analyser of the S7000 with the ASI input, you have to first enable this interface.

29. By pressing the TV key on the meter, you enter the Transport Stream Analyser, which is now receiving the TS stream on its ASI input connector. In this case I setup a TS containing channels from two different German FTA transponders.

30. The Deviser S7000 gives access to all parameters of the TS stream. 31, 32. Interestingly, the equipment used to generate this mux filtered all NIT information, which is correct. Don't you hate receiving a CATV transponder containing a satellite NIT?

33. One important application for the S7000: determining the TS rate. Notice on this picture that the specified bandwidth of the TS is 75 MB/s, but 32.45% are not being used. This clearly represents a waste of allocated bandwidth.

34. I reduced the bandwidth on the multiplexer to 35 MB/s but this time the S7000 indicates that there is 0% empty capacity in the stream. This means that there is no reserve for sporadic increases in bandwidth.

35. Again, the multiplexer was setup, this time to use a bandwidth of 40 MB/s. And this time around 15% of the bandwidth is empty, leaving some reserve. This adjustment took a couple of minutes and resulted in saving a bandwidth of 35 MB/s.

36. To compare our TS with one of the originally broadcasted streams, we connected the ASI output of one of the IRDs.

37. While there is no disturbance in the PCR interval measurement in our TS…

38. …some can be detected from the satellite signal, which is normal after travelling back and forth into space. However, if the TS from our multiplexer would show a PCR like this, then something would clearly be wrong.

39. Analysis of one of the original satellite Transport Streams.

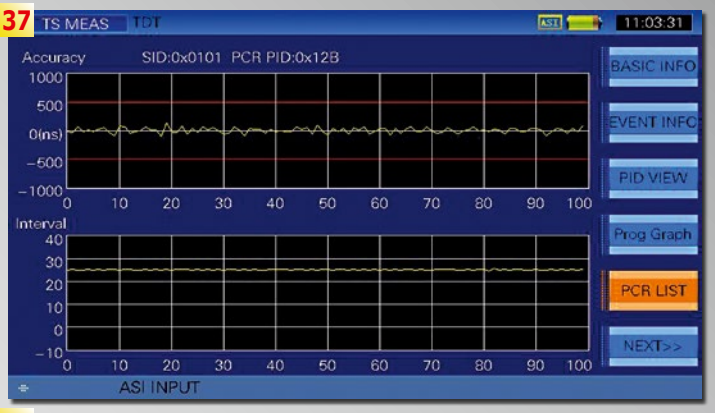
40. The PIDs carry different numbers…

41. …and the NIT contains additional data.

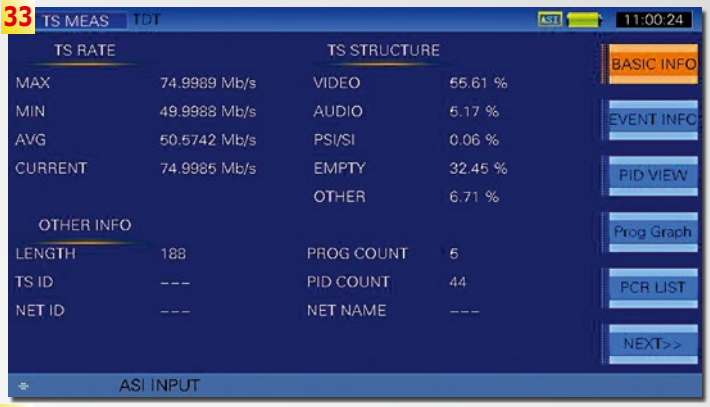
32



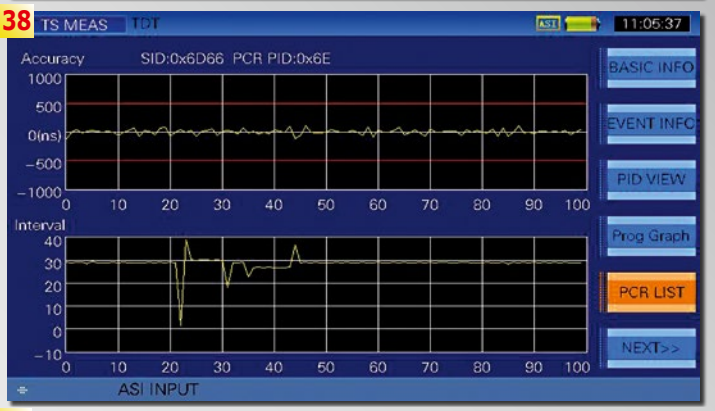
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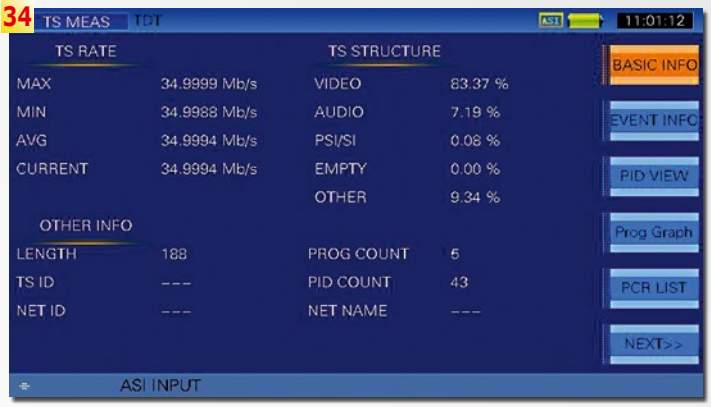
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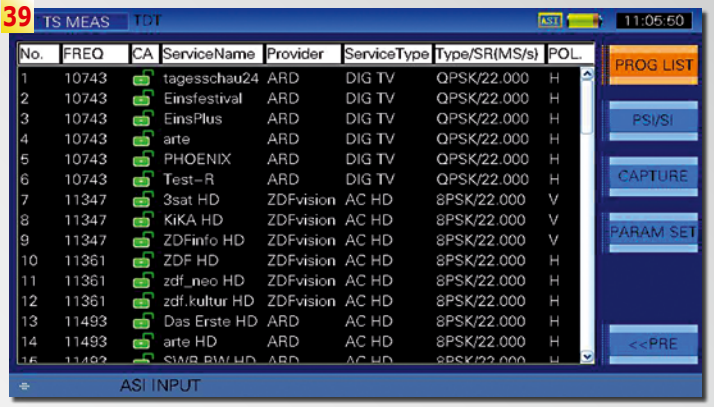
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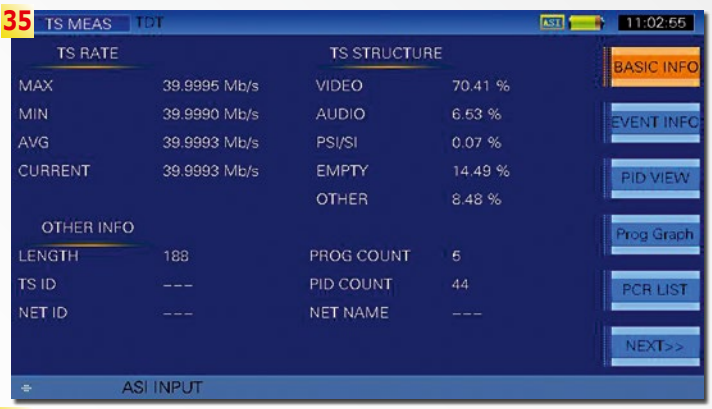
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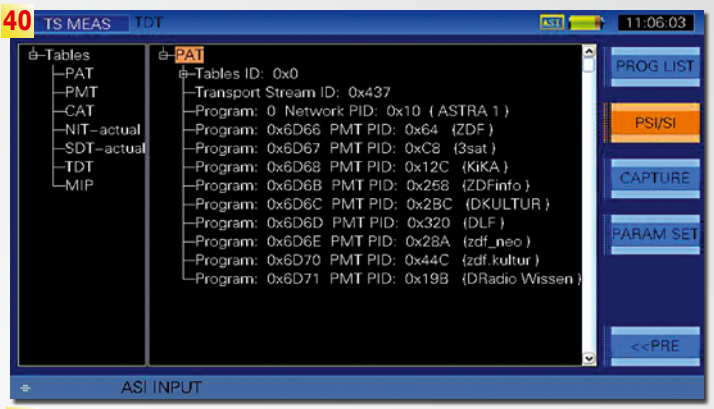
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35



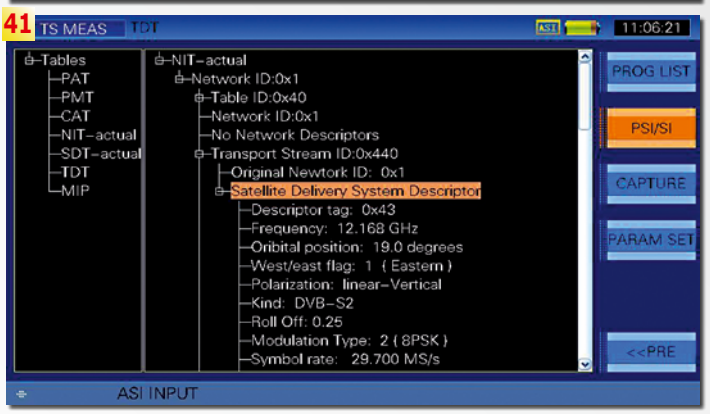
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36



41



of analyzing the received transponder stream to, for example, check the PIDs that were being used and to measure eventual timing errors.

This job is handled by the S7000 effortlessly. You merely have to activate the ASI input to use the TV analyzer function with the TS stream on the ASI input. Numerous functions are now available just like in normal Tuner mode.

We could quickly determine if the stream really consisted of all the desired channels and services. It's interesting to note that the IRD assigned new PIDs such that they don't correspond to the PIDs of the original transponder. The S7000 showed this instantly.

Finally, it also pays to perform a PCR measurement: if the original satellite signal had no deviations (in the green range), the stream produced by the IRD was perfectly synchronized with the S7000's clock generator.

If there was the smallest of errors, they would have been further multiplied through additional signal distribution.

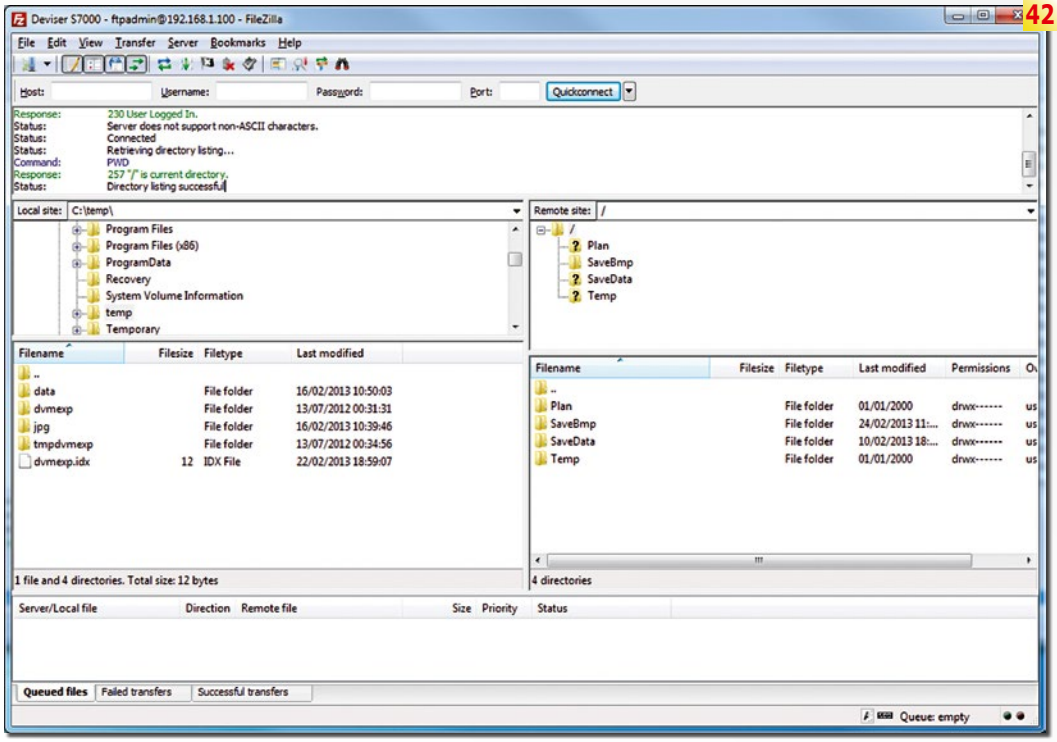
The Deviser S7000 is ideal for all of these tasks.

S7000's PC Software

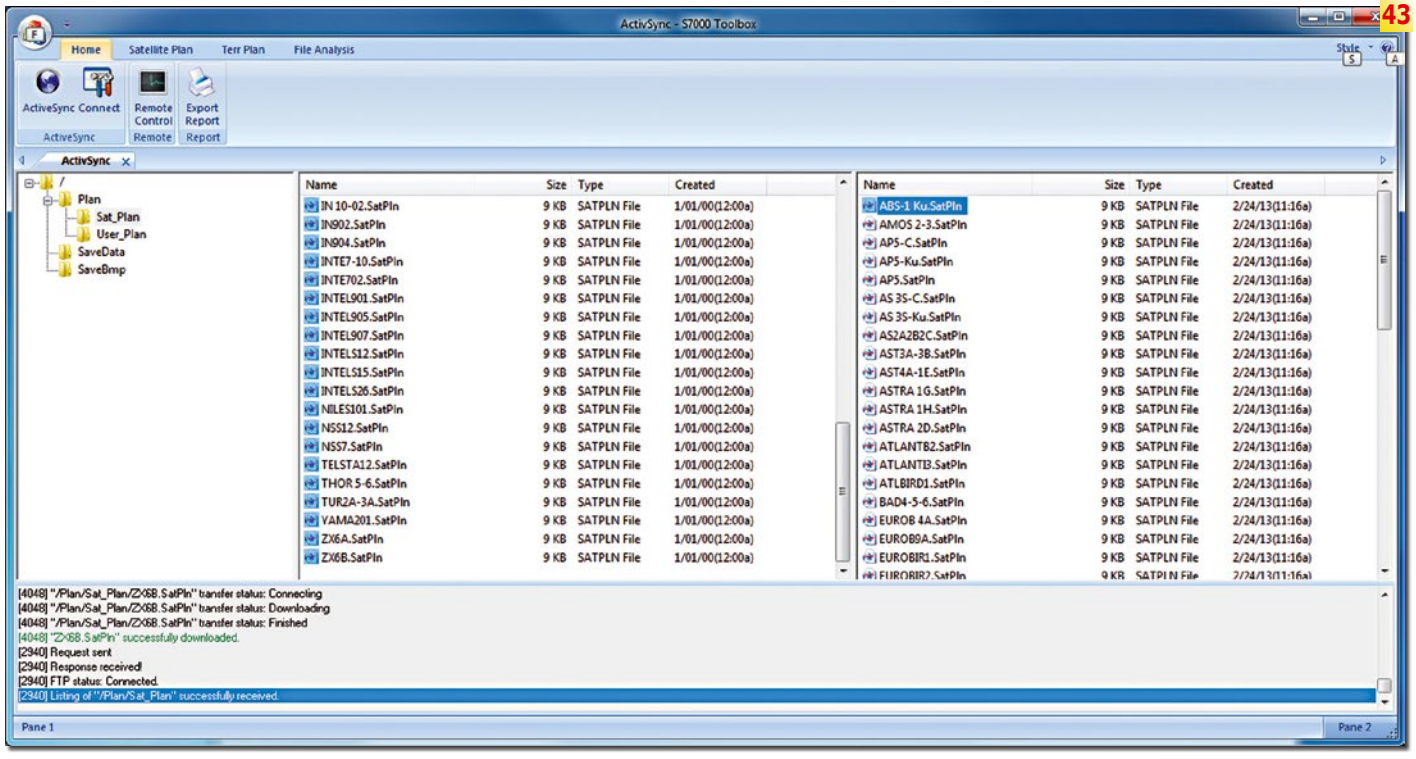
So, what software is loaded on the included CD? The S7000 Toolbox (as the software is called) lets you comfortably manage and edit numerous transponder and satellite lists. Additionally, measurements stored in the S7000 can be presented on a PC. Not only that, measurements can be stored in two different ways.

For starters the current screen image can be saved as a picture. The measurement values themselves can be stored. These measurement values could then be displayed in the PC software whereby more influence can naturally be placed on the presentation. This makes it possible to generate professional inspection reports on the computer. The technician can copy all the measurement data onto a USB stick and hand it over to his office colleagues who could then create the reports.

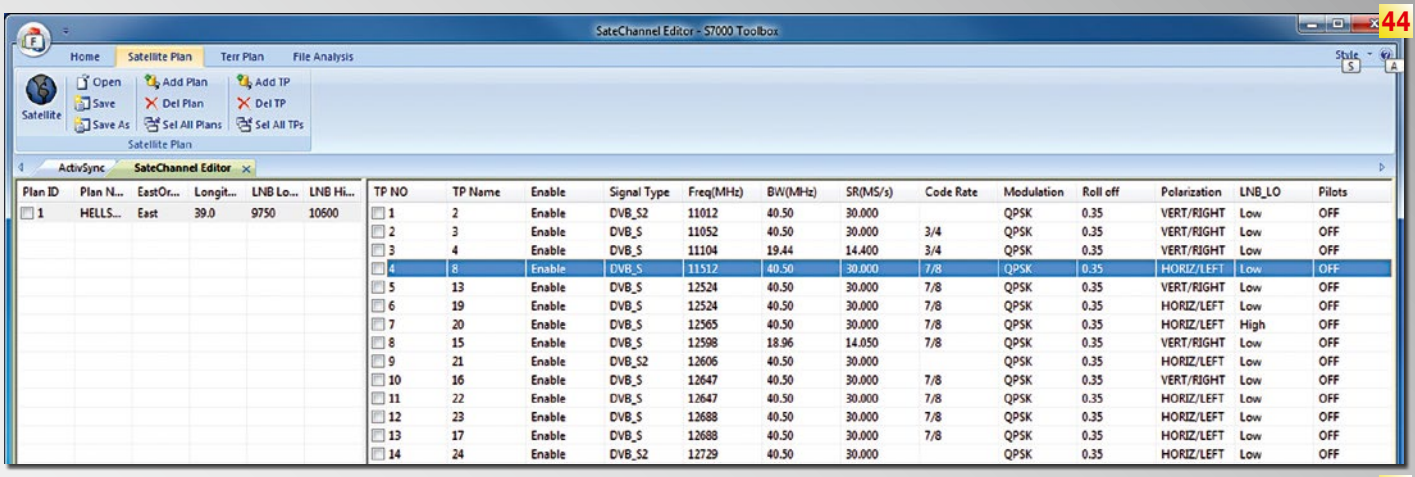
In this way you don't have to do the actual work on the S7000 leaving it free to be

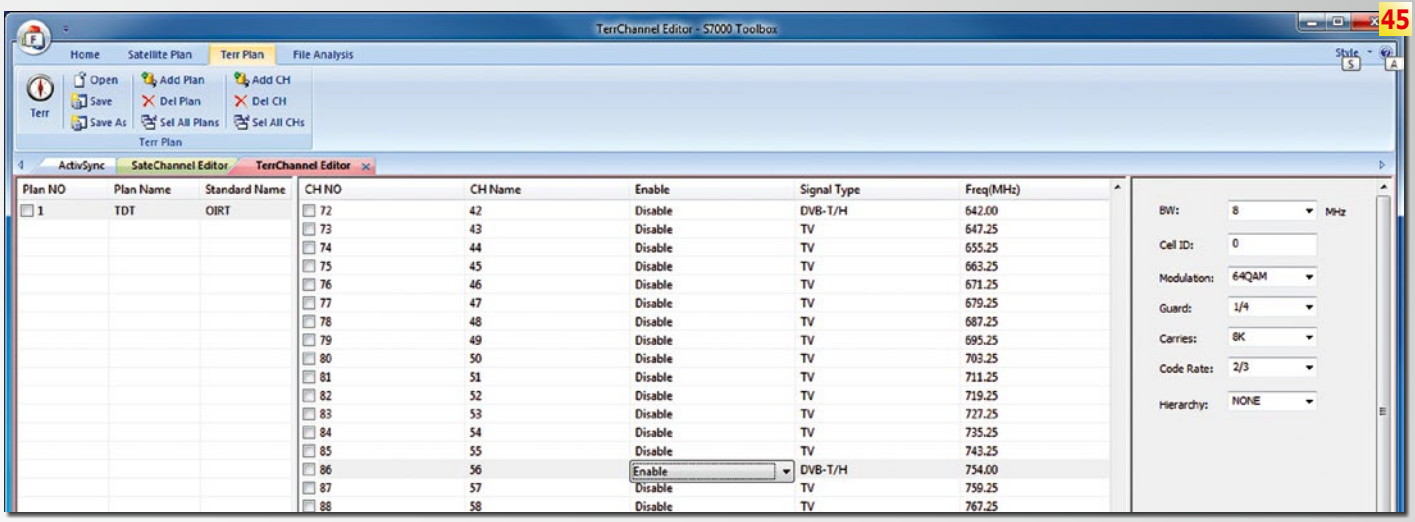


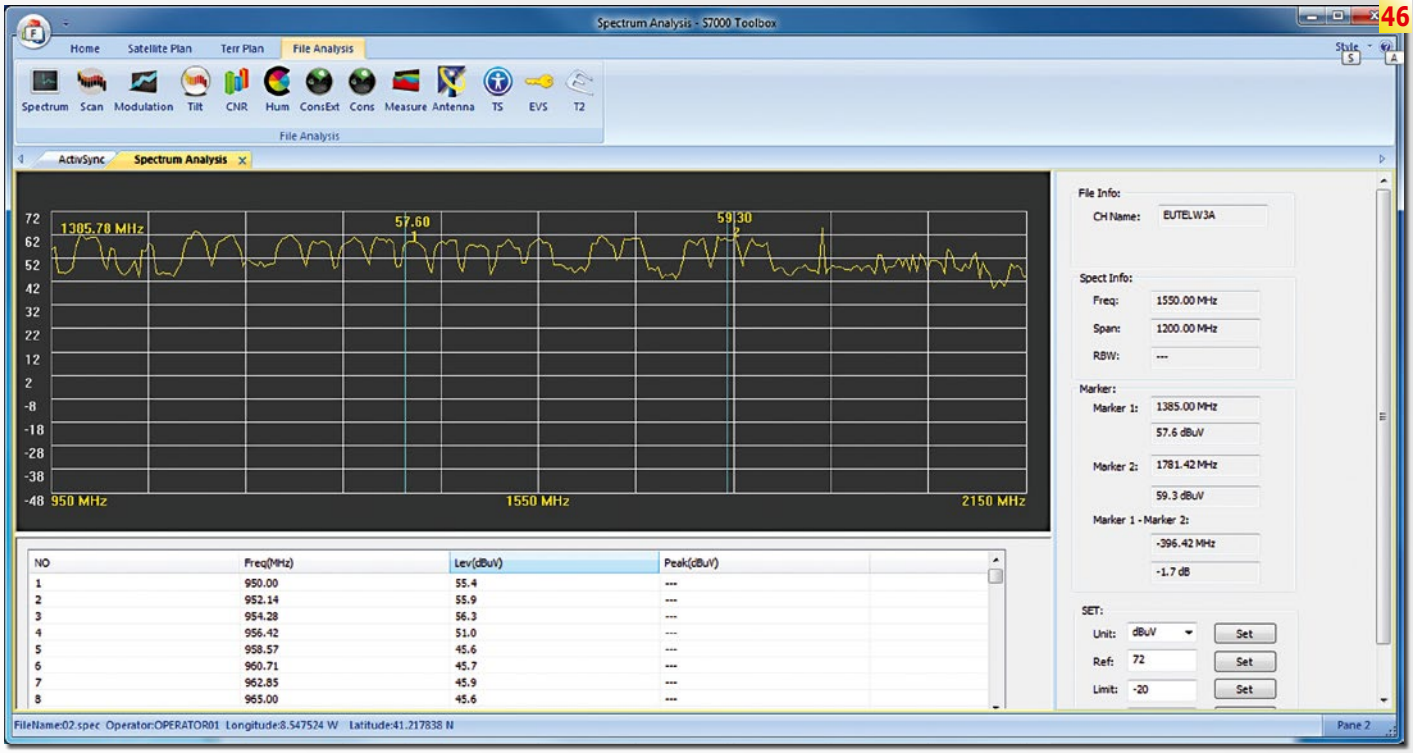
42



43







Toolbox Software

42. Thanks to the S7000's Ethernet port it is possible to access the data captured through an FTP client.

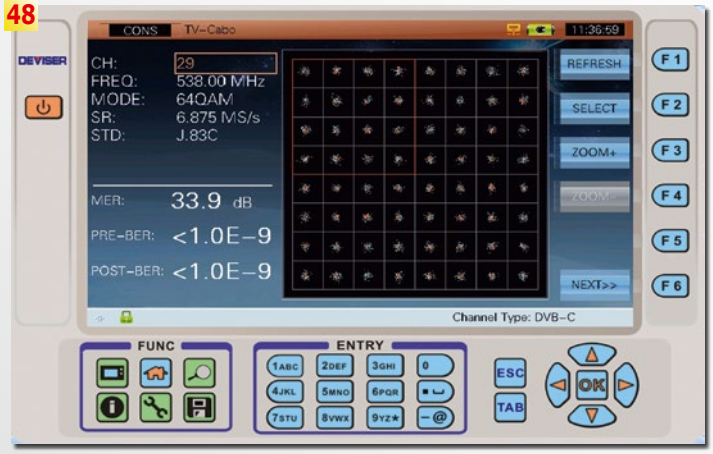
43. Naturally, the same can be done using the Deviser Toolbox software, which allows to edit the channel lists and satellite transponder as well.

44. Editing the satellite transponder lists is really easy, but Deviser did a good job maintaining them updated, so there really was nothing to edit: the S7000 features all worldwide satellite transponder lists.

45. Editing the terrestrial channels is no challenge either, and again all channel plans worldwide are predefined.

46. Amazingly, the Toolbox software is not only capable of downloading and displaying the screenshots taken during measurements. If you instead store the actual data, the measurements can be rendered with the toolbox software instead. This provides additional functionality, since markers can be moved, etc. Also, the technician taking the measurements does not have to worry about specific readings for the report – they can be generated with the stored data and you don't even need the meter to do that: just transfer the data using the network or a USB memory and the meter is ready to be used for the next call!





used on the next job.

The data (settings and measurements) can be read directly as a file from a disk or via the integrated ActiveSync function via the network from the analyzer. Naturally, the files can be copied the same way from the PC back to the analyzer.

The underlying protocol is actually the best FTP protocol and, thanks to the Wireshark network analysis tool, the access data was quickly determined: if needed you can also copy the files back and forth normally via FTP where you provide the IP address of the analyzer along with the user name „ftpadmin" and the password „Instrument".

It's important to operate the FTP connection in Active mode so that files can be copied back and forth more quickly. Damage can't be inflicted to the device in this way since only the User Directory Plan, SaveBmp, SaveData and Temp are available via FTP.

The highlight of the S7000 Toolbox Software is the remote control of the entire analyzer! Via the unremarkable „Remote Control" button a new window is opened that then displays the front panel of the analyzer including the screen. The mouse can be used to „press" all of the virtual buttons just like the real buttons and the screen reacts just as fast as on the real analyzer.

You can access all of the functions via the network without requiring any direct access to the actual physical analyzer. Only the demodulated video/audio is not passed on which is to be expected considering







Toolbox Software

47. Incredibly, Deviser implemented a remote access to the meter. All you need is a network connection to the meter to be able to fully operate the S7000 remotely.

48. Everything shown on the physical screen is rendered in real time on the remote software.

49, 50. Even the TS analyser function can be used this way – only the live picture is obviously not shown, due to bandwidth limitations of the network.

51. If you have a smartphone, you can do a VNC connection to the PC running the Deviser Toolbox software. This means that you can climb to the roof with just your phone and still use all functions of the S7000. This is simply incredible.

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the bandwidth that would be needed.

So the question then is: why not leave the S7000 in the house and only climb up on the roof with a SmartPhone?

The SmartPhone can be linked to the PC via VNC which can then be controlled remotely. If the Toolbox Software is started ahead of time, the S7000 can then be comfortably controlled via the SmartPhone and thanks to its touchscreen you have access to all of the analyzer's virtual buttons.

Just like that you have a 100g (1/4 Lbs) SmartPhone in your hand and you can hang out on your roof for hours adjusting your antenna! How great is that?

Perhaps Deviser will eventually offer an App for Android phones and/or iPhones so that the S7000 can be controlled directly without first going through a PC.

Are there any issues with the analyzer?

A test in which no problems are found with a unit is not possible; it would be an indication that you haven't adequately dealt with it. Even so, there is essentially nothing to complain about with the S7000 so some effort had to be made to at least come up with the following points:

- With analog CATV signals the S7000 cannot display any videotext. This isn't really critical since the analog video signal can be analyzed in Oscillator mode.

- In Spectrum mode you can't overlay a current spectrum with a previously stored spectrum as a reference. This could typically be used to align different antennas exactly the same and to compare the current spectrum for a longer period of time with the stored spectrum to determine if there has been any deterioration. Deviser could more than likely add this function easily with a firmware update.

- It was somewhat annoying that the S7000 automatically reduces the range of the spectrum based on the incoming signal when you switch to measurement mode. As soon as the spectrum is redisplayed, the range has to be manually adjusted in order to once again see the entire spectrum. This is just a minor thing and probably just as many users will appreciate this - it's a typical case of: you can't make everyone happy.

But these are all minor issues. The Deviser S7000 is a professional signal analyzer for practically all TV standards. It is perfectly equipped for any possible application. Every possible measurement is available. The analyzer is very easy to use, it is robust and also comes with a complete TV analyzer. The measured values remove any doubts and provide an accuracy similar to other high-end professional signal analyzers.

What more could you ask for? Perhaps, armed with the S7000, you'd hopefully want to come across as many complex situations as possible so that you could diagnose and correct them.

It's simply a lot of fun to work with this outstanding signal analyzer!

52



Battery and Inside Peek

52. The battery pack of the S7000 is easily accessible on the back side of the meter. Two big screws need to be loosened up.

53. The cover plate can be removed, revealing the battery pack.

54. The battery back can be pulled by the two cords. It is a composed of a 10x AA battery pack.

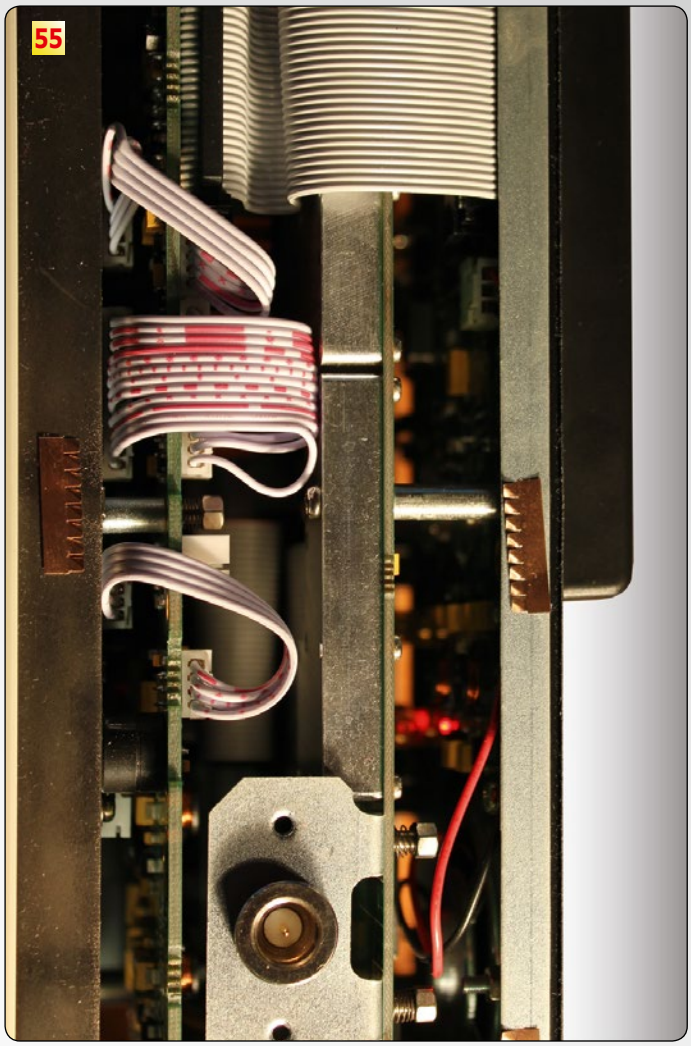
55. We could not resist removing the cover of the meter to have a peek inside. What we saw: a highly integrated and extremely well built electronic equipment. Naturally we did not dare to further disassemble the device, so this is the best insight we can provide.

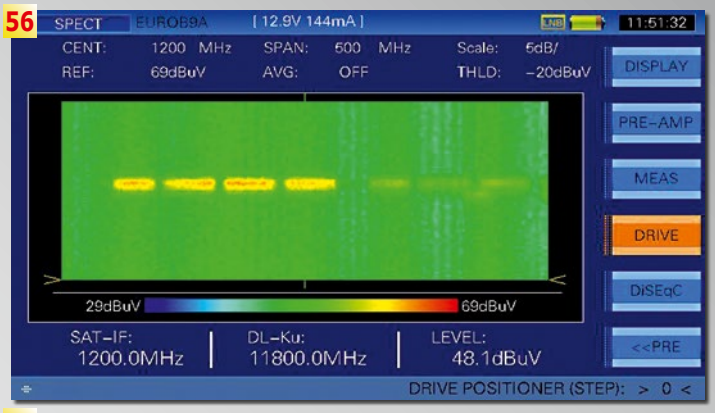
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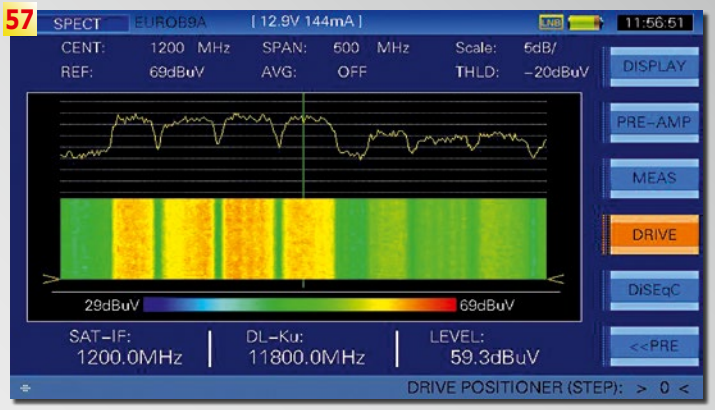


54









Ka-Band Satellite Scan

56. This waterfall diagram shows the horizon from about 30.0E to 30.0W using the Inverto Ka LNB. Only 9.0E is broadcasting transponders in the 19.7 GHz – 20.2 GHz range.

57. This picture shows 9.0E over a period of time (about 30 seconds). The second half (lower part – representing about 15 seconds) of the waterfall diagram was recorded during a sporadic rain shower. Curiously the rain did not produce any signal loss.

How to interpret BER measurements

What does 1.2E-03 mean? BER stands for Bit Error Ratio: the measuring instrument will basically count the erroneous bits within all received bits and calculate this simple formula:

$$BER = \frac{Erroneous\ Bits}{Total\ Bits}$$

Because the amount of erroneous bits is normally very small, let's say 1 wrong bit in every 1.000.000 bits, it would look odd to see a value of 0.000001 on the meter's screen. A much more convenient format would be 1x10-6. Calculators will frequently show this number as 1E-6, instead, to save some screen space. So this is what a reading of CBER = 1.2E-03 means: you will get one wrong bit in every 1200 bits received.

Let's do the math:

$$CBER = 1.2 * 10^{-3}$$

$$CBER = \frac{1}{1.2 * 10^{3}}$$

$$Total\ Bits = 1.2 * 10^{3}$$

$$Total\ Bits = 1200$$

CBER means that no error correction has been applied to the signal, so let's now see what LBER < 1.0E-8 means:

$$LBER < 1.0 * 10^{-8}$$

$$LBER < \frac{1}{1.0 * 10^{8}}$$

$$Total\ Bits = 1.0 * 10^{8}$$

$$Total\ Bits = 100.000.000$$

It means that after applying the error correction, we only will receive one bad bit every hundred million received bits. We will have a great picture without any noticeable artifacts. However, because our initial CBER value is low, there is no bad weather reserve. If the signals gets only slightly worse, the error correction will not be able to correct the incoming stream and picture artifacts will be produced.

The thumb rule is: the smaller the BER value before error correction, the better. Notice that smaller means a bigger number after the "E", because there is a "-" sign: -5 is smaller than -3! The smaller the number, the more bad weather reserve you will get. The BER value after the error correction will give you an idea, if artifacts will be noticeable on the screen with the current signal.

DVB-S, DVB-S2, DVB-C, DVB-T, DVB-T2, DVB-H, ATSC – the Deviser S7000 can do it all!

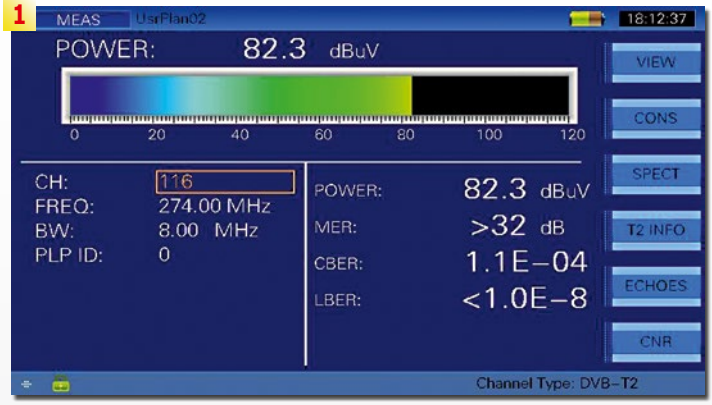
The Deviser S7000 is a very versatile instrument that comes from the factory with the ability to handle practically every modulation. We checked out a number of standards again to confirm that the S7000 really can work with these different DVB and ATSC modulations.

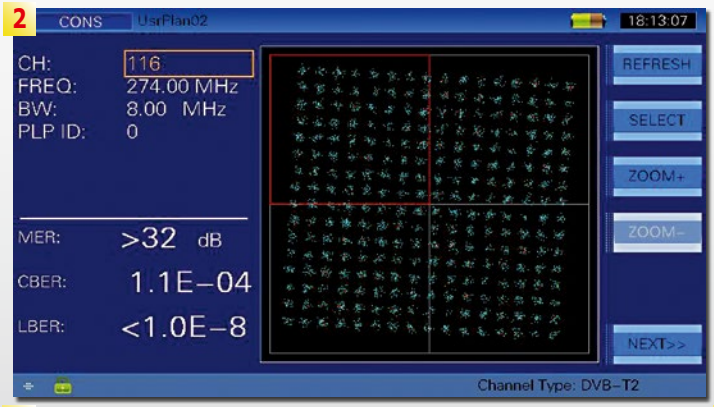
1, 2. In addition to DVB-T, the S7000 can also analyze DVB-T2 signals and can display the corresponding constellation diagrams. Interesting with DVB-T2 is the option to introduce a slope to the modulation called TILT with which the signal can be made more stable against interference.

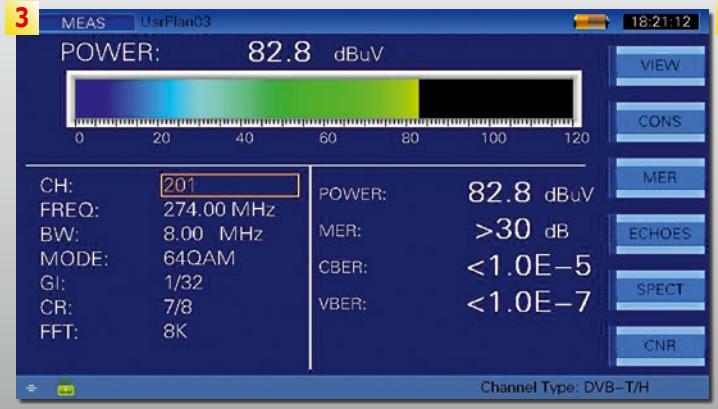
3, 4. You might assume that every DVB-T compatible signal analyzer can also analyze DVB-H. We tried it out to make sure. Sure enough, the S7000 can measure DVB-H without any problems.

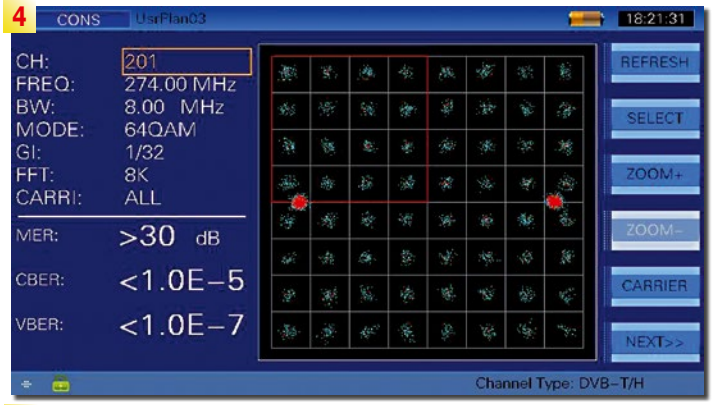
5, 6. Next is ATSC. Here's where the S7000 shows what it's all about: while most competitor products nearly always offer ATSC only as an option, Deviser includes it as a standard feature. Even the constellation diagram for 8VSB is correctly displayed.

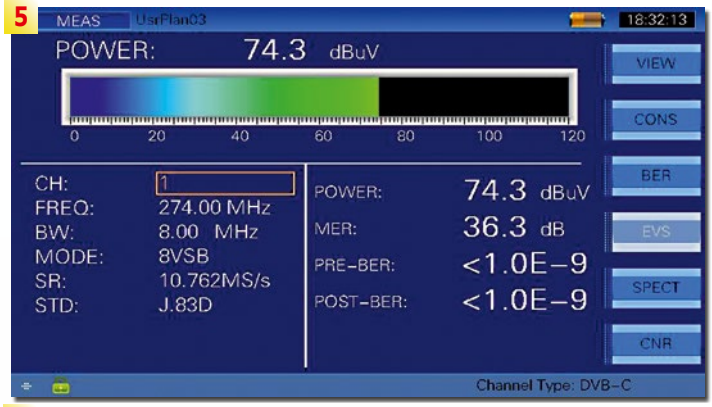
7, 8. Naturally the S7000 can also take care of 16VSB modulation; it's amazing how capable this analyzer is for every possible situation.

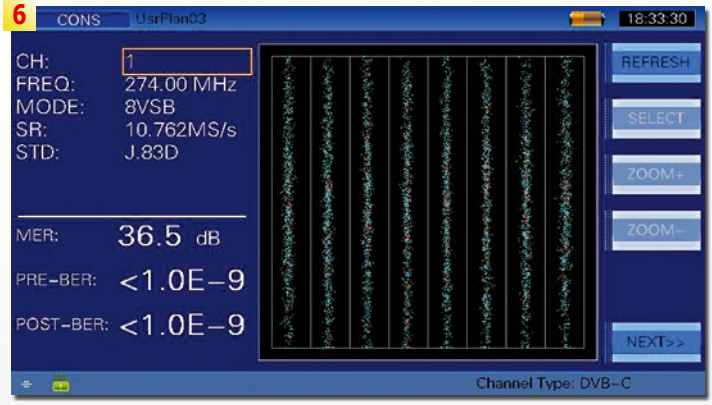


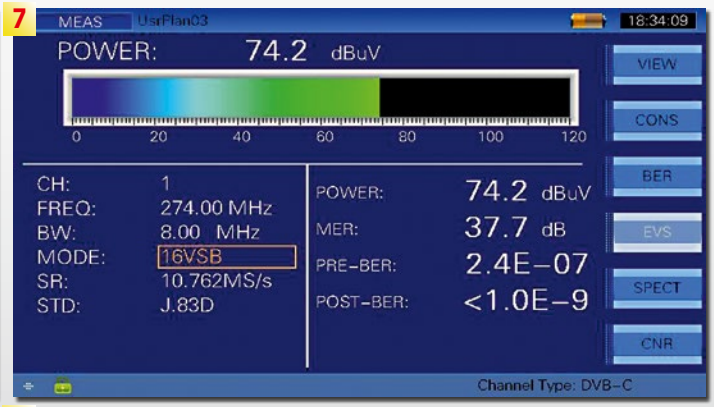


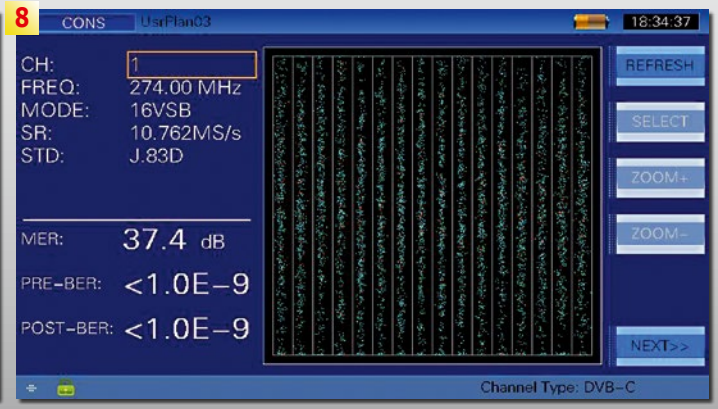












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AMIKO MINI HD



- ***Особенность: ресивер может быть спрятан; для дистанционного управления IR-ресивер может быть установлен в любом месте***
- ***Полноценный ресивер с функцией записи, благодаря USB интерфейсу***
- ***Интегрированный интернет для You Tube, Google Maps, и т.д.***
- ***Автоматическое DiSEqC распознавание, автоматическое распознавание канала и разрешения видео на ТВ мониторе.***
- ***Напряжение спутникового конвертора может быть увеличено, чтобы компенсировать перепады напряжения в длинных кабелях***



A Satellite HDTV Receiver with Every Feature

With the Mini HD, Amiko has introduced a miniature DVB-S2 compatible HDTV PVR receiver to the market. It comes with the same features as its larger cousins. It's elegant black box is only 15 x 11 x 3.5 cm in size and at 250gm it is essentially feather-light.

The front panel sports two LEDs that indicate the receiver's current operational status while all of the proper connections can be found on the rear panel. In particular, this includes an LNB input, an Ethernet jack, a USB 2.0 port as well as a jack for the external 12VDC power supply. With the help of three small jacks, Amiko has provided outputs for an A/V interface cable (CVBS and stereo audio) as well as an RS232 port; the necessary adapter cable is included with the receiver. The third jack is for connecting the external IR receiver; Amiko designed the Mini HD such that it can be mounted on a wall or placed inconspicuously behind the TV.

An absolutely perfect video signal is provided by the HDMI output, unfortunately though, crystal clear audio is only available via HDMI; there's no S/PDIF output for connection to a stereo system.

We especially liked that Amiko truly used every inch of space on the Mini HD; for example, a card reader for Conax Smartcards was incorporated on the underside of the receiver with the actual card slot facing the front of the box. There's also a second USB 2.0 jack on the right side to let you quickly attach an external storage device.

The Amiko Mini HD is powered by a 400 MHz processor and comes with 64 MB of Flash memory plus 1 GB DDR SDRAM. This combination will later provide for the perfect presentation of HDTV as well as an OSD that reacts extremely fast to remote control commands. The remote control included by the manufacturer sits nicely in your hand, is ergonomic and is clearly labeled.

You won't find an installation assistant in the Mini HD; users will need to set up all the basic functions themselves. The new Amiko receiver can provide the video signal via HDMI in 480i,





WS-6936

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Digital Satellite Meter



DVB-T&S COMBO METER WITH SPECTRUM

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

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

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

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



WS-6909
DVB-T&S COMBO METER



WS-6918P
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WS-6932
HD Satellite Finder Meter

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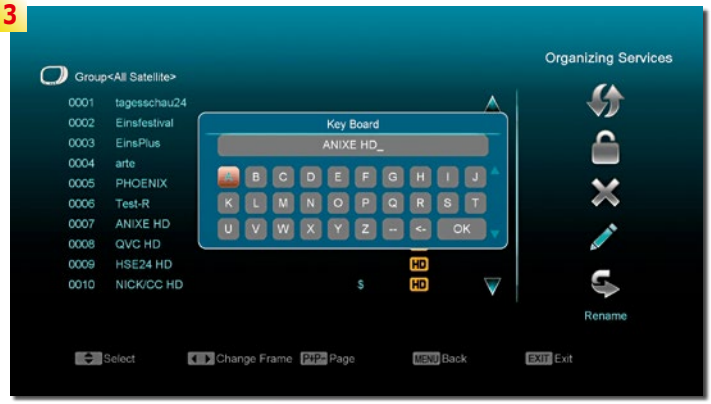
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480p, 576i, 576p, 720p 50 Hz, 720p 60 Hz, 1080i 50 Hz, 1080i 60 Hz, 1080p 50 Hz as well as 1080p 60 Hz; nothing was left out. The receiver even has an Automatic Mode where it adapts itself to the resolution of the TV channel that is currently being received plus a Native by TV mode where the receiver adjusts itself to the maximum resolution of the TV.

The Mini HD supports the DiSEqC Protocols 1.0, 1.1, 1.2 and 1.3 and is therefore able to handle multifeed, multifocus and/or motorized antenna systems. The receiver comes with 28 preprogrammed satellites but those satellites are limited to European entries only; a more expanded list would be nice to have.

We appreciated the ability to increase the LNB voltage by 0.5V in those cases when longer coax cable lengths are used. The Auto DiSEqC function could save the day for the less-experienced users. With its help, the receiver can automatically identify what satellite is connected to the receiver through which DiSEqC port.

Unfortunately, this is where the limited preprogrammed satellite list comes into play; only those satellites in the list can be recognized. Testing this feature in Europe with the very popular ASTRA and EUTELSAT satellites showed that it functioned perfectly. Less popular satellites were not recognized.

On the channel scan side of things, the user can run a satellite scan, transponder scan or blind scan. Of course it's the blind scan that we're particularly fond of: on the HOTBIRD satellite at 13° east it managed to find 1597 TV and 373 radio channels in a mere six minutes. It's quite a satisfactory result. Even on less popular satellites such as SES4 at 22° west, the blind scan feature delivered acceptable results with transponders using different symbolrates.

The FastScan Option is an exceptional feature with the Amiko Mini HD. It can be used to read all the transponders from one of nine preprogrammed European PayTV providers. In our tests with the Dutch CanalDigitaal, this function worked without any problems. In no time at all every channel from a PayTV provider will be presented in the channel list without

1. The Amiko Mini HD Main Menu

2. Every possibility is available for editing the channel list

3. Individual channels can easily be renamed

4. Installation Menu

5. Satellite Settings

6. If desired, the individual PID values of a channel can be entered

7. With FastScan, all the transponders from one of the nine preprogrammed PayTV Providers can be automatically scanned

8. Auto DiSEqC Function

9. Calculation of the necessary angle for antenna alignment

10. User Settings

11. Time Settings

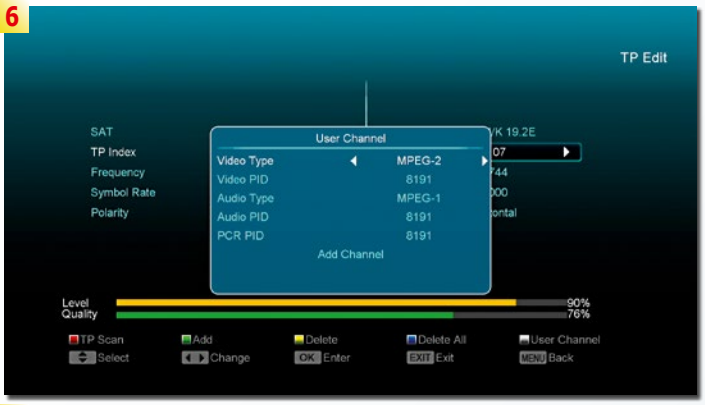
12. A total of eight timer slots are available

13. The output video signal can be set to a maximum resolution of 1080p HDMI

14. The user can customize the OSD

15. Three integrated video games pass the time during commercials

6



11



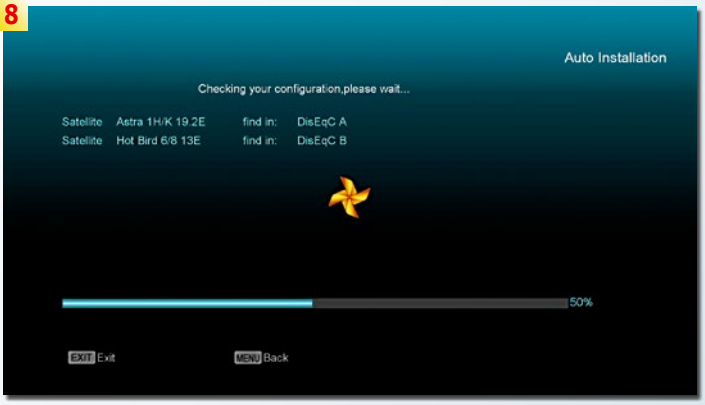
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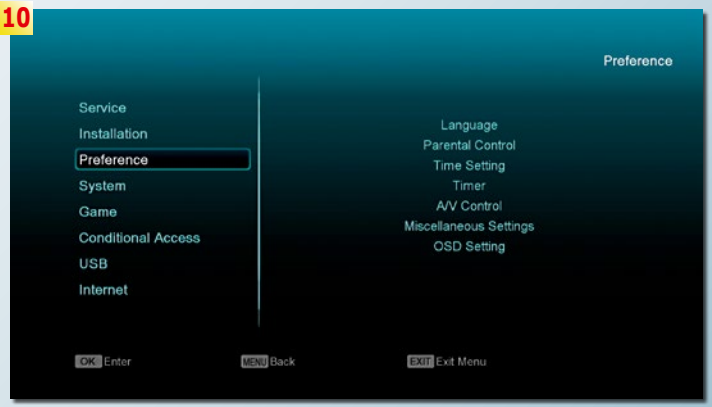
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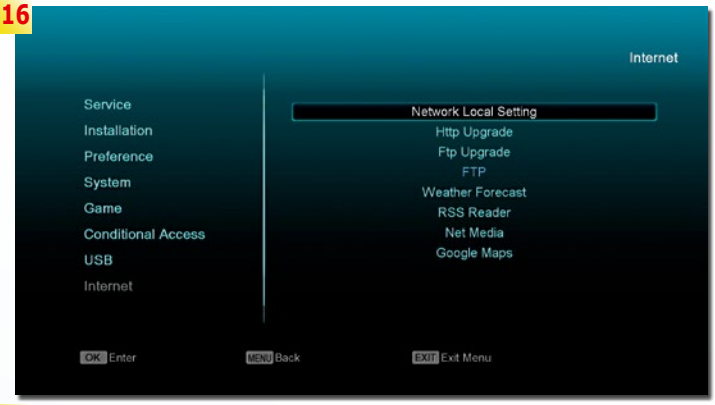
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15



16



16. The Amiko Mini HD's network features

17. IP settings; of course the DHCP protocol is supported

18. The receiver's software can be automatically updated via the Internet

19. Weather forecast

20. RSS Feeds are shown in an organized fashion

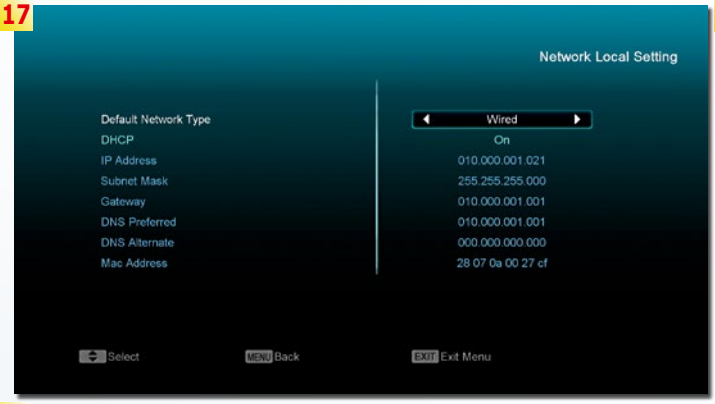
21. The video services YouTube and YouPorn can be accessed directly from the receiver

22. YouTube

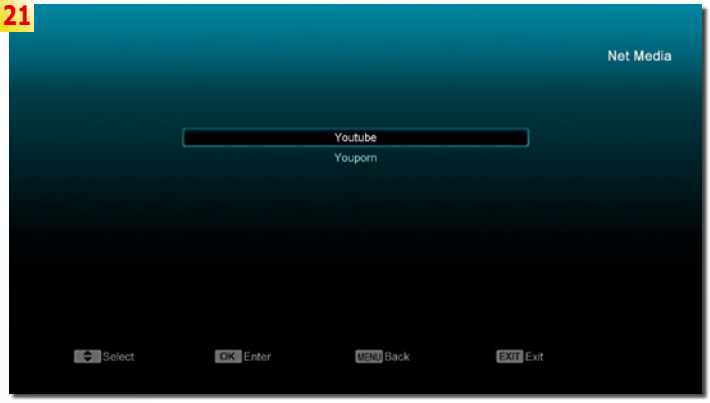
23. The receiver supports the time shift function in addition to normal recordings

24. Google Maps on the Amiko Mini HD

17



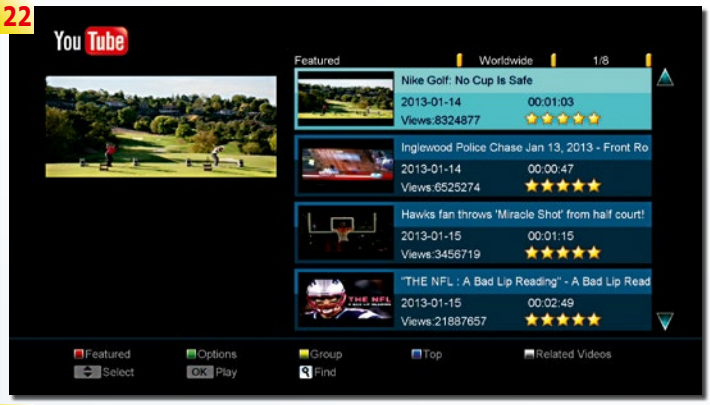
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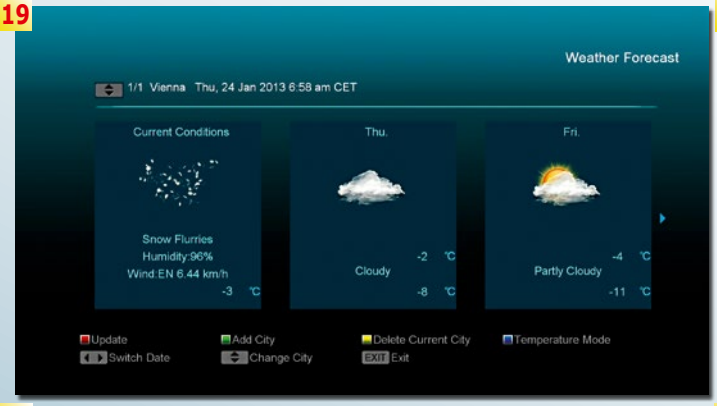
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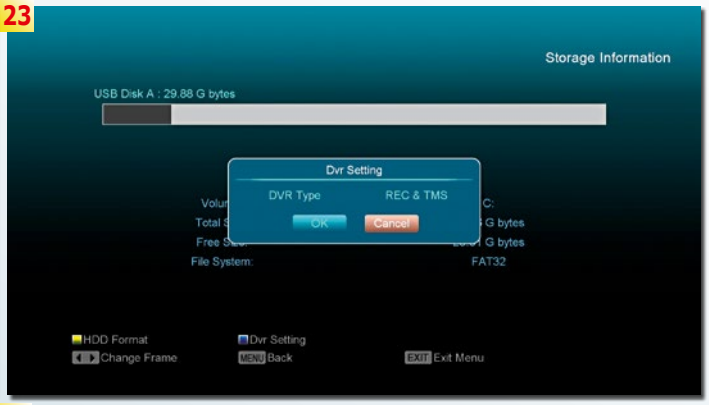
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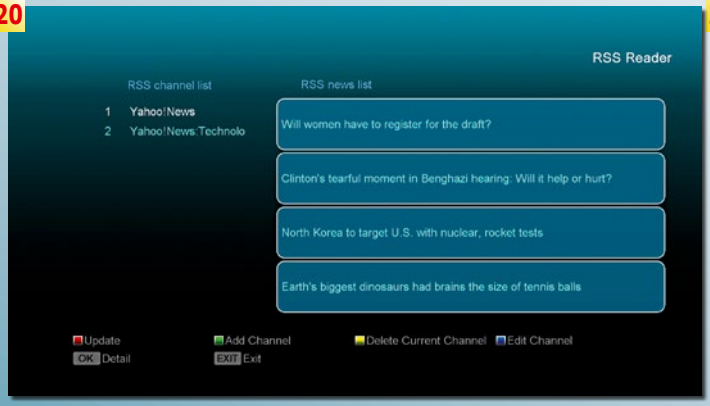
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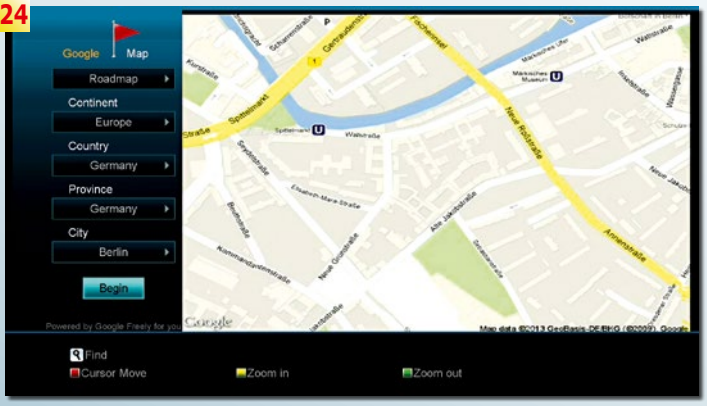
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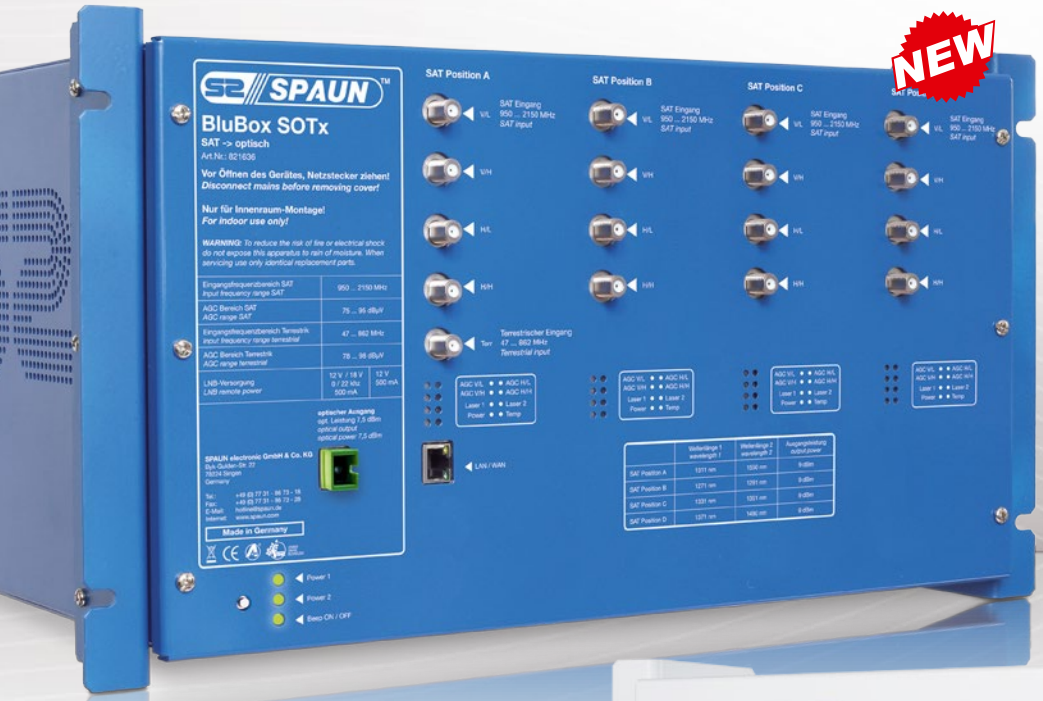


24



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Highlights



NEW

BluBox SOTx

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the need for any tiresome searching.

After the receiver's channel list has been filled with thousands of entries, the next task that comes to mind would undoubtedly have to be managing the channel list. And the Mini HD doesn't disappoint here at all; every possible option you can think of is available, such as deleting, renaming, moving, grouping or locking out specific channels with a PIN code. Thanks to the 32 Favorites lists all of your most-loved channels can be moved into one of these collections making them easier to access with the push of just one button.

25. Even Google Maps' satellite view is available

26. The OSD keyboard can be used to search for specific locations in Google Maps

27. Channel scan

28. Info bar with the EPG data from the current and upcoming programs

29. EPG view 1

30. EPG view 2

31. EPG view 3

32. Channel list

33. The channel list can be limited to individual satellites

34. The channel list can be limited to individual providers

35. Language selection

36. Satellite selection

37. OSD Teletext

38. The Amiko Mini can easily play back previously recorded programs

39. MP3 playback

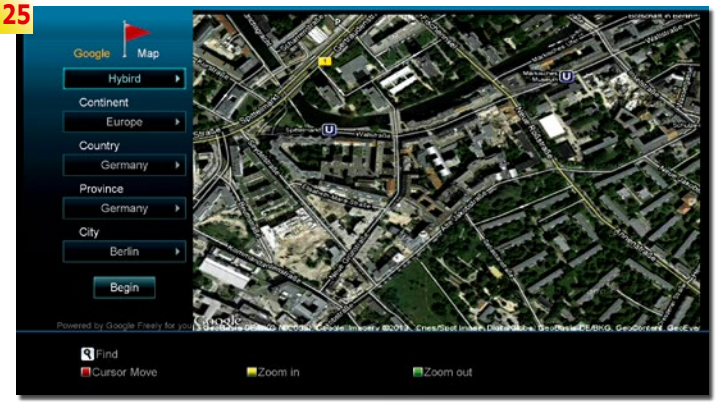
After the receiver has been set up to your personal tastes, a push of the Exit button on the remote control takes you out of the Settings menu. The Mini HD can now get to work. It operates through a cleverly arranged OSD that presents a logically and well-thought-out interface to the user. We especially liked the EPG, the contents of which can be displayed in three different modes.

Thanks to additional function buttons on the remote control, options like subtitles, teletext or language selection can be accessed directly through the main menu. This saves time and makes things easier for the user.

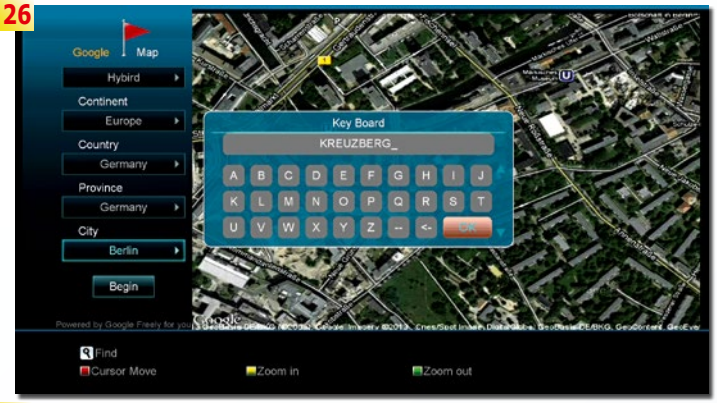
Since the Amiko Mini HD is a fully-featured PVR receiver, we wasted no time in connecting an external storage device on one of the two USB ports. We were able to record two broadcasts simultaneously in HD quality while at the same time watching a third channel live. For timer recordings there are eight programming slots available. In this day and age, though, that's not quite enough.

In addition to PVR record-

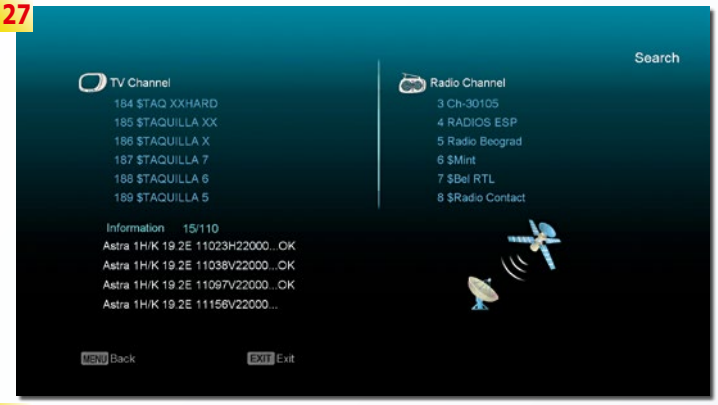
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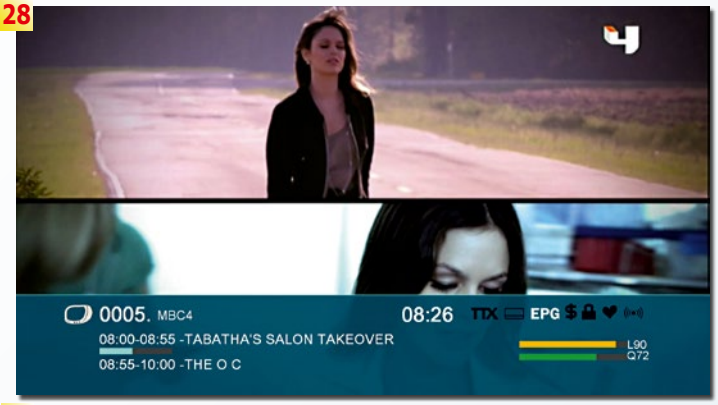
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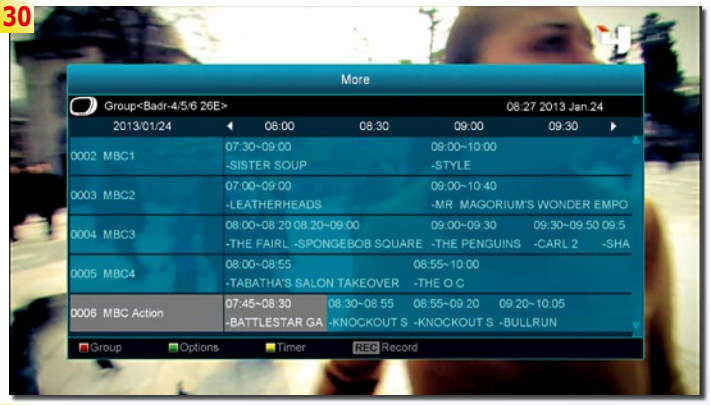
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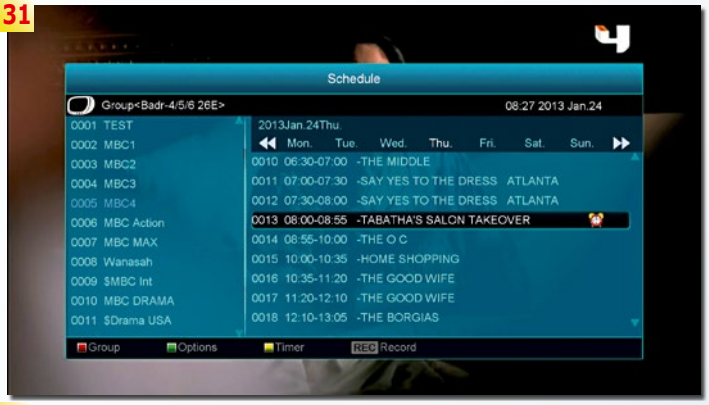
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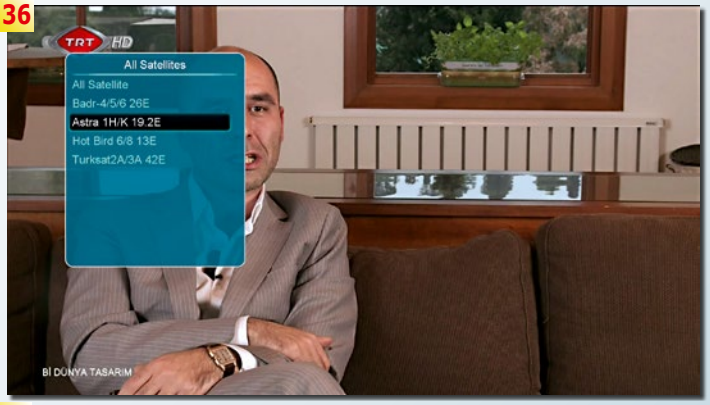
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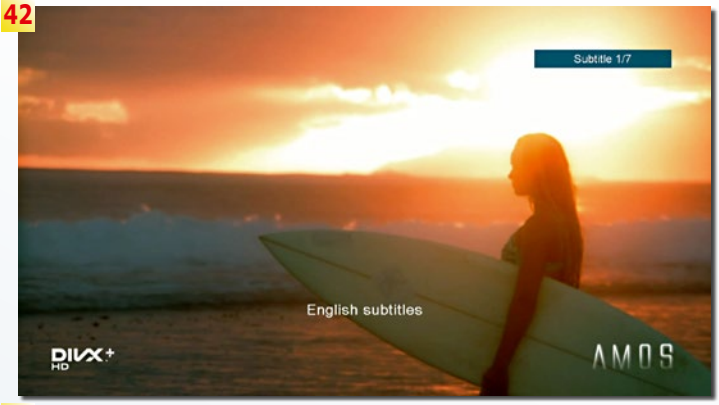




ings, the USB ports can also be used to play back videos in AVI, MPEG, MP4, TS, Flash and VOB formats. You can even listen to your favorite MP3 music files. Some of you out there will be also happy to know that JPEG pictures can be viewed on your TV through the Amiko Mini HD.

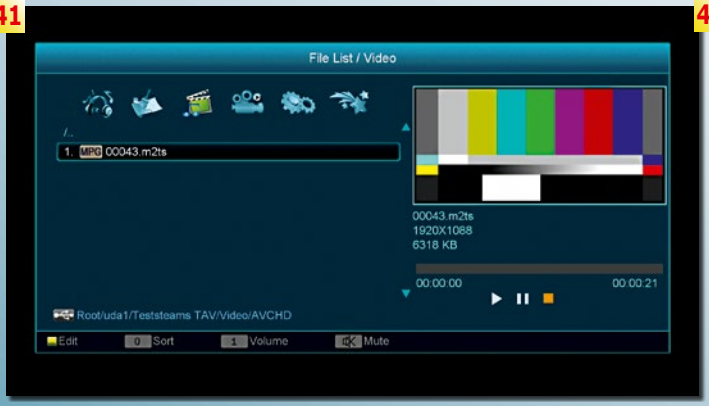
You may have noticed while reading this test report that the Amiko Mini HD also comes with a network interface allowing you to access the wonderful world of the Internet. And if you're surrounded by WiFi signals in your home, the USB WiFi adapter would also let you browse the Internet wirelessly. Unfortunately, though, this adapter is not part of the package.

40. The integrated picture viewer functioned perfectly
41. Video playback of various formats
42. DivX playback
43. Full HD video playback
44. Even Flash videos could be played back without any problems

42


40


43


41


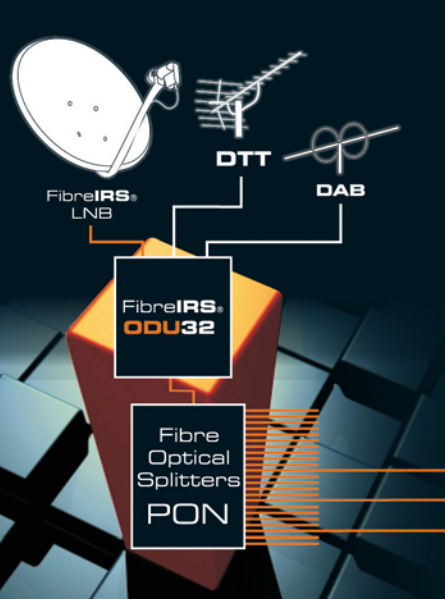
44

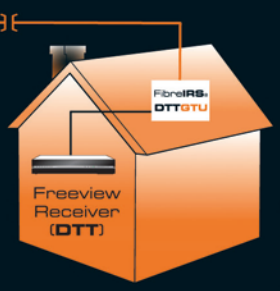

FibreIRS®



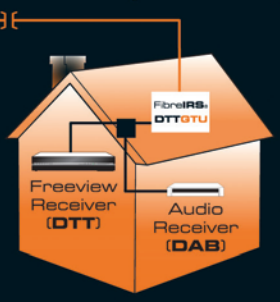
The **New** Generation
Fibre Integrated Reception System

The only cost effective solution for distributing
Satellite IF, DTT and DAB over a Single Fibre Optic Network.

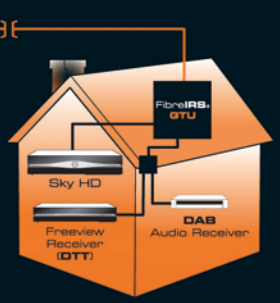




DTT & DAB Installation



DTT & DAB Installation



Digital Satellite **DTT & DAB** Installation

- Compatible with all digital satellite STBs
- Compatible with all DTT/Freeview™ STBs
- Compatible with all DAB Tuners
- Can be easily expanded to **256** points
- Simple installation* via 'Plug & Play' technology
- Ideal for short or long cable runs.

Compared with existing Fibre Systems

Single Fibre Distribution

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global invacom
completing the picture

In addition to the ability to update the receiver's software, the user also has access to current weather information, RSS feeds as well as services such as YouTube, YouPorn and Google Maps. The idea of adding Google Maps to a satellite receiver seems to be an innovative idea at first, but in reality it's not all that easy to work with when all you have is a remote control and an OSD keyboard.

To round it all off, three integrated video games are included that we had a lot of fun with in our tests. There were also numerous settings capabilities as well as the ability to store the channel list on a USB storage device if needed. In general we were quite satisfied with the logical and well-organized OSD structure including its graphical presentation. Thanks to its very low power consumption at only 3W in standby, you can keep a little extra of your money in your wallet. And because of its small size, the Amiko Mini HD can easily be hidden deep inside your TV setup.

EXPERT OPINION



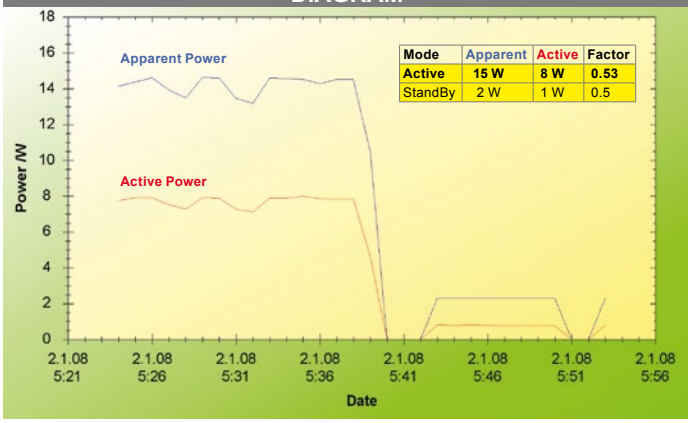
+ Very compact and space-saving construction, low power consumption, well-organized OSD, logical operation and every PVR feature you can think of are all plus points for the Amiko Mini HD. All in all, a perfect little receiver.

– The Auto DiSEqC function because of the limited number of preprogrammed satellites in some cases doesn't provide convincing results. The eight timer slots for a PVR receiver are not enough.

TECHNICAL DATA

Model	Mini HD
Function	Miniature DVB-S / DVB-S2 PVR Receiver with external IR remote control
Input frequency	950 - 2150 MHz
Input symbol rate	2 - 45 Ms/s
Modulations	QPSK, 8PSK
EPG	yes
Video resolution	480i, 480p, 576i, 576p, 720p 50 Hz, 720p 60 Hz, 1080i 50 Hz, 1080i 60 Hz, 1080p 50 Hz, 1080p 60 Hz
DiSEqC	1.0, 1.1, 1.2, 1.3
SCR	no
RS232	yes
Ethernet	yes
USB 2.0	yes
CI Slot	no
Card Reader	yes (Conax)
HDTV	yes
MPEG4/H.264	yes
OSD languages	English, German, Greek, Italian, Russian, Spanish, Ukrainian, Rumanian, Hungarian, Croatian, Bulgarian, Czech, Slovenian, Slovakian, Serbian, Hebrew, Portuguese, Dutch, Polish
Power Supply	100 - 240V AC, 50/60 Hz AC / 12V DC
Dimensions	15 x 11 x 3.5 cm
Weight	250 g

ENERGY DIAGRAM



Energy: The first 15 minutes active operation; the second 15 minutes standby



www.work-microwave.de

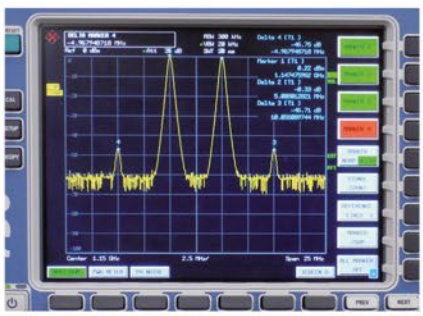
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Handheld Satcom Test Source with High Spectral Purity

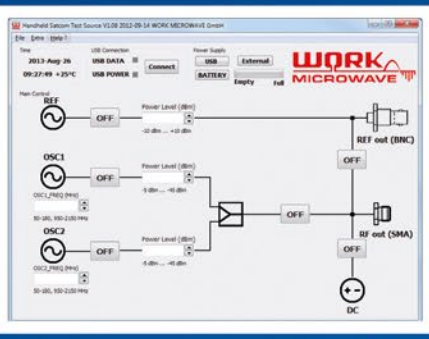


Applications:

- Signal source for measurement of IP3, P1dB, Gain and more
- Low phase noise dual carrier signal generator
- Combined source for BUCs (L-Band, 10 MHz and 24 V DC)

Key Features:

- Two tone output
- 50 MHz to 180 MHz and 950 MHz to 2150 MHz
- -45 dBm to -5 dBm / 0.5 dB step size
- Both synthesizers independently adjustable in frequency and power
- 10 MHz reference output with adjustable power
- Remote control via USB and GUI
- Power supply options: internal battery, USB or external SMPS



WORK Microwave • Raiffeisenstr. 12 • 83607 Holzkirchen • Germany
Tel. +49 8024 6408 0 • sales@work-microwave.de


SPAUN
SUS 5581/33 NFA LEGACY
Art.Nr.: 865108
Kaskadierbarer Einkabel-Multischalter nach EN 50494
für 4 SAT-ZF-Ebenen und Terrestrik mit aktiven
SAT Stammleitungen
Cascadable SCR-Multiswitch according to EN 50494
for 4 SAT IF signals and terrestrial with active SAT trunklines
Legacy
oder/or
Made in Germany
SUS 4441 F
Art.Nr.: 865105
SUS 5581 NFA
Art.Nr.: 865103
SUS 4481 F
Art.Nr.: 865106
SPAUN SUS 5581 NFA, SUS 5581/33 NFA LEGACY, SUS 4441 F, SUS 4481 F, SUS 5541 F & SUS 5541 NFA
SCR Multiswitch
RECOMMENDED PRODUCT BY
TELE-audiovision
THE WORLD'S LARGEST DIGITAL TV TRADE MAGAZINE
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Каскадные SCR мультисвичи от SPAUN

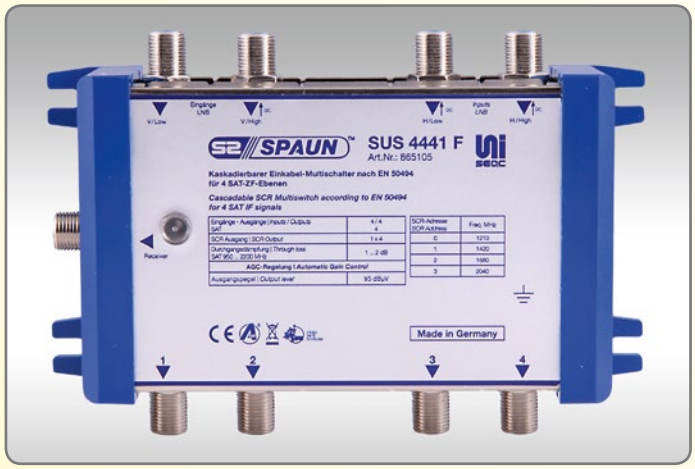
- *доступны различные варианты для всяческих возможностей*
- *работа отличная и лучше даже, чем заявленные технические спецификации*
- *система может совмещать роутер с одним входом и обычные ресиверы*
- *очень быстрое переключение каналов уменьшает время зависания*
- *модели LEGACY могут быть использованы с обычными ресиверами, без роутера с одним входом*



Часть 2







В первой части данной статьи (см. TELE-audiovision 09-10/2013) мы представили два мультисвич роутера с одним входом (SCR): SUS 5581/33 NF LEGACY и SUS 5581 F. В этот раз мы более детально рассмотрим другие модели SPAUNSUS , а именно модели, которые отличаются между собой количеством входов/выходов и, соответственно, количеством ресиверов, которые можно подключить. Модели называются так:SUS 5581 NFA, SUS 5581/33 NFA LEGACY, SUS 4441 F, SUS 4481 F, SUS 5541 F и SUS 5541 NFA.

Но для начала давайте объясним, что обозначают буквы и цифры в названиях моделей. Первые две цифры обозначают количество входов и стволовых выходов. Таким образом, «44» означает четыре спутниковых входа (от Quattro спутникового конвертора) и четыре стволовых выхода : Вертикальный низкий, Вертикальный высокий, Горизонтальный низкий и Горизонтальный высокий. Если символ мультисвича содержит цифры «55» - это означает, что у вас есть дополнительный вход и стволовой выход для наземного сигнала , в большинстве случаев взятого от уличной ТВ-антенны.

Вторая пара цифр в номере модели обозначает количество однокабелевых выходов и количество ресиверов, которые вы сможете к ним подсоединить. «41» означает: одна линия выхода, к которой вы можете подключить вплоть до четырех ресиверов. «81» используется, когда к одной линии можно подключить 8 ресиверов. А если вы увидите «81/33» - это означает, что мультисвич может быть использован либо в режиме одна линия выхода и восемь ресиверов или в режиме трех линий выхода вплоть до трех ресиверов на каждой линии. Необходимый режим выбирается при помощи вращающегося переключателя на верхней крышке мультисвича.

Буквы «NFA» означают, что SCRмультисвич имеет встроенные усилители на каждом спутниковом входе. Будьте осторожны – чтобы не перегрузить такие модели. Если вы напрямую подсоедините современный Quattroспутниковый конвертор к такому мультисвичу, при помощи короткого коаксиального кабеля – существует большая вероятность того, что вы превысите лимит в 80 dBV для NFA приборов. Так же это относится и к сильным транспондерам, таким как ASTRA или HOTBIRD в Европе. В таком случае, качество сигнала значительно снизится на всех выходах. NFA модели должны быть использованы в качестве третьего или даже четвертого мультисвичав цепочке, где сигнал будет ослаблен при прохождении через предыдущие приборы.

Термин «LEGACY» используется для приборов с 3 выходами и двумя типами работы: 8x1 или 3x3. Такие приборы, при включении в режим 8x1, будет генерировать классические (традиционные)мультисвич сигналы на двух выходах, не используемые в режиме одного кабеля. В таком случае, эти выходы являются неактивными и могут поставлять сигналы на два дополнительных ресивера,

VIP Card
Tested & Recommended Product by
TELE-audiovision International
The World's Largest Digital TV Trade Magazine
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SUS 5581 NFA, SUS 5581/33 NFA LEGACY, SUS 4441 F, SUS 4481 F, SUS 5541 F and SUS 5541 NFA
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compliant RoHS

которые сконфигурированыпод типичный универсальный спутниковый конвертор.

Как всегда, когда имеешь дело с продуктами SPAUN , качество исполнения не оставляет желать лучшего. Все превосходно доведено до ума и описания на внешней крышке точно объясняют функции для каждого входа/выхода. Также, на верхних крышках приборов, были напечатаны частоты носителей , так что не было даже необходимости обращаться к инструкции (называется Технические советы/ TechnicalAdvice), которая, тем не менее, прилагается к каждому продукту. Инструкции предоставляют всю необходимую информацию, спецификации технических параметров и предложения по установке. Некоторым из моделей необходим внешний источник питания. В набор для некоторых приборов даже входит блок питания штепсельного типа. И эти блоки питания имеют различные адаптеры и подходят для широкого спектра входных напряжений и, таким образом, Вы можете использовать их практически в любой точке мира.

Дополнительно, некоторые модели от SPAUN имеют 75 ohm- терминаторы – чтобы использовать на стволовых выходах, если они не подключены к последующему мультисвичу в конкретной системе распределения сигнала. Не забывайте использовать



In TELE-audiovision 09-10/2013 we presented two SPAUN SCR multiswitches: SUS 5581/33 NF LEGACY & SUS 5581 F

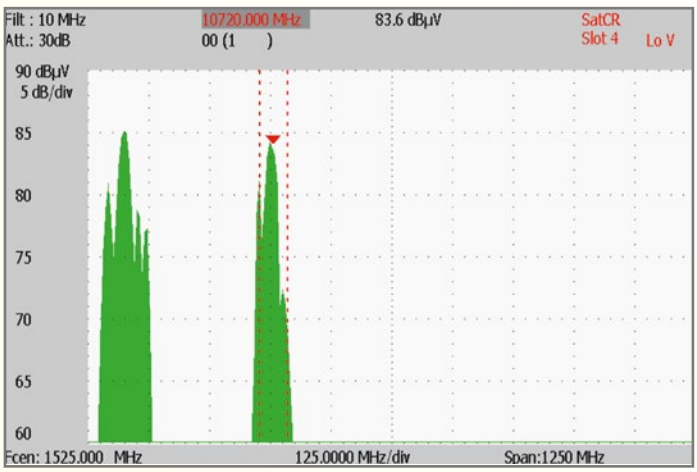
www.tele-audiovision.com/TELE-audiovision-1309/eng/spaun.pdf

такие терминаторы, если хотите достигнуть наилучшего качества сигнала.

В этот раз наша тестовая установка состояла из: 85 cm офсетной тарелки, направленной на HOTBIRD, на 13° Востока и Quattro спутникового конвертора. При измерении NFA приборов, мы дополнительно использовали 10 dB аттенюатор, для удержания входного сигнала ниже предела в 80 dBV.

Во всех случаях спектр сигнала на однокабелевых выходах был чрезвычайно чистым – никаких помех между









MKTECH



S1-50HD
Dual Core Android4.0 OS OTT Box with DVB-S2 & 3D GPU

- Opeartion System: Android version 4.0.4
- XBMC Supported
- ARM Cortex-A9 Application processor with NEON SIMD Multimedia extension: 5000DMIPS Dual core 1GHz
- Advanced NEON includes the ARM NEON SIMD extensions
- 3D GPU supports 3D user interfaces & games
  Broad Format HD Content Decoding:online video on demand (VOD) and over-the-top (OTT) services, including native support for VP8 codec
- Supports Mouse and Keyboard
- 3G USB DONGLE supported
- Support Android Browser Apps/boot animation/Screen Shot/File browser/ Live Wallpaper
- Support Google Search, Web browser, Email, ect

DVB-S2 Twin Tuner Box with Enigma2 & XBMC OS

- E2 BMC-XBMC and Enigma2 dual-boot
- DVB-S/DVB-S2 Satellite Compliant based on Enigma2
- Twin Sensitive Tuner Supported
- Enhanced media features and functionality from XBMC
- Abundant media plug-ins for users: XBMC-movies, pictures, radio channels, plenty of library portals available
- Support Webserver, Airplay, NAS, Samba and Cifs connection
- Remote control app available for working on Smartphones and tablets
- Media content share by BubbleUpup with Smartphone and tablet
- Real Picture in Picture Supported







Digital T2/S2/C Combo Meter

- DVB-S2, DVB-T2/T and DVB-C signal meter in one
- High performance spectrum analyzer to display the signal strength of all transponders
- Pre-/ Post-BER and MER indicator, C/N in the dB and signal level in dB/μV
- Constellation analyzer
- Screenshot Function (Capturing): screens with data can be in BMP format on a USB-stick
- Super ECO system management for power saving, auto-standby function supported
- Multi-lingual OSD menu supported
- Weight: 480 grams
- Dimensions: (W*H*D) 105*170*45 mm

MKTECH
Gotech International Technology Ltd

Headquarters: 66 Yongda Road, Hongqi, Jinwan District, Zhuhai 519045 P.R.China
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несущимироутера с одним входом. C/R соотношение превосходило 35 dB! У вас не будет таких удобных условий при работе с обычным спутниковым сигналом.

Мыпроверилисилувыходящихсигналов (мощность-канала /ChannelPower) увсехпродуктов. Во всех случаях, мощность каналаоднокабелевых выходов была отрегулирована на величину, установленную SPAUN. Нашвывод: неважно, накакуюнесущуюсконфигурированвашресивер, он будет обеспечен равноценным сильным сигналом. В зависимости от модели, стволовые выходы либо просто повторяют вход, с небольшой потерей; усиливают его, либо усиливают его и регулируют до зафиксированного значения. Вы можете увидеть как это выглядит на наших графиках (Graph.1, 2, 3)

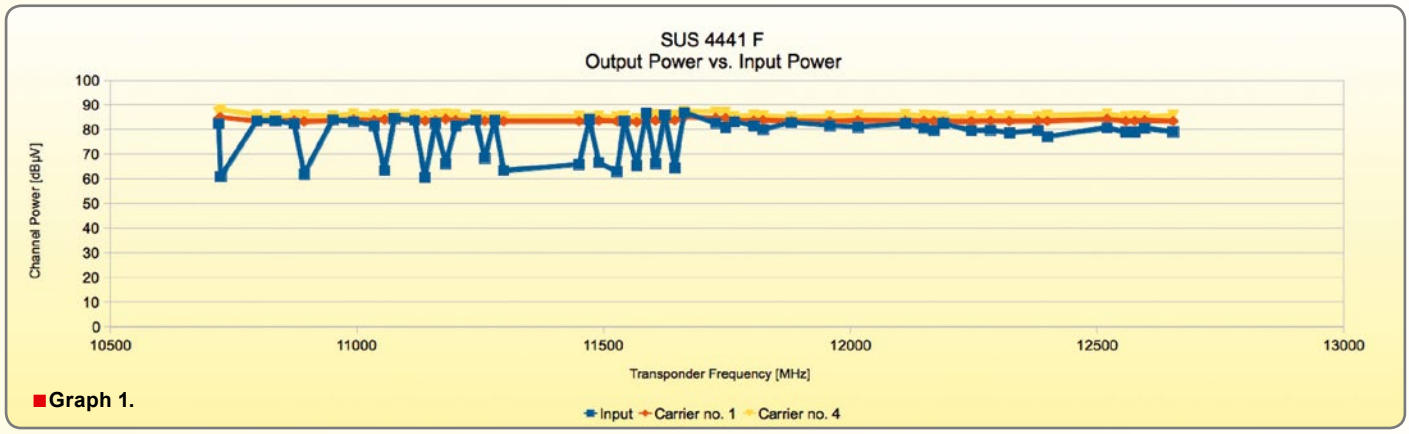
Пожалуйста, обратите внимание, что мы предоставляем вам только выборочные графики, из тех, что мы составляли по каждой модели. Иначе, этот отчет был бы слишком длинным и не подходящим для журнала. Но, можете быть уверены, что модели, не показанные в данном отчете – вели себя практически одинаково.

А что насчет качества выходного сигнала? Значительно или минимально оно снижалось? Следующие графики (Graph 4, 5, 6) открывают перед нами правду: они показывают коэффициент ошибки модуляции(MER) входного и выходящего сигналов на одном графике. MER совсем незначительно хуже на выходе.

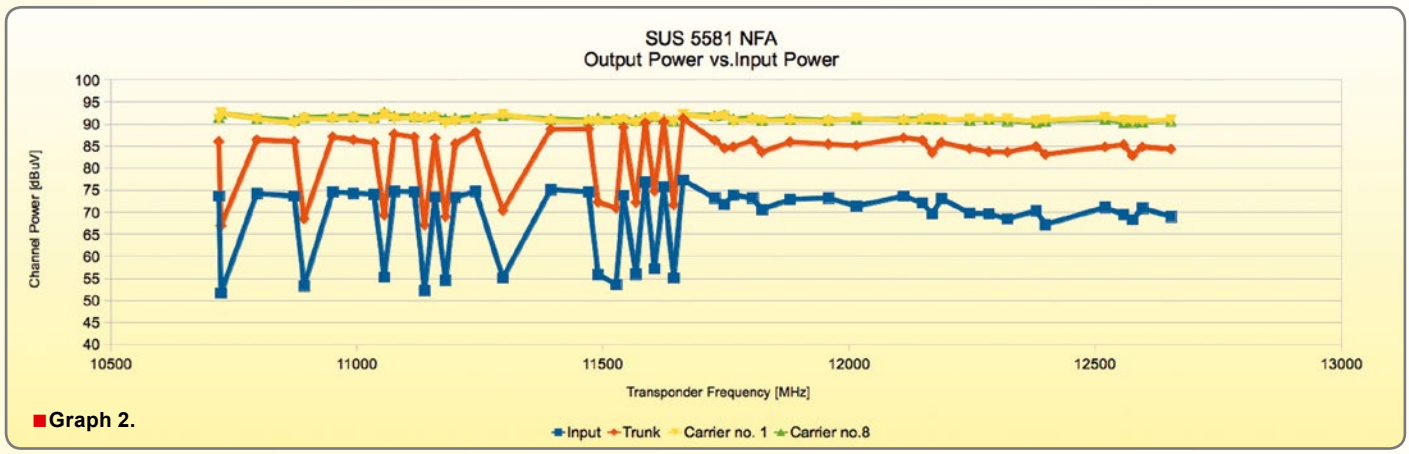
Дополнительно, мы наблюдали за равномерностью – для несущих с более высокой частотой MER слегка хуже, чем для несущих с более низкой частотой. Но, между тем, разница настолько мала, что она неразличима ни ресиверами, ни конечным потребителем.

Мы также проверили работу прибора с наземным сигналом (конечно , для моделей , поддерживающих этот сигнал)и можем подтвердить, что потеря сигнала – ниже установленой величины (4 dB).

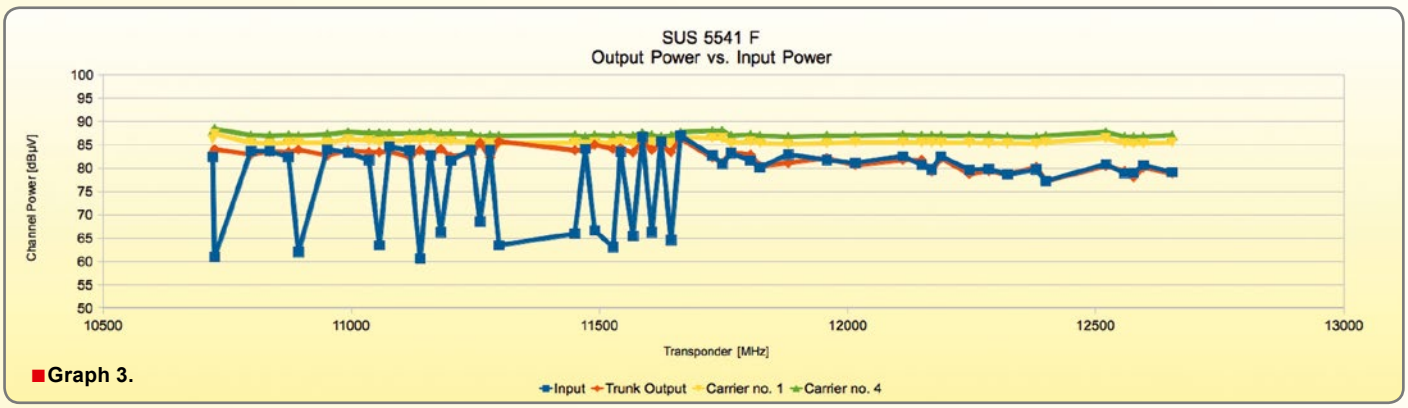
В конце концов, мы подсоединяли реальный ресивер к различныммультисвичам и выяснили, что время зависания канала действительно минимально для сигнала от одного кабеля. Это важно, потому что в такой конфигурации не ваш ресивер должен пере-



Graph 1.



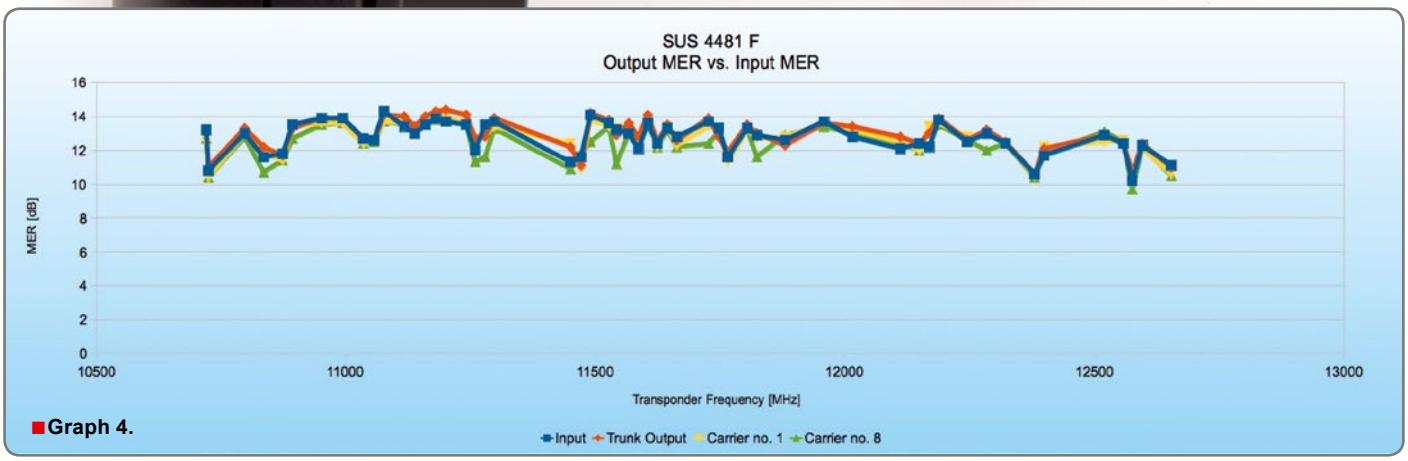
Graph 2.



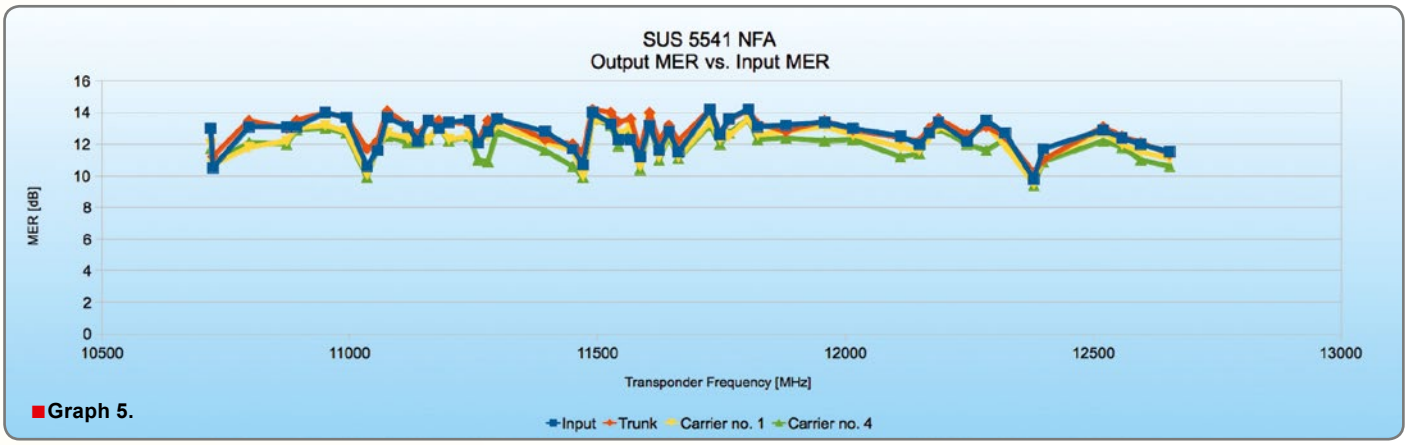
Graph 3.

настроиться на спутник, а мультисвич роутер с одним входом должен перенастроить свои входные схемы на разные транспондеры. Вам не нужно бояться, что мультисвичиSPAUNмогут как-то увеличить время зависание канала и испортить вам

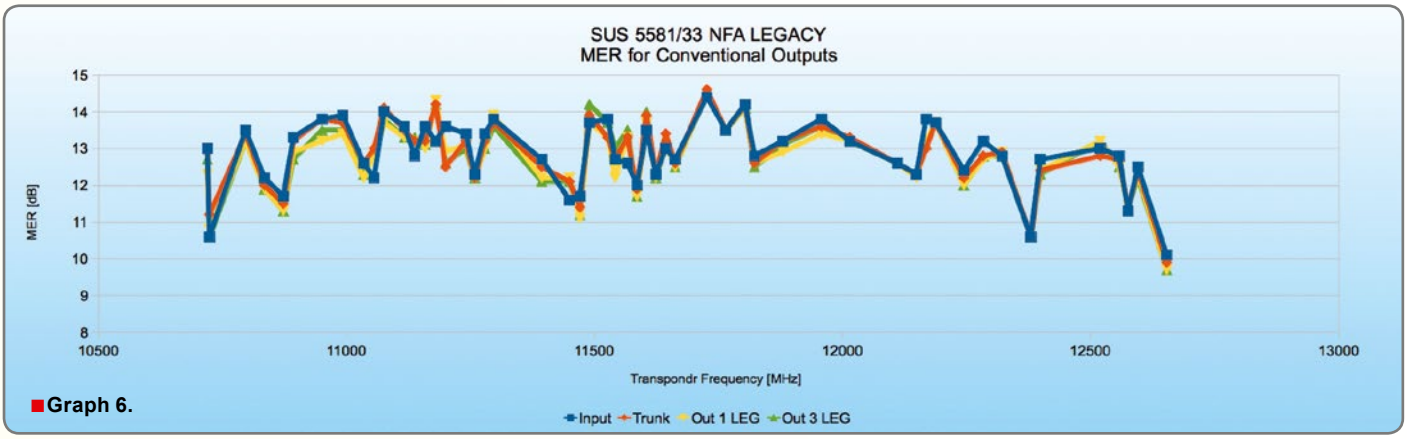




Graph 4.



Graph 5.



Graph 6.



удовольствие от быстрого переключения каналов. Невыйдет – оничрезвычайно-быстры!

Суммируем: реальная работа SPAUN SCR мультисвичей абсолютно совпадает с их технической спецификацией. Выходной сигнал очень чистый, сильный и его коэффициент ошибки модуляции всего чуть –чуть хуже чем на выходах системного входа – Quattro спутникового конвертора.

В каталоге продукции SPAUN множество моделей: с и без усиления, подходящие для четырех, восьми, девяти (3x3) или даже десяти ресиверов (8x1 + 2x LEGACY), так что вы можете найти решение практически для любого применения. Если вам нужно подсоединить больше ресиверов, чем один прибор сможет поддержать, вы можете использовать стволовые выходы мультисвич роутера с одним входом, которые повторяют сигналы спутникового конвертора и подсоединить другой мультисвич. Более того, вы можете легко использовать комбинацию классического и мультисвич роутера с одним входом, если некоторые ресиверы в вашей системе распределения не поддерживают сигнал с одного кабеля.

EXPERT OPINION



+ Numerous models make it easy to optimize your distribution system

Very solid performance matching the specification

Very good noise performance

Superb workmanship

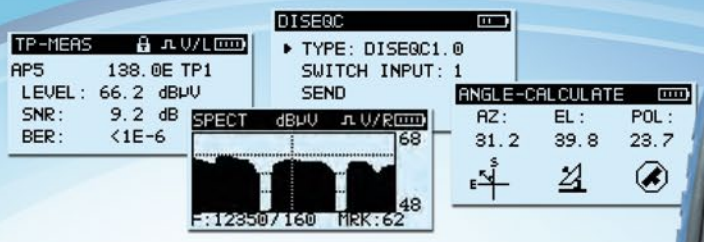
– None

TECHNICAL DATA

Manufacturer	SPAUN electronic GmbH & Co. KG, Germany					
Web	www.spaun.com					
E-mail	contact@spaun.com					
Phone / Fax	+49-7731-8673-0 / +49-7731-8673-17					
Model	**SUS 5581/33 NFA LEGACY**	**SUS 5581 NFA**	**SUS 4441 F**	**SUS 4481 F**	**SUS 5541 F**	**SUS 5541 NFA**
Inputs SAT/TERR	4/1/	4/1	4	4	4/1	4/1
Through loss 5...862 MHz	< 4 dB	< 4 dB	-	-	< 4 dB	< 4 dB
Through loss 950...2200 MHz	12 … 14 dB	-	-1 ... 2 dB	-1 ... 2 dB	-1 ... 2 dB	-
Through gain 950...2200 MHz	-	12 … 14 dB	-	-	-	12 … 14 dB
Tap Loss 5...862 MHz	13 … 15 dB	4 … 6 dB	-	-	4 … 6 dB	4 … 6 dB
SAT Input Level	50 … 80 dBµV	50 … 80 dBµV	65 … 95 dBµV	65 … 95 dBµV	65 … 95 dBµV	65 … 95 dBµV
SAT Output Level (Legacy Mode)	73 dBµV	N/A	N/A	N/A	N/A	N/A
Output Level 950...2200 MHz	1x8: 95 dBµV 3x3: 82 dBµV	95 dBµV	95 dBµV	95 dBµV	95 dBµV	95 dBµV
SCR carriers [MHz]	974 1076 1178 1280 1382 1484 1586 1688 1790 (only in 3x3 setup)	974 1076 1178 1280 1382 1484 1586 1688	1210 1420 1680 2040	974 1076 1178 1280 1382 1484 1586 1688	974 1076 1178 1280	974 1076 1178 1280
Power consumption	< 7 W	< 7W	-	-	-	< 7W

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- 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

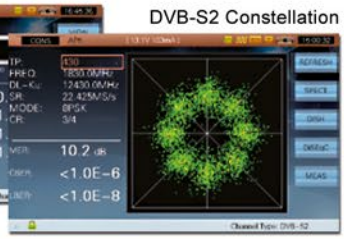

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TR101 290 Three level Monitoring

- All standards in one: QAM(J.83A/B/C), 8VSB, DVB-T/H/T2, DVB-S/S2
- Digital/Analog TV and Satellite TV analysis
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- 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



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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

Icecrypt S3700CHD



- ***чрезвычайно отзывчив, благодаря CPU последнего поколения***
- ***очень быстрое слепое сканирование***
- ***магазин приложений, от производителя – для добавления мультимедиа черт***
- ***функция записи для двух одновременных процессов, при просмотре третьего канала***
- ***установки монитора могут быть скопированы для всех спутников***



Triple Tuner PVR

The new Icecrypt S3700CHD is characterised by its elegant front panel featuring a perfectly readable VFD display, two Conax smartcard readers hidden behind a flap, a total of seven buttons for front-end operation without the remote control, and a USB port. The back panel of this new triple tuner PVR sports three tuner input sockets complete with loop-through outputs (2x DVB-S2, 1x DVB-T/C), a USB port, HDMI and RF-45 network interfaces, 3 RCA jacks for stereo audio and composite video, a euroscart connector, one optical and one coax audio output, a UHF modulator as well as an RS232 interface. All this is completed by a much-appreciated mechanical power switch which adds some more icing to the cake.

The remote control that is part and parcel of the overall package sits rather nicely in your hand, comes with self-explanatory labelling and – most importantly – boasts conveniently spaced buttons that can easily be operated with more robust fingers as well. The manual is provided in German and English and cannot be faulted in any way.

Like most receivers these days, the Icecrypt S3700CHD comes with an installation assistant that provides valuable help when it comes to setting up the box for the first time. It asks for your preferred on-screen language, local time and network parameters, as well as for the desired video resolution. Speaking of that, we did appreciate the fact that 1080p can be selected, which makes this receiver truly fit for the future in terms of full HD capabilities. The initial setup also requires users to select a PIN for preventing unauthorised use, and offers automatic software update messages or other important alerts that are sent directly by the manufacturer.

Once the box is ready for take-off the main menu offers a quick channel search option, which relies on a



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Icecrypt S3700CHD
Excellent hardware
in tandem with sophisticated
but easy-to-use software.
www.TELE-audiovision.com/13/11/icecrypt

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Transmit Reject & Receive Reject
Multi-band Reject
Diplexers

K/Ka-Band (18-40 GHz)

Transmit Bandpass & Receive Bandpass

X-Band (7.25-8.4 GHz)

Transmit Reject & Receive Reject

Broadcast (DTV & FM)

DTV Transmit Mask
Multi-Channel Combiners
Single Channel Preselectors
DTV Adjacent Channel Eliminator
FM Adjacent Channel Notch
Harmonic Lowpass

Auxiliary Services (Broadcast)

BAS (2 GHz) - Full Band & Single Channel Bandpass
BAS (7 GHz) / ISM (5.8 GHz) Diplexer

STL (950 MHz) - Single Channel Bandpass
STL (950 MHz) - Multi-Channel Ferrite Combiners
STL (950 MHz) / ISM (900 MHz) Diplexer



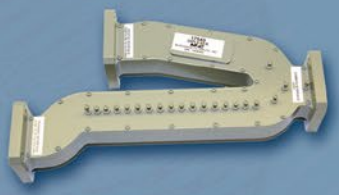
WiMAX & Radar Eliminator



Transmit Reject



Transmit Reject



Diplexer



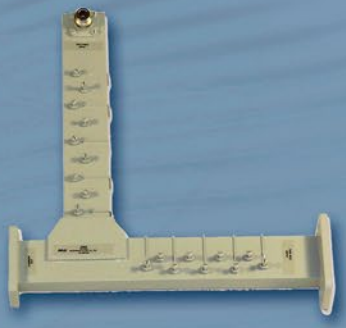
Transmit Reject



Receive Reject



DTV Transmit Mask



BAS (7 GHz) / ISM (5.8 GHz) Diplexer

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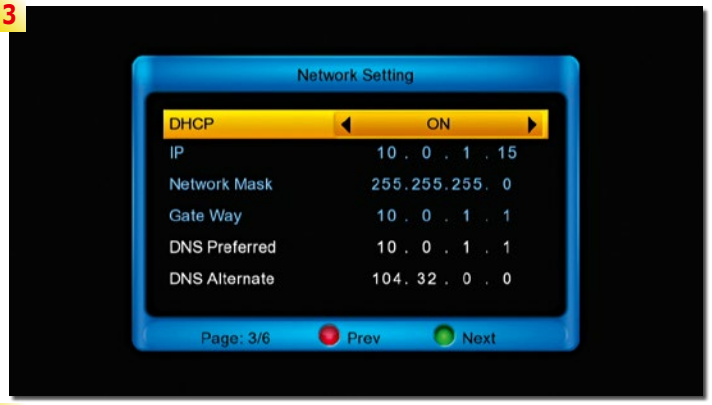
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total of 50 pre-stored orbital positions in the internal database. Unfortunately, however, some entries are missing, which becomes evident when comparing the results of a blind scan search on HOTBIRD 13° East with those of a standard search on the same position. The default software supports all DiSEqC protocols (1.0, 1.1, 1.2 and 1.3), allows freely selectable LOF values and will work flawlessly with SCR unicable solutions as well – thumbs up for all this versatility! We also discovered another great feature of the Icecrypt S3700CHD: All DiSEqC 1.3 motor settings determined for a satellite position can easily be copied to work with all other satellite entries of the internal database as well. This may sound like only a minor benefit, but we know from experience how tiresome it can be to manually edit each satellite entry for motor control. So well done, Icecrypt!

By the way, whenever you're unsure which port of your DiSEqC multiswitch is connected to the currently desired satellite you can always use the Auto DiSEqC function which will provide you with all details you require – another hugely valuable Icecrypt software feature.

Let's get back to the satellite search for a moment. You can either opt for an automatic scan across one or more satellites or one or more transponders, or you can go for a blind scan search instead. A standard search on HOTBIRD 13° East took some five minutes and resulted in 1518 TV channels and 361 radio stations. A blind scan, on the other hand, yielded 1707 TV channels and 414 radio stations in eight minutes. As far as we are concerned, those extra three minutes are time well spent when considering the excellent blind scan result.

In the non-satellite realm you need to first select DVB-T or DVB-C before launching the channel search. Unfortunately, the new Icecrypt box is not compatible with DVB-T2, a relatively recent transmission standard that is predominantly used for terrestrial HD channels. In our test, the S3700CHD took a little more than three minutes for a search across the entire frequency band, and thanks to an optional +5V supply voltage transmitted via the inner coax wire it is possible to also use DVB-T antennas with built-in signal amplifier.

You'll surely appreciate that for the Icecrypt software the sky is the limit when it comes to the maximum number of channels to be stored. Even though, it makes a lot of sense to bring some order and clarity into the overall channel offering. Individual channels can be moved, renamed, PIN-locked or deleted, and the entire list can be sorted according to satellite, alphabet, provider, conditional access system, HD, broadcaster or favourites. Speaking of favourites, you can set up a total of 32 of

1: Installation assistant of the Icecrypt S3700CHD

2: Setting the time

3: Network configuration

4: Video output settings

5: A PIN code has to be set during the initial installation routine

6: New software alerts and other important news can be shown right on the receiver, if selected by the user

7: Main menu of the Icecrypt S3700CHD

8: Installation menu

9: Software update via USB

10. Tuner settings

11. DiSEqC 1.3 settings

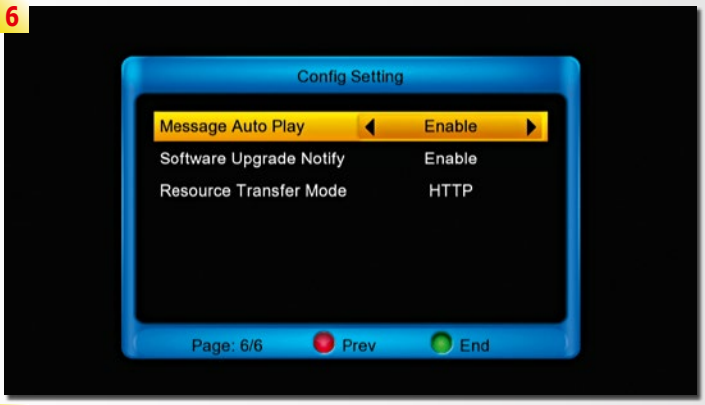
12. If desired, DiSEqC 1.3 settings can be taken over for all satellite entries

13. The Auto DiSEqC function automatically detects which port is used for the selected satellite

14. Blind scan

15. 1707 TV and 414 radio channels were found on HOTBIRD 13° East with a blind scan

6



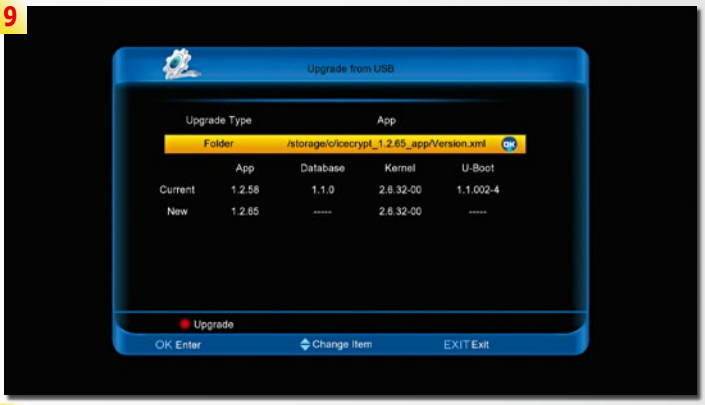
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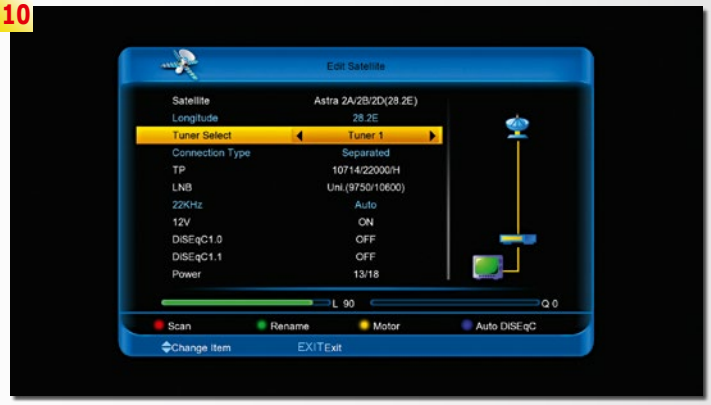
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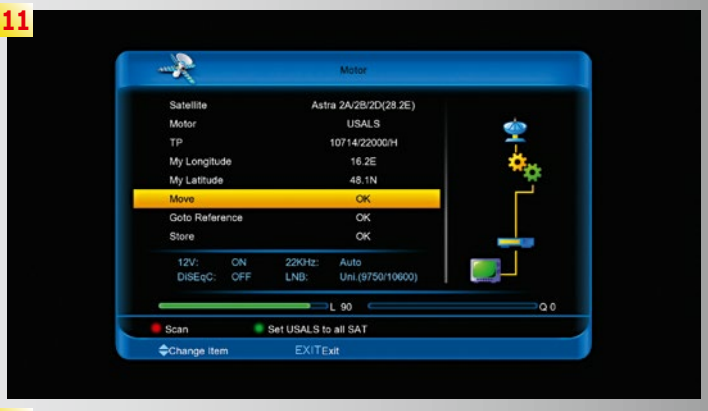
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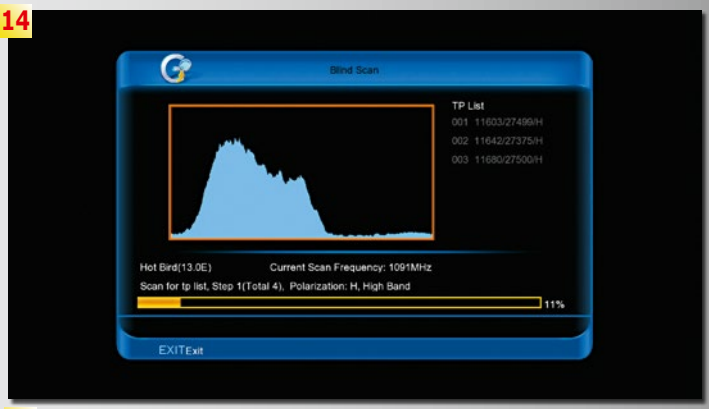
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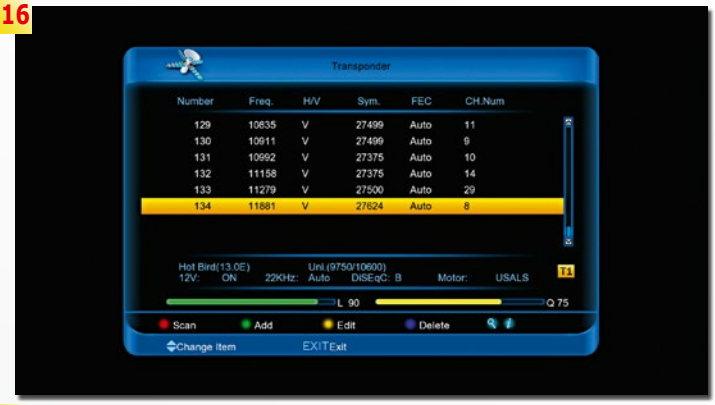
14



15



16



16. Individual transponder entries can be deleted, added or edited

17. Users have to decide between DVB-T and DVB-C for the third tuner

18. Tuner settings for terrestrial reception

19. Terrestrial channel search. DVB-T2 is not supported, which is why the receiver finds only 13 TV channels and one radio station

20. All 32 favourites lists can be given individual names

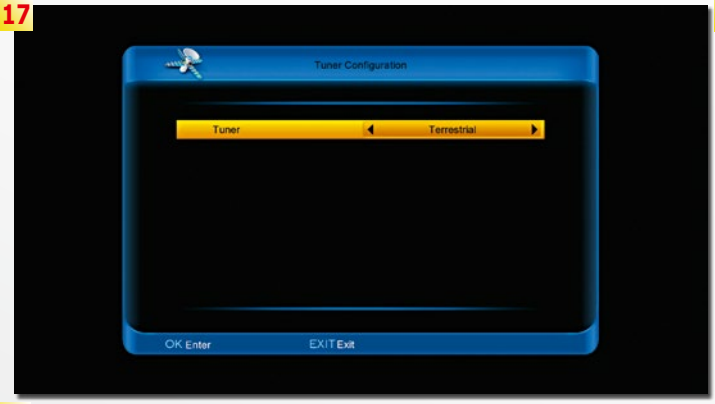
21. Editing a favourites list

22. Editing the channel list

23. Various basic settings

24. A/V settings

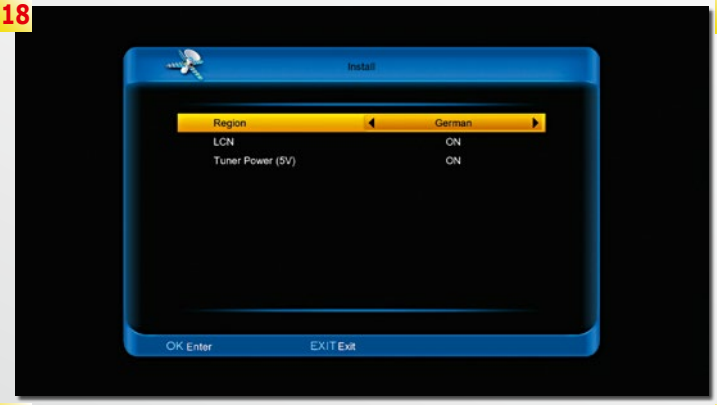
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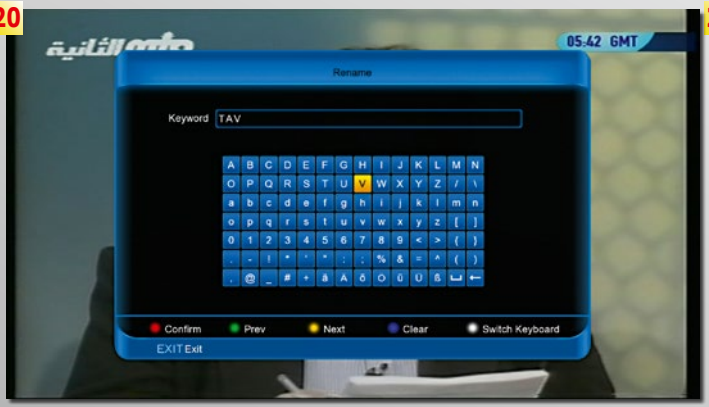
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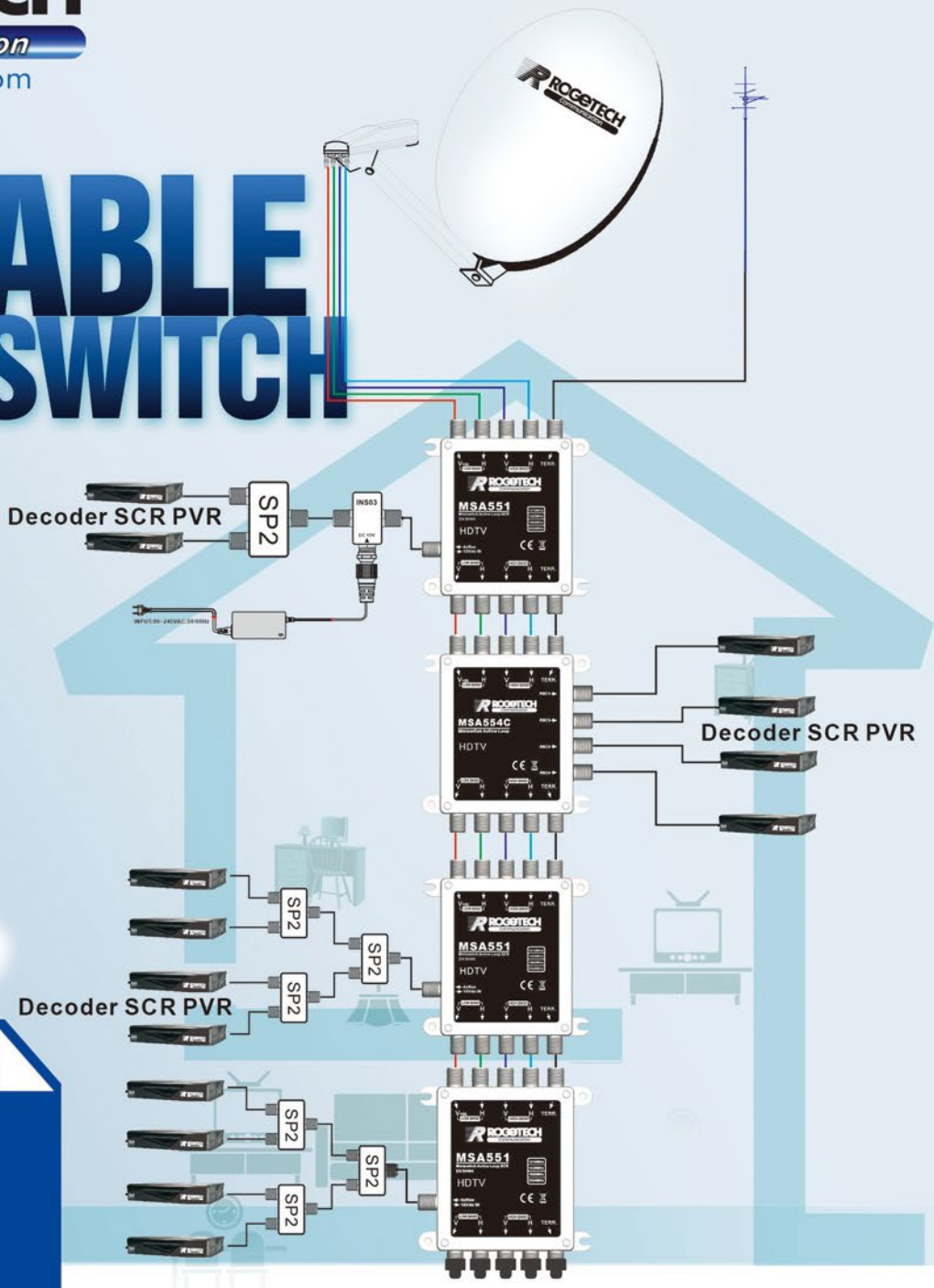


24



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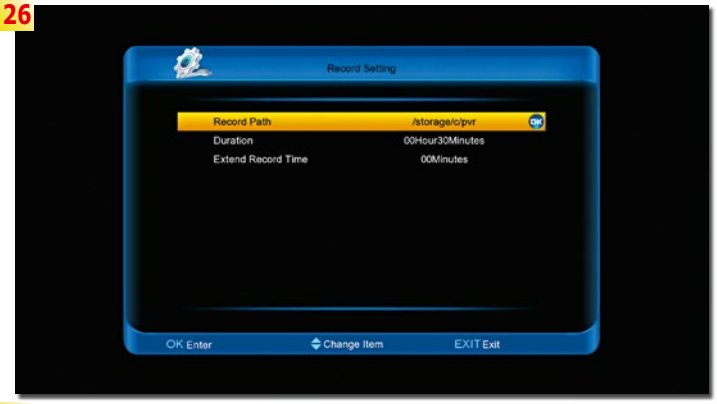
them, all named and organised to meet your personal demands. So there's no excuse any longer for not having all your favourite channels at your fingertips whenever you need them!

In addition, the settings menu sports a very user-friendly layout, which means owners of the S3700CHD are spoilt for choice in terms of customising their receiver. Quite frankly, we could not ask for more: You can set a certain after-run period to make sure your recordings are not cut off in case of changes in a channel's schedule, you can define the size of the timeshift buffer, configure network access with an external WiFi or 3G dongle, save the channel list and all settings onto an external storage medium or update the receiver's operating software. The choice is yours, and all functions can be used or adjusted with remarkable ease of use.

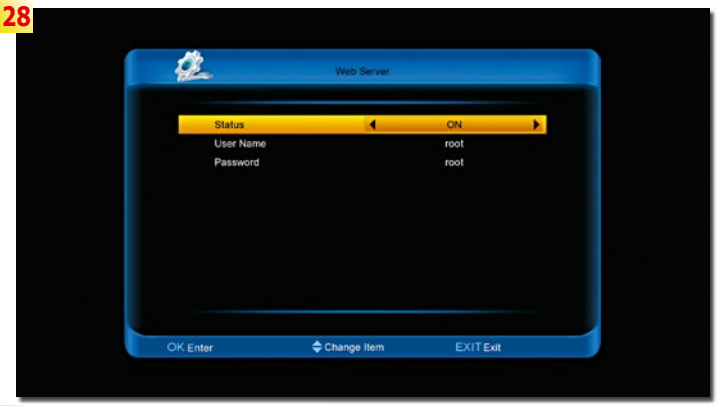
Most receivers we have tested so far open the channel list with a touch of the OK button, and the S3700CHD is no exception. The list is divided into three rows, with the first row listing the sorting options (all, favourites, satellite, alphabet, provider, CAS, HD, top and broadcaster), the second row offering subcategories (such as encryption system used, available favourites lists or providers, etc.) and the third row showing the resulting channels for final selection. This three-stage layout leads you to your final destination in an extremely straightforward manner.

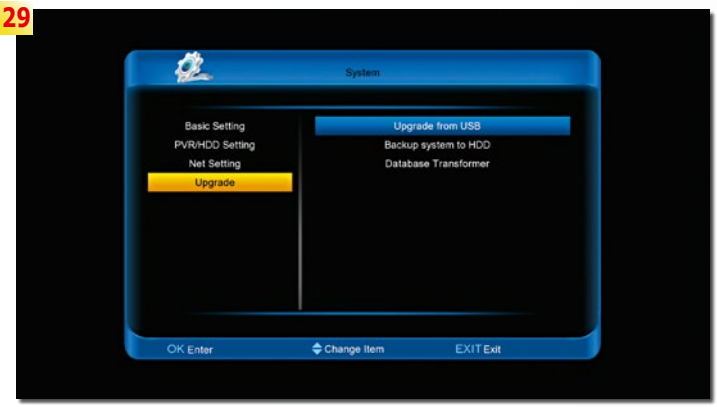
Another software plus we noticed is smooth integration of the electronic program guide (EPG) into the channel list – if you're in the third column of the channel list a press of the right arrow button calls up all EPG data for current

25


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28


29


25. TV Wall icons can be downloaded from the Internet
26. PVR settings
27. 3G connection parameters
28. Web server settings
29. The complete channel list can be saved onto an external storage medium
30. This is the place where messages and alerts from the manufacturer will be displayed
31. Weather forecast
32. FAQ and the manual are integrated right into the receiver software
33. Built-in multimedia features of the Icecrypt S3700CHD
34. YouTube
35. Shoutcast
36. Picasa
37. Opera web browser
38. IPTV Player
39. WebTV Player

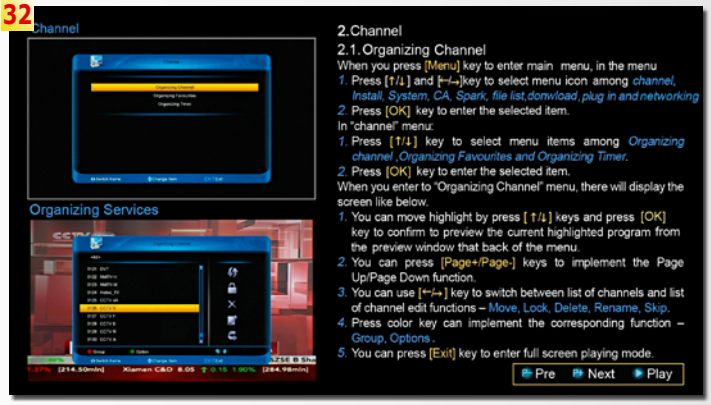
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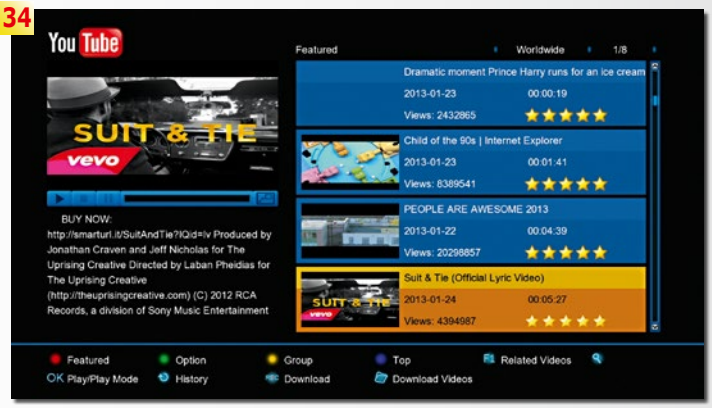
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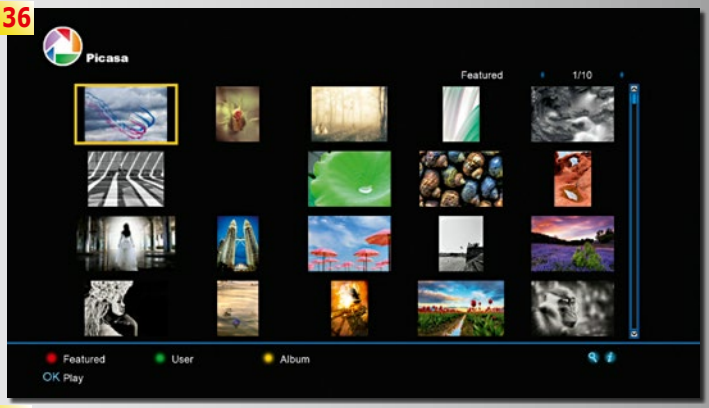
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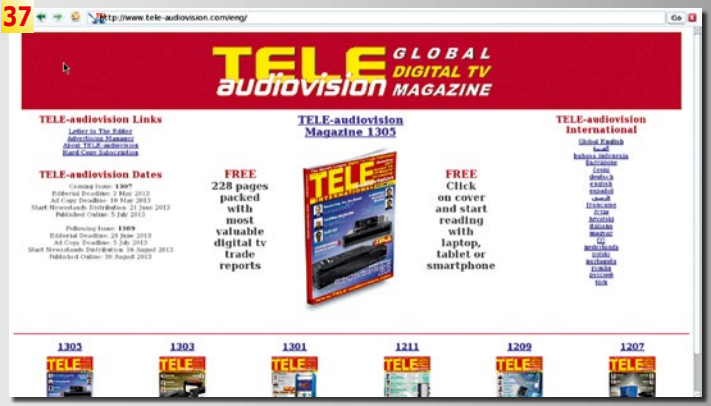
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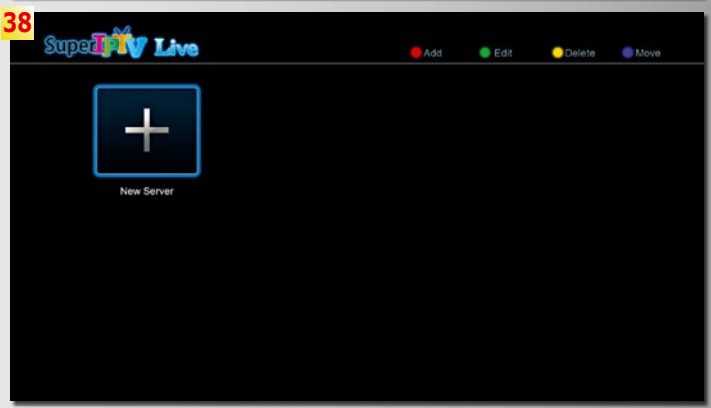
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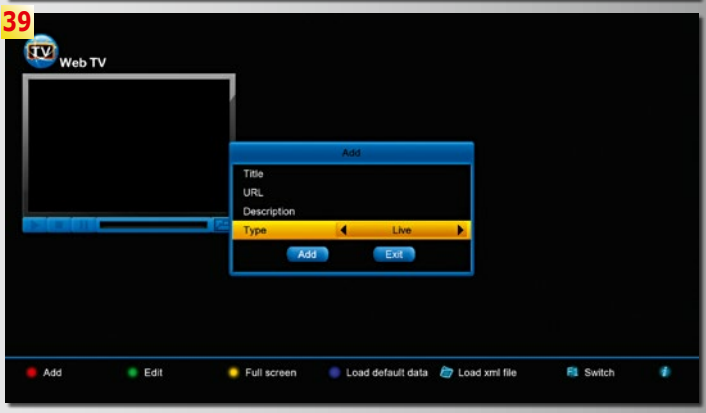
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38



39



40. ebay app
41. Channels can be edited right in the channel list
42. Upcoming events of the selected channel
43. Extended event information
44. Info bar with titles of current and next broadcast
45. Channel search with PC-style on-screen keyboard
46. Channel search with telephone-style alphanumeric keypad
47. Language selection
48. Teletext, subtitles and a preferred audio language can easily be selected

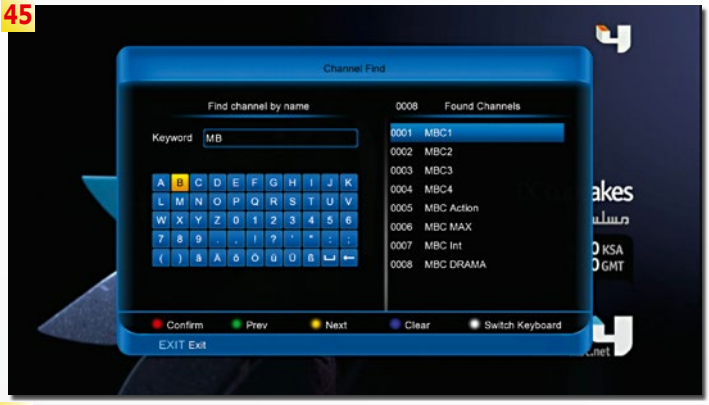
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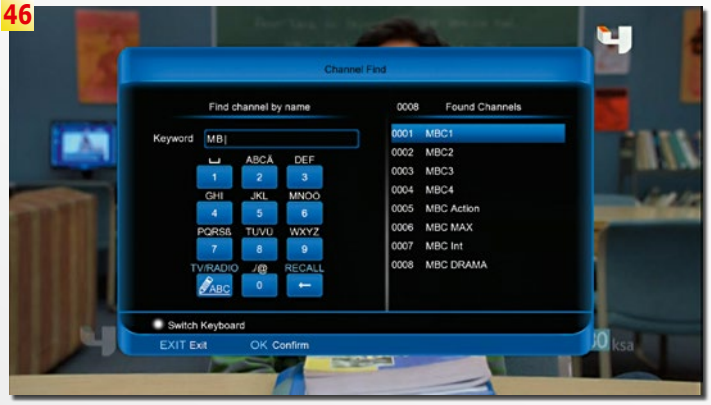
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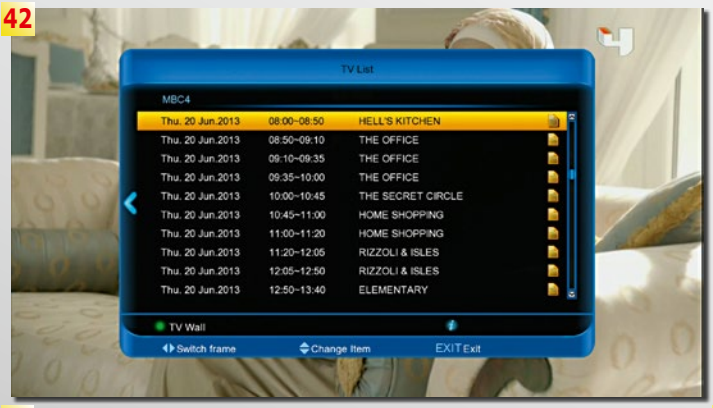
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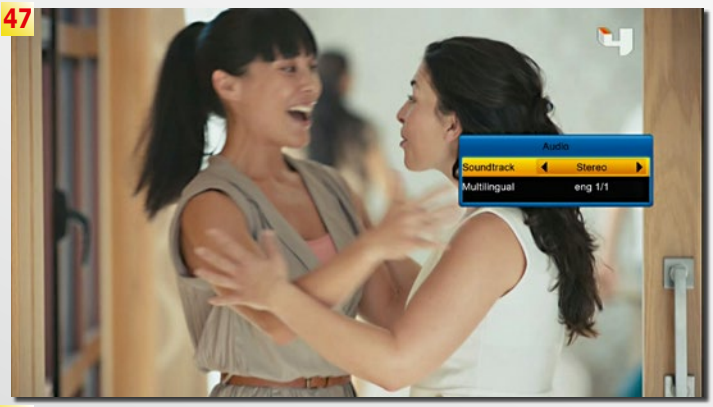
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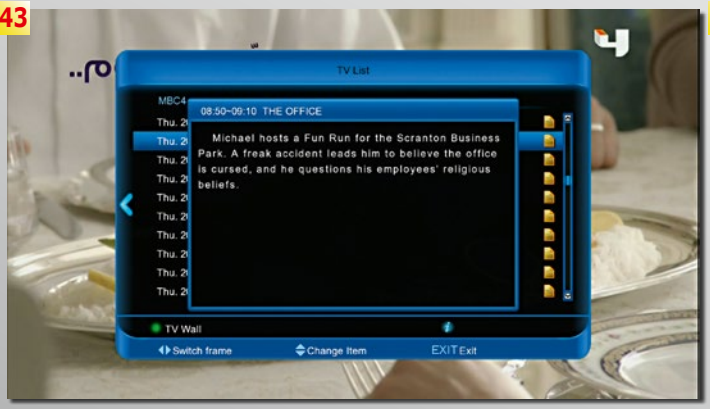
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47



43



48



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The company for manufacturing and researching satellite antenna dishes

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P180L6-1



S035W-3



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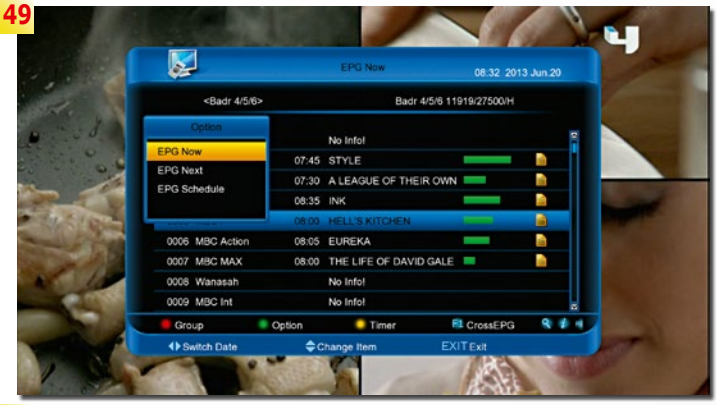
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offset satellite receiver antennas of band KU
at 0.45m, 0.6m 0.75m 0.9m,1.2m.

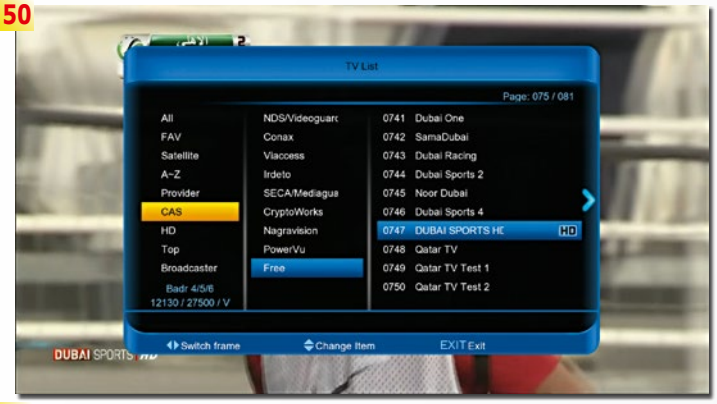
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Guangxi Lianxing Satellite Co.,Ltd.
Tel: +86-773-6259228 | Fax: +86-773-6259234 | Email: root@gxlianxing.com | Web: http://www.gxlianxing.com
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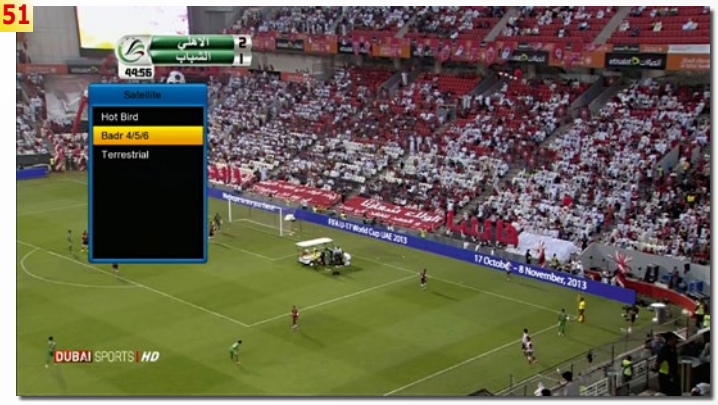
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50



51



events broadcast on channels appearing on the list. Pressing the same button once again then calls up events coming up on the currently selected channel. If our opinion is anything to go by, we can hardly think of a more user-friendly EPG arrangement.

A dedicated button on the remote control gives all users of the S3700CHD an option to search for any channel by name. The on-screen keyboard that appears on the TV panel can either be shown as a standard PC keyboard or as an alphanumeric keypad like on telephones.

During our simulated everyday use this new Icecrypt receiver shined with its excellent responsiveness to all commands sent from the remote control. If you look beyond the box's great looks, it's easy to find out why it is so very capable: Apart from its 450 MHz CPU it boasts a 2 MB NORE flash memory, 512 MB of NAND flash memory as well as 2 x 128 MB DDR random access memory. All this adds up to make the S3700CHD a genuine powerhouse. Both video and audio quality are equally impressive and leave nothing to be desired. Added to that is a channel switching time of less than one second, so that all those sofa surfers out there will quickly become channel zappers as well. HbbTV content of channels offering that service can be used to access multimedia libraries, enhanced EPG data and lots of channel-specific features with the S3700CHD. The PVR function of the Icecrypt receiver allows simultaneous recording of two events, while a third channel is being watched live. We would have loved to see this receiver record three or even four events at the same time, but please make no mistake about it – we're complaining to high

49. EPG view

50. Various sorting options of the channel list

51. Satellite selection

52. MP3 playback

53. Image viewer

54. Playing back an AVI test video

55. Playing back a DivX test video

52



54



53



55



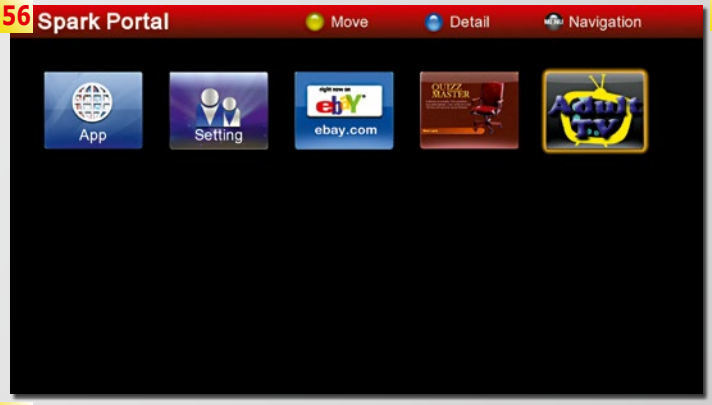
heaven here… Now that we're through all of the basic features and functions of the new Icecrypt box we should take a moment to deal with the huge range of extra features that offer lots of added value. First and foremost, we have to mention the message function that is integrated in the Icecrypt software: It can be used by the manufacturer to display important information right on a user's TV screen.

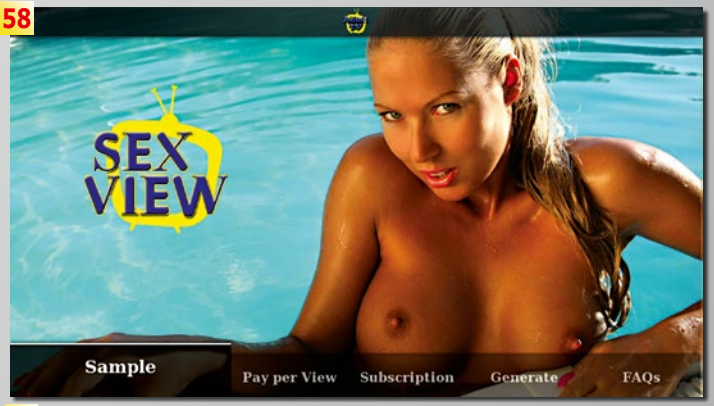
Available software updates can easily be announced this way, for example. If this is the case the update procedure is a flawless and efficient affair, and Icecrypt even provides a change log with extended information on new features. What a great benefit! Generally, the Icecrypt software has a clear focus on usability and this is underpinned by the digital user's manual that can be accessed right from the receiver's menu, together with a list of frequently asked questions. Remember the times when you had to think about where you had put the manual in the first place, then dig it out of a drawer or closet only to take forever until you find the specific section you're looking for? No more trouble with the S3700CHD – take the remote, press a button and find the answer right on your screen.

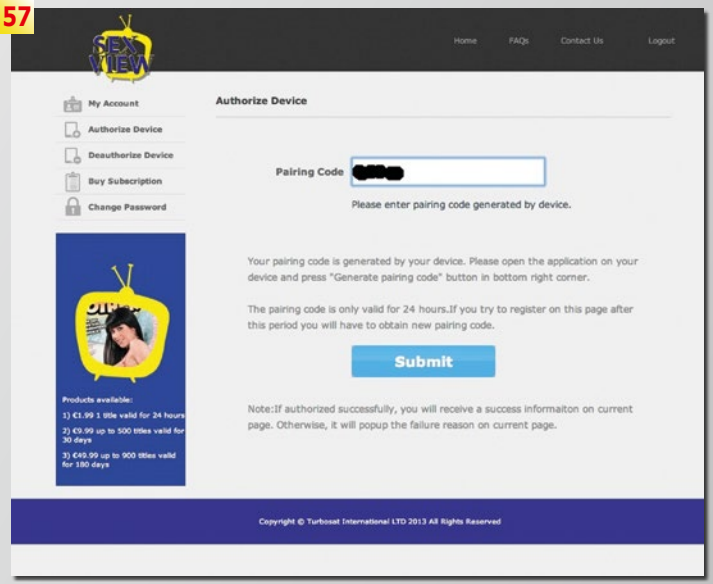
As far as integrated multimedia features are concerned the Icecrypt software offers standard fare such as a weather forecast service, but also specials like YouTube, Shoutcast (Internet radio), Picasa (pictures) and even access to Russian pay TV provider Kartina TV. Added to that are a web browser (Opera), an FTP client and an RSS newsreader. IPTV and WebTV are also offered, but in both cases we could not find any pre-stored channels, which means users need to manually set up these services. Our thorough test confirmed that all built-in features work smoothly and flawlessly, no matter whether we're talking about a YouTube video, a Shoutcast stream, an RSS feed or a website. After all, that's what really counts for end users.

Obviously, the S3700CHD can be used for playing back audio and video files











56. The Sexview app can easily be downloaded from the app store of Icecrypt receiver

57. On the Sexview website the user has to type in the registration code generated by his receiver

58. Main menu of the Sexview app

59. The channel is child protected by a PIN

60



63



61



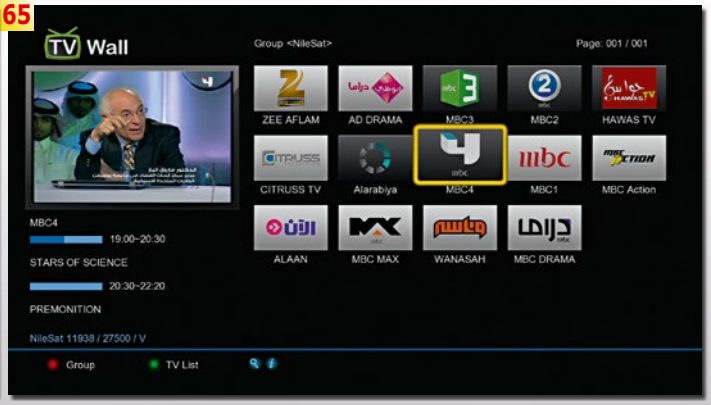
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62



65





60. Playing back a Flash test video
61. Playing back a MOV test video
62. Playing back a MP4 test video
63. Playing back a TS test stream
64. HbbTV support
65. TV Wall function of the Icecrypt software

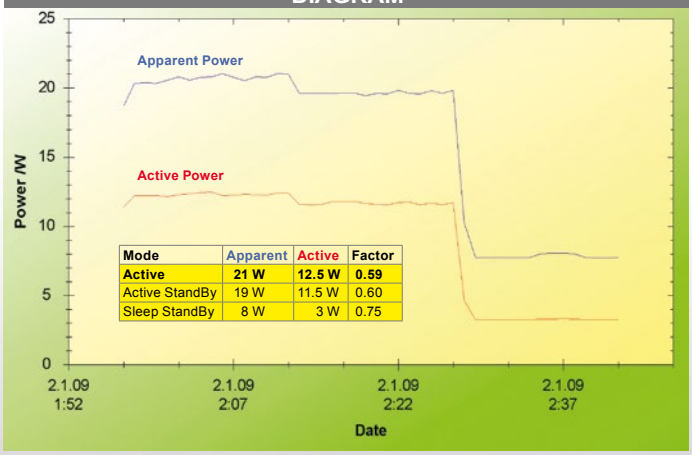
and will happily accept the following formats: AVI, MKV, MPG, TS, WMA, WMV, M2TS, FLV, DAT, ASF and MP3. In addition, your latest holiday photos in JPEG beg to be presented on the TV panel, too.

There is even an in-house app store run be the manufacturer and offering dozens of free extensions for the S3700CHD. Are you looking for an ebay client, content libraries, sports news, games or even food deliveries? Simply browse through the app store and chances are you will find just what you're looking for.

An exclusive is the adult service Sexview, which is available only with the Icecrypt receivers T2300HD and S3700CHD. After a short registration on their website a unique account is created based on the MAC address of your receiver. In our test this service workd flawlessly and we also found picture quality exceptionally good. We appreciated this app is safeguarded by a PIN Code.

Lastly, we would like to draw your attention to a special feature that turned out truly beautifully: It's called TV Wall and consists of the names and logos of 20 TV channels at time, complete with their EPG data and a live preview window. The TV Wall can be displayed instead of the conventional channel list and channel logos can be downloaded from the Internet and edited on the PC. A great idea that vastly enhances the way your new Icecrypt receiver looks and feels on screen.

ENERGY
DIAGRAM



Mode	Apparent	Active	Factor
Active	21 W	12.5 W	0.59
Active StandBy	19 W	11.5 W	0.60
Sleep StandBy	8 W	3 W	0.75

Active use during the first 15 minutes, active standby during the second 15 minutes (the receiver will wake up instantly, if required), sleep standby in energy-saving mode during the third 15 minutes (the receiver will take some time to wake up from this mode).

EXPERT
OPINION



+ The S3700CHD is a solid and very capable triple tuner PVR with an excellent range of features and functions. Based on a top-notch software platform it offers enormous versatility. Thanks to Full HD support and regular software updates this new Icecrypt receiver not only marks the state of play today, but will stay fit for future enhancements.

− Unfortunately, DVB-T2 is not supported by the terrestrial tuner, and only two simultaneous recordings are possible.



WORK микро-волновой портатив-ный тестер Satcom



- ***Спроектирован для спутниковых станций восходящего канала***
- ***Способен измерять интермодуляционные сигналы и точку сжатия***
- ***Также идеален для калибровки анализаторов сигнала и создания протоколов для сертифицированных измерений***
- ***Интегрированный генератор развёртки позволяет производить измерения и регистрацию кабельной установки***
- ***Встроенные аккумуляторные батареи делают этот тестовый прибор просто универсальным!***



The Reference Determines the Quality

In order to be able to measure complex analog systems, calibrate test equipment or test high-frequency converters, you need to have a test signal generator. This device generates a signal at a specific frequency and power level where its precision is extremely critical since it is to be used as a reference signal.

WORK Microwave offers exactly this kind of test signal generator; it can produce signals from 50-180 MHz and also from 950-2150 MHz. The Handheld Satcom Test Source is shipped in a suitable protective package in which you'll find a red aluminum case, two USB cables (A-B) and a power cable.

When you open up the red aluminum case you'll find in its padding the signal generator, the power supply, a USB stick, the user manual and a certificate of conformance certifying that the Handheld Satcom Test Source complies with the listed parameters. It is even noted on the certificate that any documentation that was used in the manufacture of this signal generator can be made available upon request. This kind of documentation results in traceability; all measured values can be traced as far back as the manufacturer WORK Microwave thereby precluding any discussions on any measurement results.

Page 15 of the user manual explains all of the functions of the test signal generator in a detailed yet easy-to-understand format. The installation of the unit is quite simple. You only need to run the executable file from the USB storage device. An actual installation is not necessary. Naturally, you can also copy the program to the hard drive.

The manufacturer was also thoughtful enough to include a copy of the user manual in the USB storage device. Installing drivers is not necessary since Windows XP, Windows Vista and Windows 7 will recognize the instrument as an HID (Human Interface Device) and automatically incorporate it into the operating system.

The Handheld Satcom Test Source has an elongated housing fabricated out of aluminum. There's no doubt that this is a robust test instrument that is further protected on the front and back by hardened plastic. On the front panel you'll find the





■ TELE-audiovision Editor Vitor in action. It's not nearly as difficult as it looks.


THOMSON
THOMSON
WORK
MICROWAVE

power supply input (12V-24V), two USB type B inputs and three status LEDs. The first LED indicates the instruments operational status (OK or error), the second LED shows the charging status of the rechargeable battery and the third one shows the system status.

The two USB inputs have different functions. USB1 serves as an additional source of power and also provides for the data communication with the PC. USB2 is exclusively used to provide power to the unit if for some reason the external power supply can't be used.

The Handheld Satcom Test Source runs from an internal rechargeable battery that lets you use it without having to keep it connected to a power source. This is not surprising considering this is a portable signal generator. It's also interesting that this instrument can be operated from a PC or laptop via the USB ports and since a single USB port cannot provide enough power, the Handheld Satcom Test Source can be connected to both USB ports. Very clever!

On the back of the test source is the on/off switch. There's also a BNC jack that provides a 10 MHz reference output signal as well as an SMA jack that provides the signal generated by the test source.

The signal generator also provides a DC voltage on this output which is indicated by an additional LED. Control of the unit is taken care of by a Windows program which also controls a sweep function.

Measurement of High-frequency Converters

The primary use of the Handheld Satcom Test Source is the measurement of various parameters of high-frequency (RF) converters. These RF converters, also available from WORK Microwave, convert the signal to be transmitted from its original frequency to a higher output frequency.

Since these high-frequency signals could not be routed through a satellite uplink station between all the different devices (modulators, multiplexers, etc.) using coaxial cable without incurring some signal loss, waveguides or very expensive cable are needed. Instead, a different path is used. The signal is routed and processed in the 50 to 180 MHz range or the 950 to 2150 MHz range until it's ready to be sent to the uplink section. Only then, in this final step, is the high-frequency converter used to upconvert the signal into the satellite uplink frequency range.

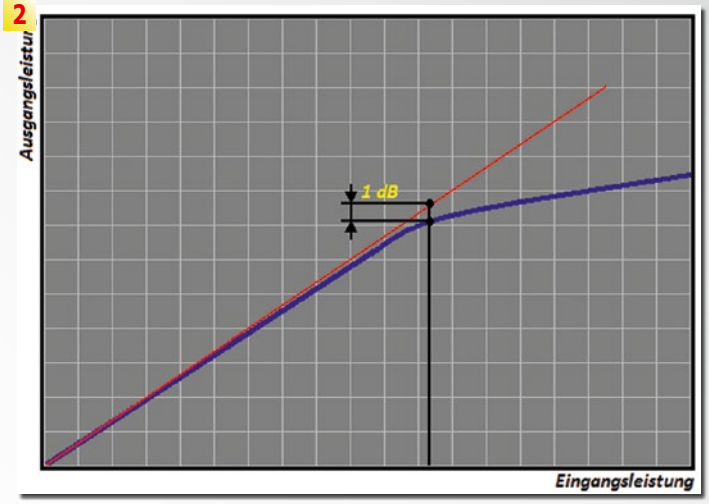
Obviously, this high-frequency converter cannot introduce any errors that might interfere with a neighboring transponder or even go as far as interfering with normal satellite operation.

This kind of interference is known as intermodulation. Intermodulation occurs when two signals are modulated on two frequencies that are very close to each other, causing additional signal peaks to appear on the sides of the two main frequencies. **(see Figure 1)**.

To check and see how much a high-frequency converter can minimize this Intermodulation effect, you would need two RF test sources so that you can modulate two nearby signal levels with known parameters. These two signal levels would then be routed to the high-frequency converters. Using a spectrum analyzer, you could then generate an picture of this intermodulation.

It's exactly for this reason





1: Intermodulation occurs directly next to the wanted signal - see the red labled signals

2: The compression point is defined to be at exactly 1 dB. From here on the signal quality deviates from the ideal characteristic.

that WORK Microwave incorporated two independent synthesizers in the Handheld Satcom Test Source so that now you can use just a single RF signal source to perform this measurement.

Obviously this greatly reduces the costs involved in acquiring these RF test sources since now you'd only need one of these instruments instead of two. At the same time the test setup itself is simplified since only a single cable and the upconverter need to be connected.

Another parameter that is measured when it comes to high-frequency converters is the so-called 1 dB compression point. This measurement is used to check the non-linear response of the high-frequency converter. Here the amplitude of the input signal is slowly increased until the signal distortion due to non-linearity deviates exactly 1 dB from the ideal characteristic curve **(see Figure 2)**.

The red line shows the ideal output curve. Above a specific input level the high-frequency converter begins to distort the signal such that a lower signal level is available at the output - hence the name "Compression": a lower signal level is at the output; the signal has been compressed.

To be able to compare different devices, you measure the input power level that results in a 1 dB compression at the output. Here the WORK Microwave Test Source proves itself with the ability to set the test signal to any frequency from 50 to 180 MHz and 950 to 2150 MHz with a power level from

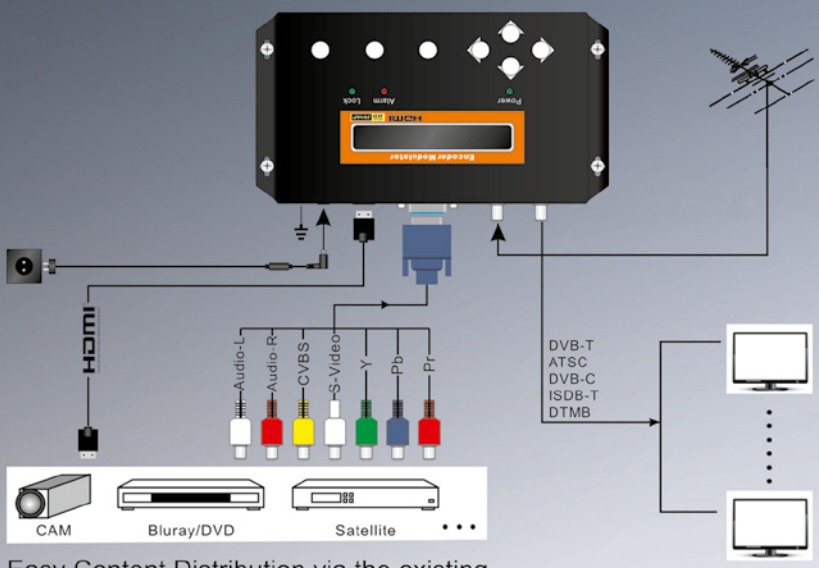
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-45 dBm to -5 dBm in 0.5 dB steps.

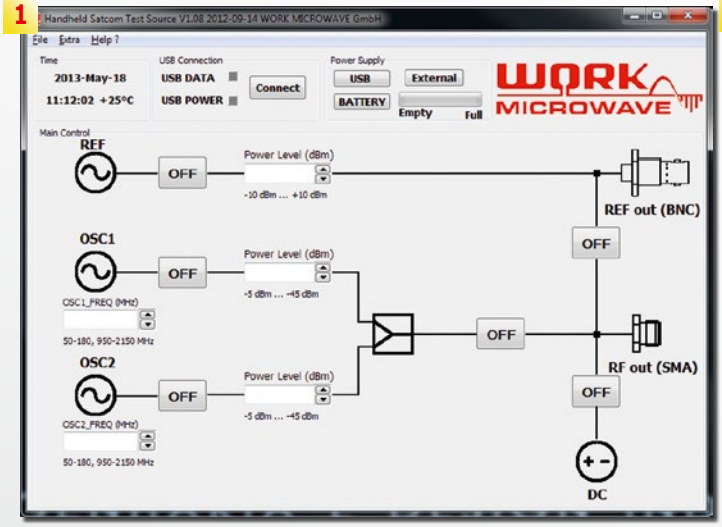
Another parameter to check with high-frequency converters is the conversion gain. Just like with the measurement of the 1 dB compression point, a signal with a known signal level is supplied to the converter. A spectrum analyzer would then be used to measure the signal level at the output.

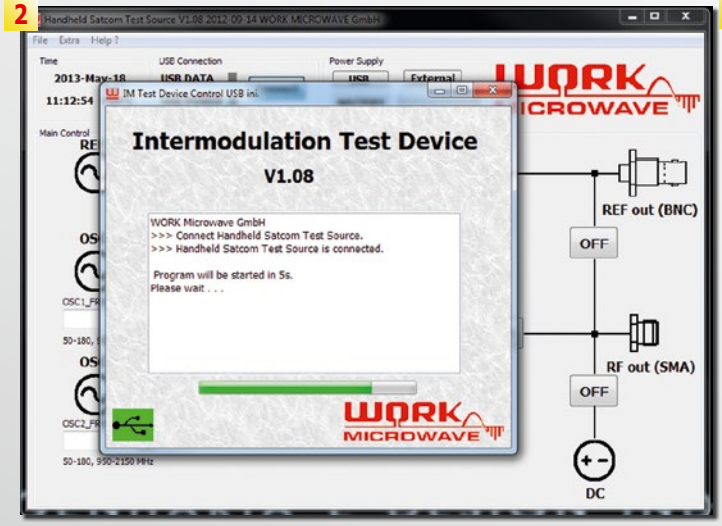
Of course, you could also supply a real signal and measure this. But due to several factors this measurement would not be as precise, that's why it's necessary to use a calibrated RF test source.

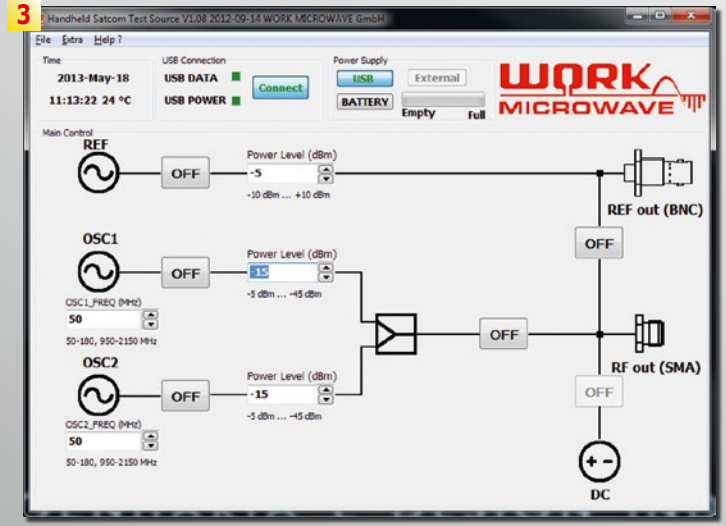
In all of these applications WORK Microwave has shown that it has developed a fully featured and well thought out instrument: two independent synthesizers can supply two signals simultaneously in order to measure intermodulation.

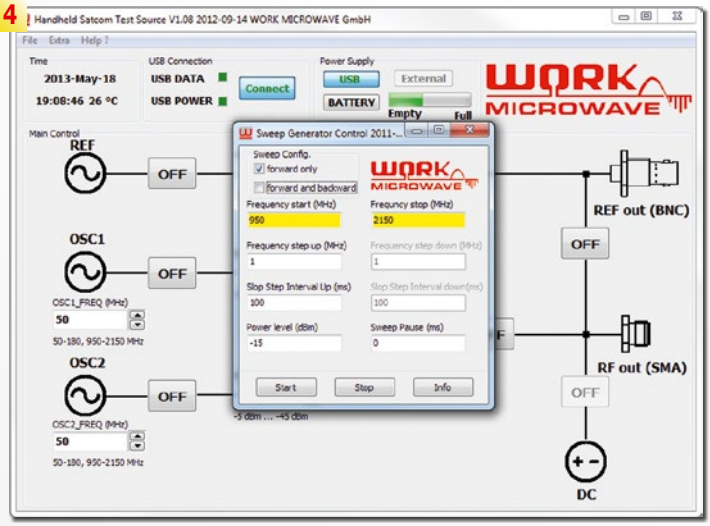
The Handheld Satcom Test Source's freely selectable output level makes it possible to measure the 1 dB compression point and also gives you the ability to measure the conversion gain.

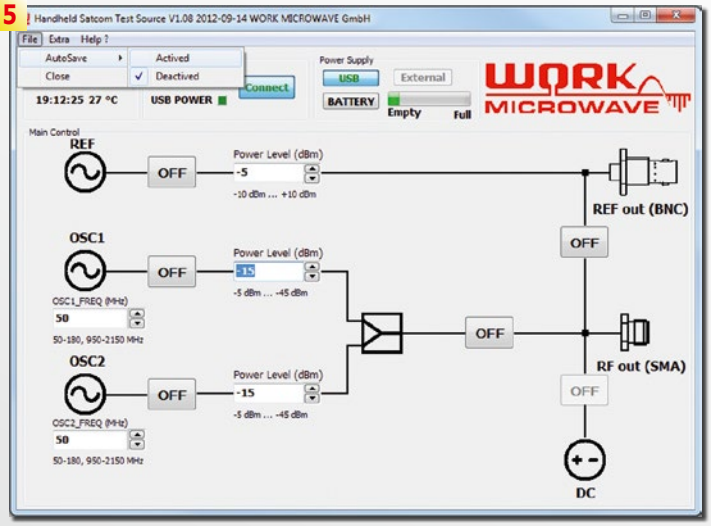
Handling the WORK Microwave Handheld Satcom Test Source is further simplified











1. The application that controls the Handheld Satcom test source is an easy to use tool which basically consists of this main window. Thumbs up for the nice graphical scheme, that perfectly explains what each parameter and button is used for.

2. First you need to connect the software with the Test Source. This takes exactly 5 seconds and both Windows XP and Windows 7 did install the instrument automatically without the need to provide any drivers.

3. Once the instrument is connected, the status in the upper part of the window is updated. In this case, the power is provided through two USB cables.

4. The sweep generator opens in a separate window and allows users to specify frequency range, the up and down increment and speed, as well as the pause between sweeps.

5. It is of course possible to use the Handheld Satcom Test Source without a connected laptop. You just need to set up the desired parameters and store them in the instrument. When you then turn it on, it will use these parameters automatically. Great if you need to measure several devices with the same input signal.

VIP Card

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- OSD显示和响应迅速
- 支持PVR刻录
- 强大的多媒体功能















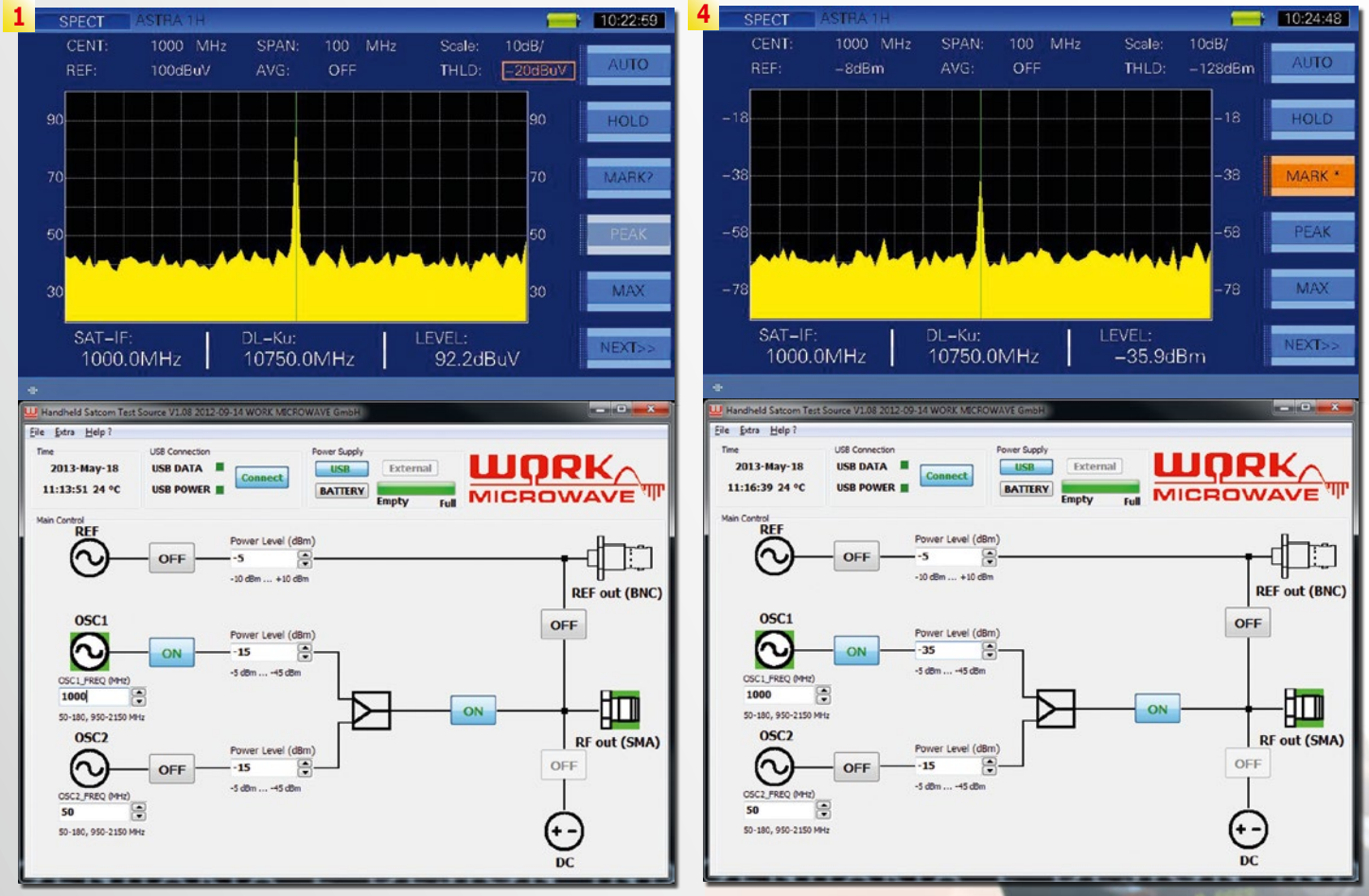
GT-278
高清晰度國標地面數字電視機頂盒

USB HDMI HDTV



http://aluosat.taobao.com/

by two additional details: a rechargeable battery lets you use the instrument for hours at a time without being connected to a power source and since the test parameters can be stored in the unit itself, no connection to a laptop is needed, for example, when the conversion gain on multiple units is measured. Another plus is the BNC jack on which a calibrated 10 MHz signal is provided so that the RF technology of different devices can be controlled.





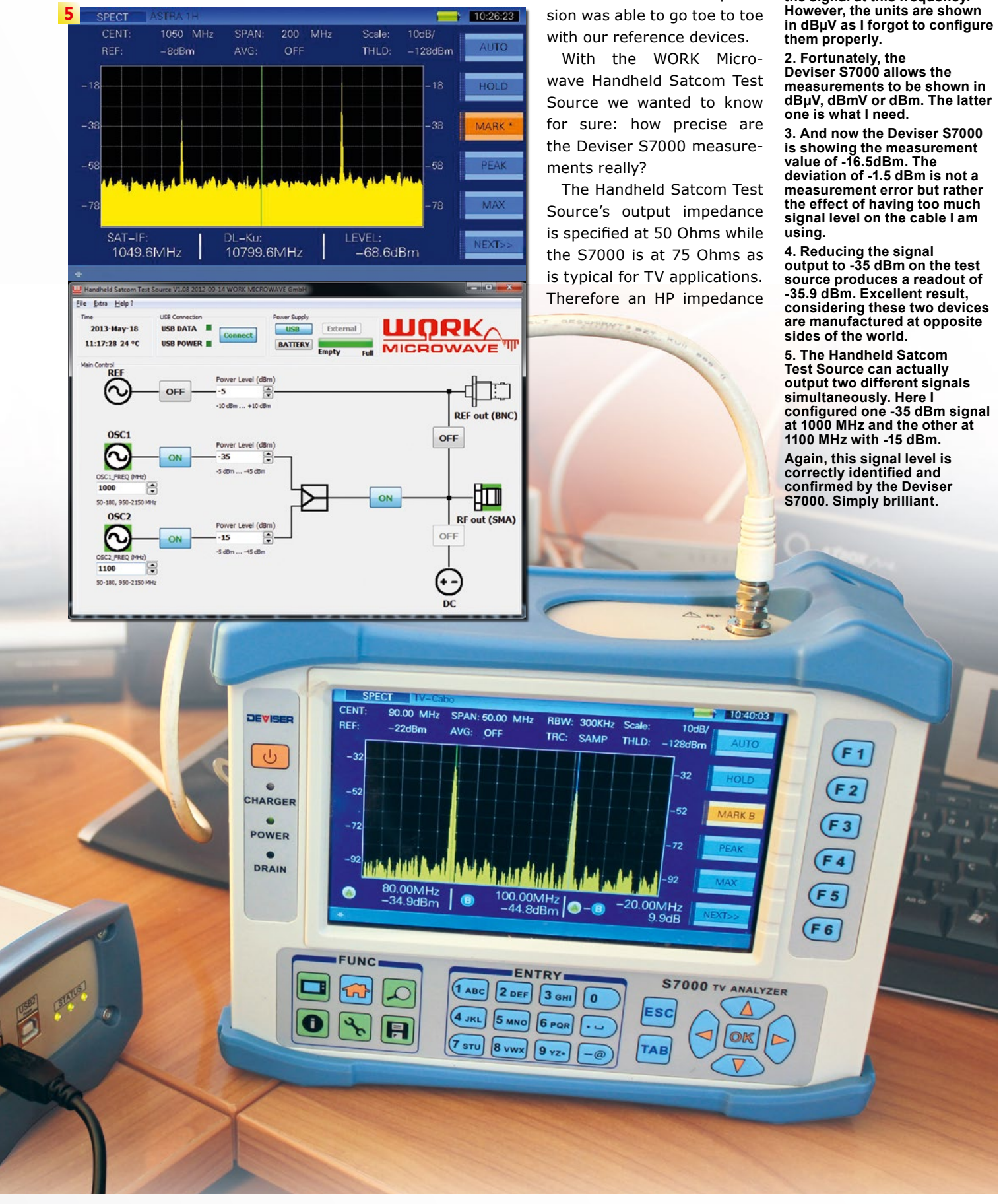
The setup to test and evaluate the WORK Microwave Handheld Satcom Test Source. Notice the 50 Ohm to 75 Ohm impedance matching adapter from HP. Tests confirmed the theory: in our case the error was insignificant, so I dispensed the use of the adapter.

Test Equipment Calibration

In the last issue of TELE-audiovision we tested the Deviser S7000 TV analyzer. We were very impressed with this analyzer; it comes with every possible feature that you could possibly want in a TV tester and analyzer. Even its measurement precision was able to go toe to toe with our reference devices.

With the WORK Microwave Handheld Satcom Test Source we wanted to know for sure: how precise are the Deviser S7000 measurements really?

The Handheld Satcom Test Source's output impedance is specified at 50 Ohms while the S7000 is at 75 Ohms as is typical for TV applications. Therefore an HP impedance



1. The Handheld Satcom Test Source is configured to generate a signal at 1000 MHz with -15 dBm and the Deviser S7000 correctly shows the signal at this frequency. However, the units are shown in dBµV as I forgot to configure them properly.

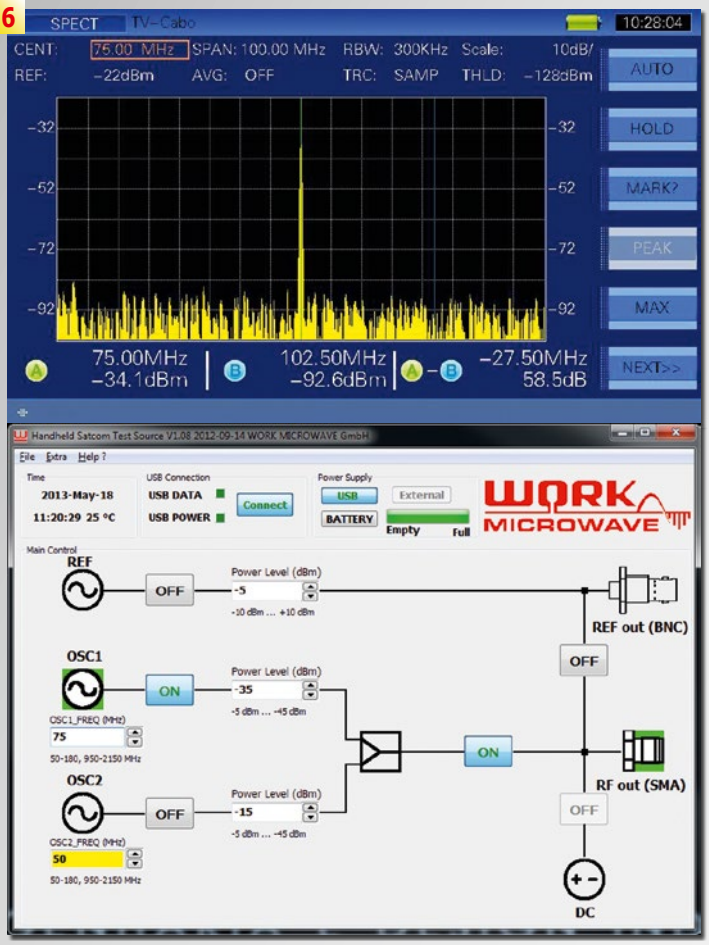
2. Fortunately, the Deviser S7000 allows the measurements to be shown in dBµV, dBmV or dBm. The latter one is what I need.

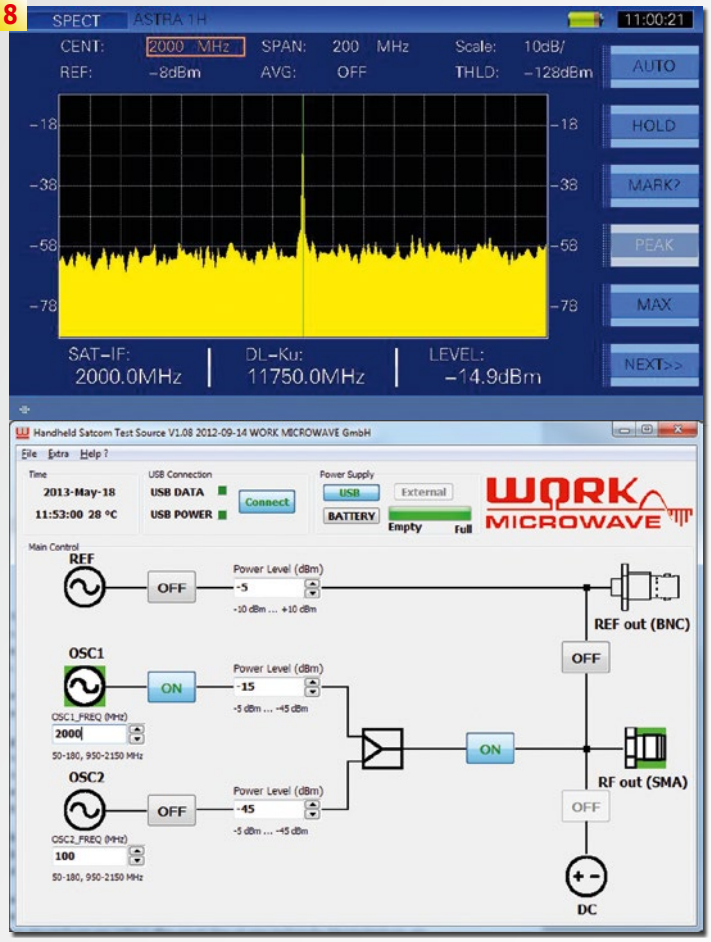
3. And now the Deviser S7000 is showing the measurement value of -16.5dBm. The deviation of -1.5 dBm is not a measurement error but rather the effect of having too much signal level on the cable I am using.

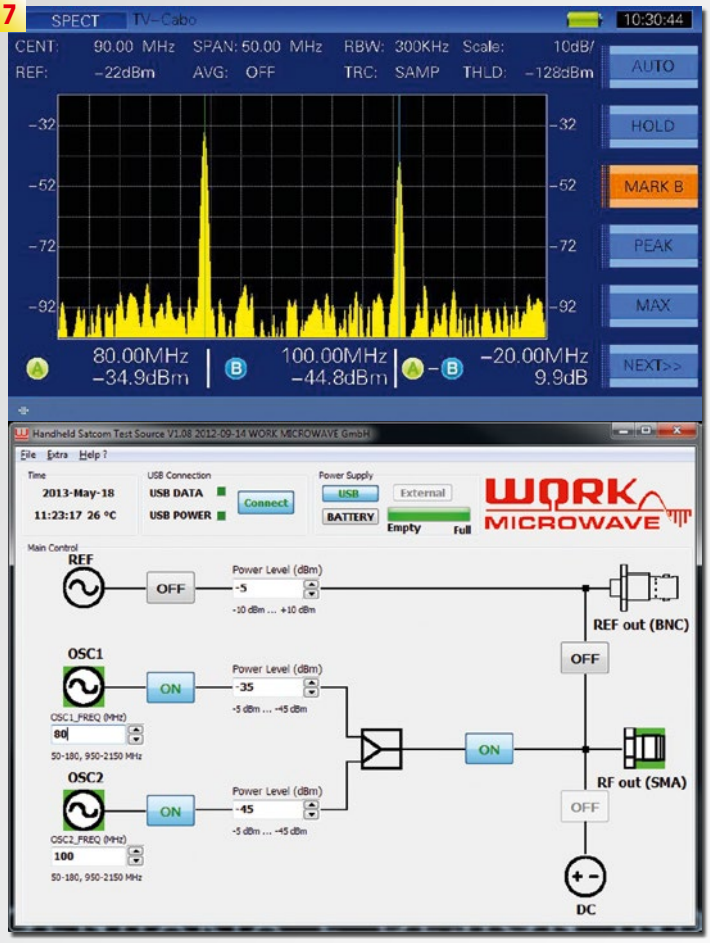
4. Reducing the signal output to -35 dBm on the test source produces a readout of -35.9 dBm. Excellent result, considering these two devices are manufactured at opposite sides of the world.

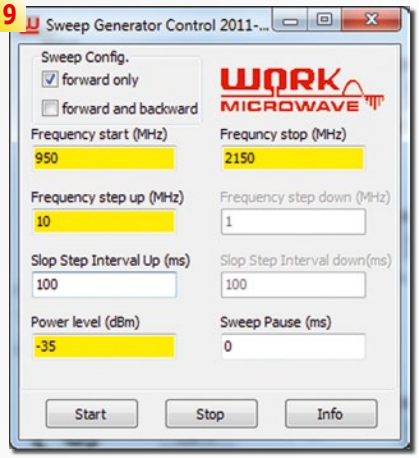
5. The Handheld Satcom Test Source can actually output two different signals simultaneously. Here I configured one -35 dBm signal at 1000 MHz and the other at 1100 MHz with -15 dBm.

Again, this signal level is correctly identified and confirmed by the Deviser S7000. Simply brilliant.









6. Now for something completely different. At 75 MHz a signal of -35 dBm is generated and measured with a deviation less than 1 dBm. Absolutely amazing.

7. Since the Deviser S7000 supports two markers in CATV mode which is used to measure the tilt between two channels, I generated one signal at 80 MHz with -35 dBm and a second signal at 100 MHz with -45 dBm. Incredibly, the deviation was -0.1 dBm and -0.2 dBm, respectively. The tilt was measured with 9.9 dB.

8. To test the end of scale I generated a signal at 2000 MHz with -15 dBm. Again the Deviser S7000 measured this signal with an amazing precision.

9. To test the sweep generator several slop step intervals had to be tested in order to allow the spectrum analyzer function to sample enough data to correctly measure the signal.

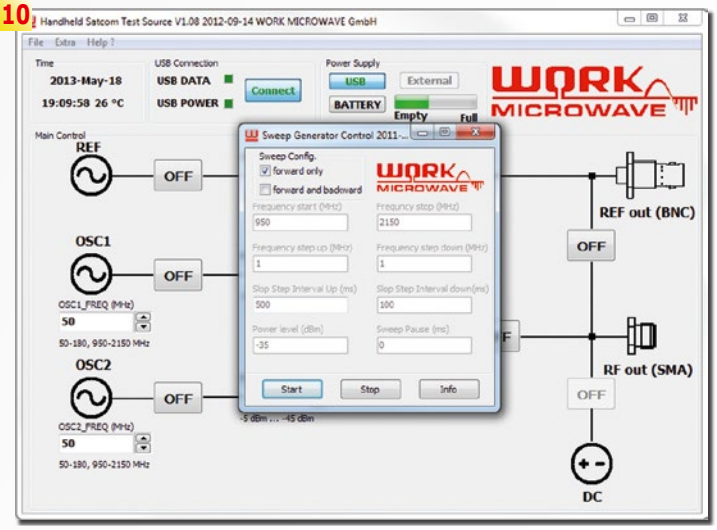
10. With a slop step interval of 500 ms the Deviser S7000 produced good results so I started the test run.

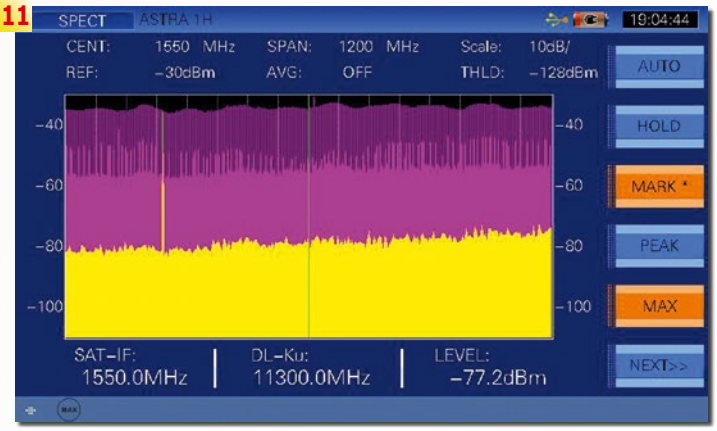
11. First I measured the whole spectrum with the MAX function active. This way we can see the whole range at the end of the test. The result is excellent with the spectrum oscillating about 3 dB around -35 dBm, which is the output level setup on the Handheld Satcom Test Source. This oscillation is an acceptable error and due to the fact that I was giving the spectrum analyzer just about the time to render the spectrum.

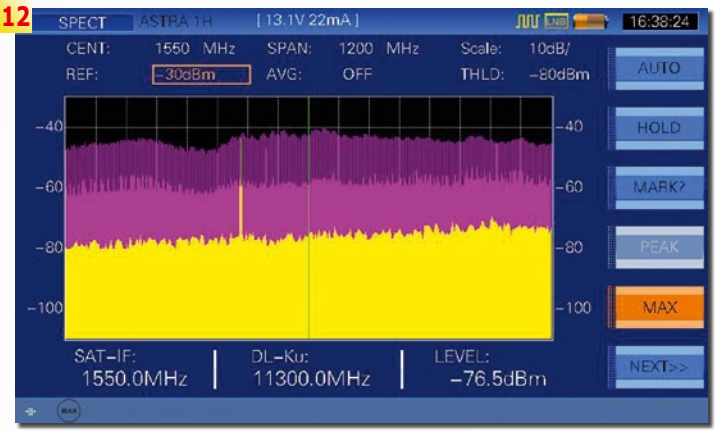
12. This picture shows the same output signal, but this time the signal had to pass a multi switch and about 20 meter of cable, an aerial socket and then another cable before reaching the spectrum analyzer. Notice that only the upper curve is of interest. The result is clear to see: there is an over attenuation of about 10 dB to 15 dB. Also, it is clear to see that the attenuation is not uniform.

converter (part number 08590-60090) designed for the 1 MHz to 1.8 GHz range was used. This converter has an attenuation of -15 dBm.

The WORK Microwave Handheld Satcom Test Source shows here that this professional signal analyzer can perform measurements with a deviation of less than 1 dB. This is extremely low

10 

11 

12 

and is the result of the application of international standards in development and production.

The pictures show the measured values in the ranges 50 to 180 MHz and 950 to 2150 MHz. These are definitely within the precision range of the device and the tolerance given in the WORK Microwave Handheld Satcom Test Source's certificate.

This shows that the Handheld Satcom Test Source can be used in another outstanding way: it can be used to precisely calibrate test equipment.

Testing a CATV Cable Run

Another application for the Handheld Satcom Test Source is the testing of a CATV network's cable installation. For this test we used our own distribution network here in the TELE-audiovision test center.

A multiswitch with 16 inputs for the satellite range (950 - 2150 MHZ) and another input for terrestrial TV (50 - 850 MHz) was used for distribution. The signal is then made available on eight outputs and distributed throughout the house to a number of antenna ports that each provide separate satellite and CATV outputs.

The next step was to measure the attenuation of the signals in the satellite range, but we also wanted to know if the multiswitch, the coax cable and the antenna jacks had more of an affect on some frequencies than on others.

Normally, you'd use a noise generator for this task but they typically don't come with the same measurement precision as does the Handheld Satcom Test Source.

If you're thinking now that it would be an enormous amount of work in that you'd have to check each frequency individually, you'd be wrong. WORK Microwave incorporated a sweep generator in the Handheld Satcom Test Source that can be set to run through a user-defined frequency range (50 to 180 MHz and 950 to 2150 MHz). The frequency steps can also be set (minimum of 0.5 MHz) as well as the desired speed (starting at 10 ms per step).

The output level can be set from -5 to -45 dBm. The sweep itself can be run bidirectionally: when the sweep reaches the upper frequency limit, it turns around





and goes back the other way whereby the frequency steps (MHz) and sweep speed (ms) can be set up separately. You can also set up a pause between the two sweeps.

The Handheld Satcom Test Source was connected to the input of the multiswitch which would then operate the switch using the frequency sweep generator. The spectrum analyzer mode was activated on the test equipment and it was used with the peak-level hold function activated in order to be able to read the results of the frequency sweeps across the entire frequency range.

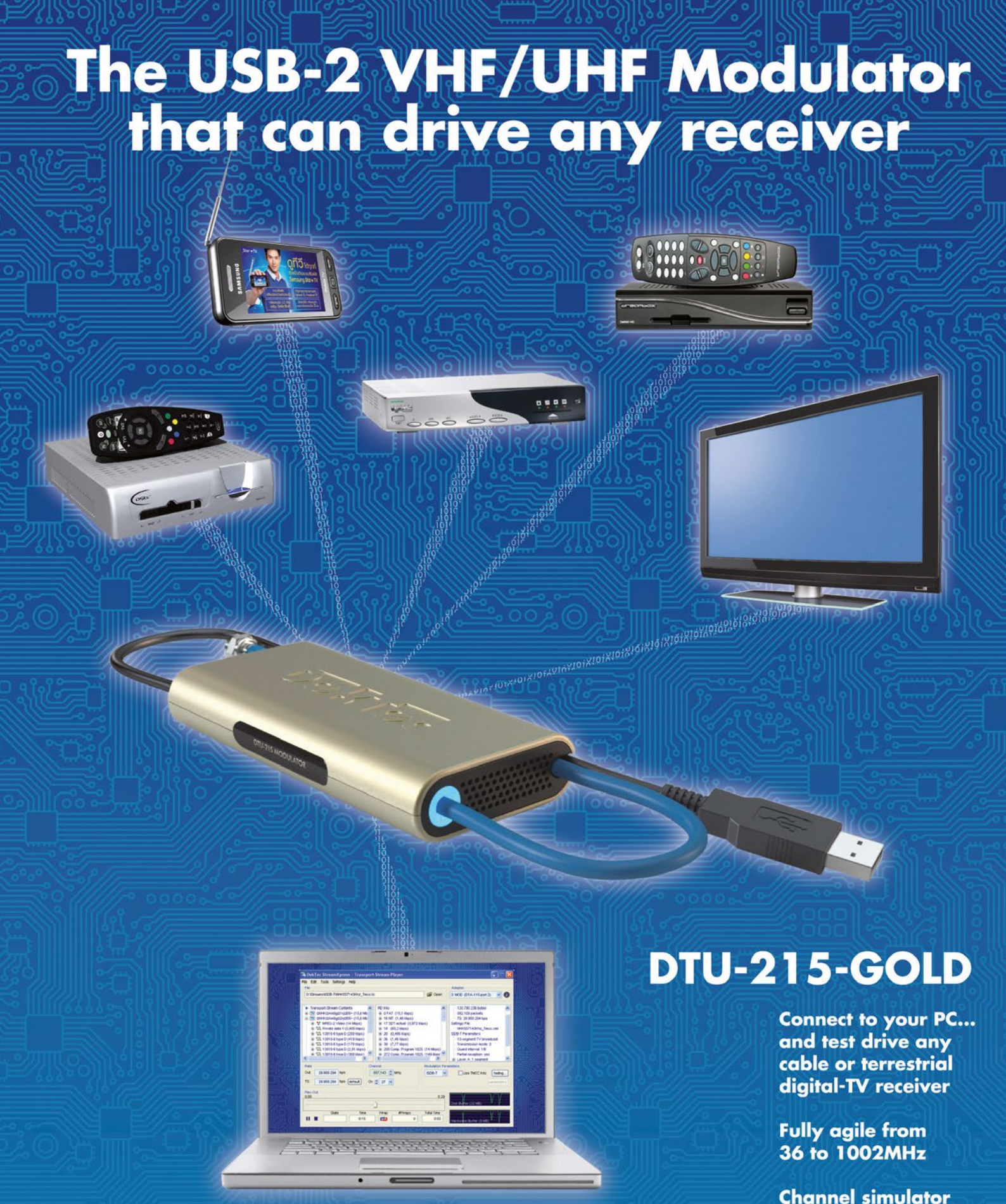
The first attempt failed because we didn't realize that the spectrum analyzer needs a certain sampling period to be able to generate a spectrum from the signal. If the signal generator sweep is too fast, it doesn't allow enough time for the analyzer to correctly measure the signal.

So we first had to directly connect the signal generator to the analyzer and try a few different scenarios to determine the correct parameters for the frequency sweep.

It quickly became clear why WORK Microwave incorporated so many parameters in the Handheld Sat-

Setup to measure the attenuation and other problems in our SAT and CATV distribution system. Luckily, the Handheld Satcom Test Source works on battery.

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



DTU-215-GOLD

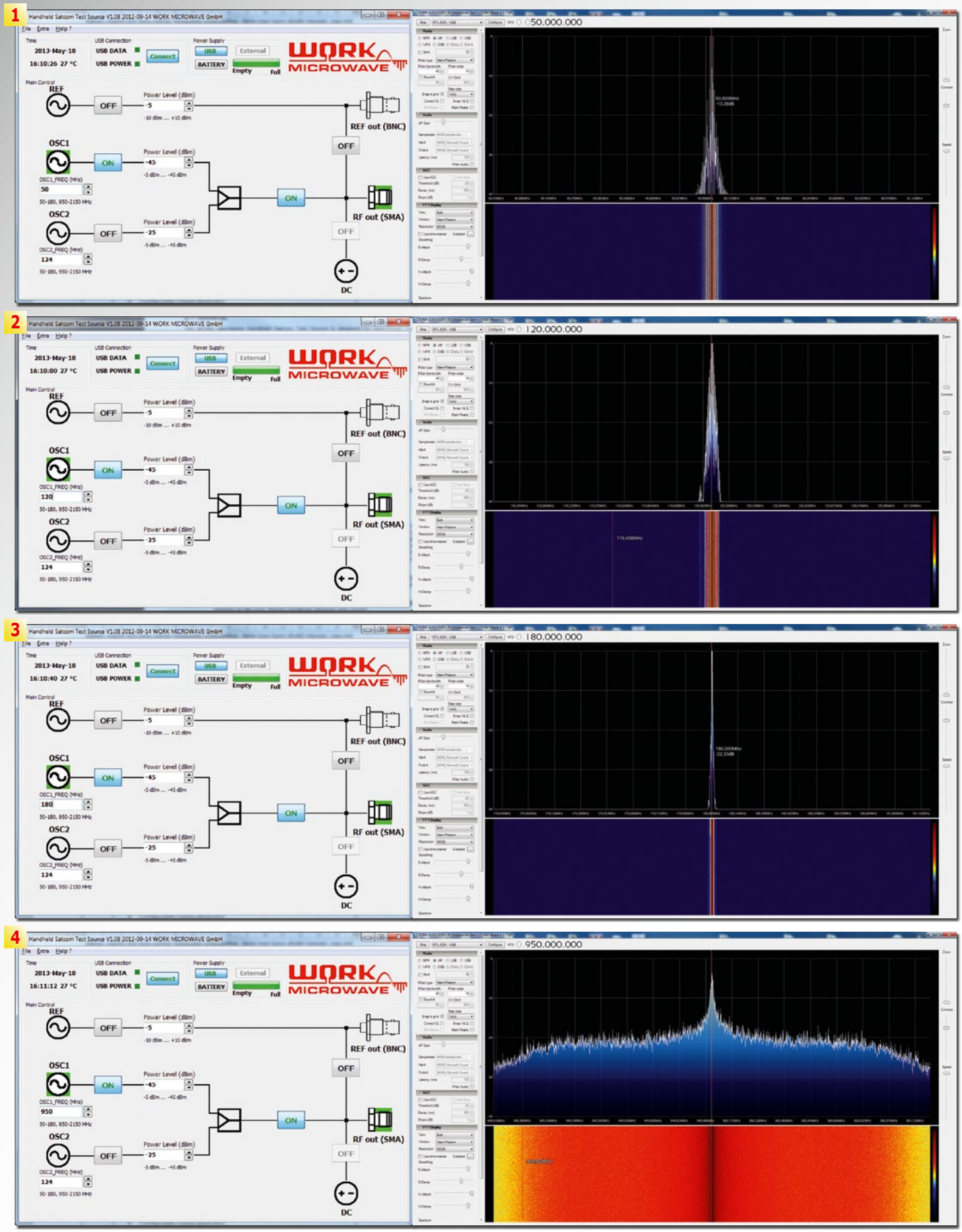
Connect to your PC... and test drive any cable or terrestrial digital-TV receiver

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

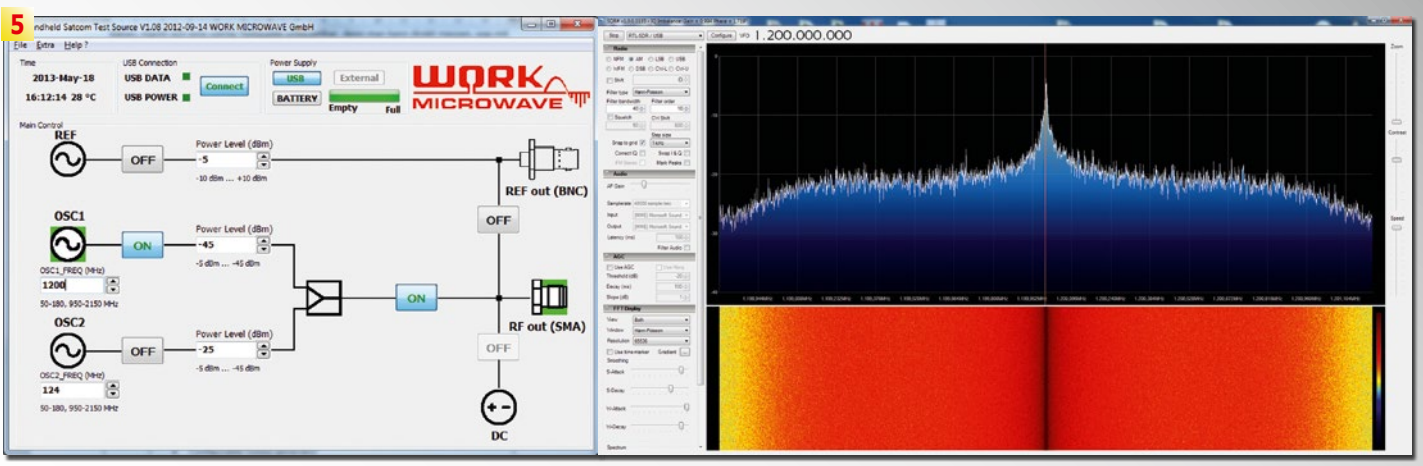


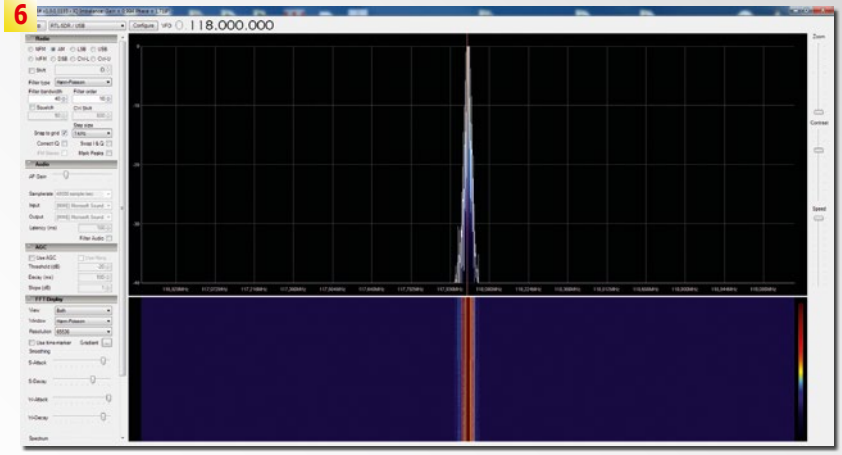
com Test Source: they really are all necessary and useful. The desired measurement was taken with the following parameters:

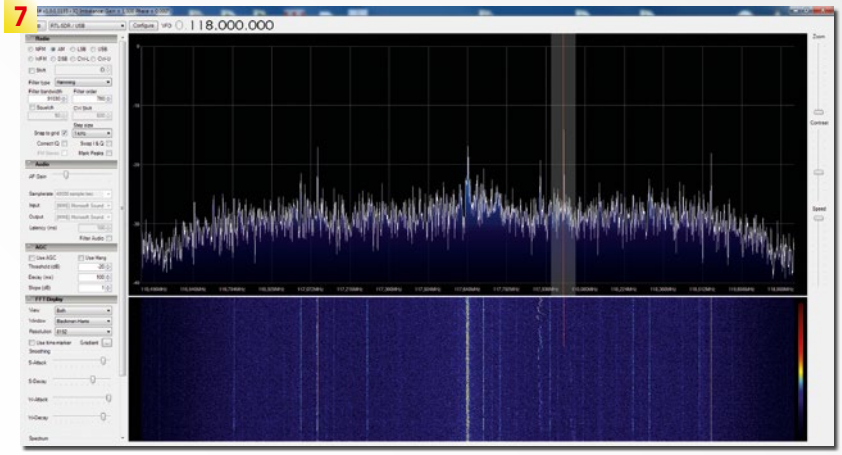
- Start frequency: 950 MHz
- End frequency: 2150MHz
- Frequency step: 1 MHz
- Time interval per step: 500 ms
- Signal level: -35 dBm

These values allowed the analysis of the entire satellite frequency range and the fluctuations in the directly connected analyzer turned out to be approximately +/- 3 dBm.

Since the WORK Microwave Handheld Satcom Test







1. Testing the DVB-T USB dongle with SDR# at 50 MHz. The signal is clean and correctly tuned on the supposed frequency.

2. Same test, but now on 120 MHz. This frequency band is used for air control communications and it is good to see that the DVB-T USB dongle behaves very well here.

3. At 180 MHz the reception is acceptable, albeit the gain is lower. The indicated dB value is just a reference as the RTL2832U chip and the FC0012 tuner have automatic gain control activated.

4. Unfortunately my DVB-T USB dongle has the FC0012 tuner instead of the much better E4000 one. The result is a total deafness at 950 MHz.

5. As expected, no signal at 1200 MHz, either.

6. At 118 MHz frequent radio communications between pilot and tower can be heard as the test centre is located near the local airport. Using the Handheld Satcom Test Source I can be sure that my DVB-T USB dongle is capable of tuning and demodulating this frequency.

7. I did not have to wait long to get to hear a pilot reporting to the tower. Notice the small red line at 118.000 MHz in the waterfall graph. It suddenly appears with the communication and lasts only a few seconds. This kind of air traffic communication is naturally modulated in AM and it is incredible that a DVB-T USB receiver for less than 20 Euro can actually be used as a SDR radio scanner to receive such communications.

Source is a portable unit with built-in rechargeable batteries, it was easy to transport it to the switch box and then put it to work. It was simply connected to a Netbook and operated without a power connection.

The built-in rechargeable batteries in the signal generator let you operate with a laptop for longer periods of time without a power connection since the signal generator won't suck the laptop battery dry if you don't use both of the USB connections on the Handheld Satcom Test Source (the second USB connection serves exclusively to recharge the battery).

The measurement of the complete spectrum with these parameters needed about five minutes. During this time you could confidently focus your attention on something else because if the test is longer, the measurements would simply be repeated continuously.

The results of these measurements show that there's a signal attenuation of 10 dB to 15 dB through the signal distribution system. These are overall good values considering that there's over 20 meters of cable, a multiswitch, an antenna jack and some more cable between the Handheld Satcom Test Source and the Deviser S7000.

But this measurement does point out a rather annoying aspect of this setup: the signal attenuation is not constant across the entire frequency range, but rather, some frequency segments are more strongly attenuated than others.

There's no question: the WORK Microwave Handheld Satcom Test Source makes it possible for an installer to check out an installation before the actual signals are sent through it while at the same time the quality of the system can be confidently verified using a certified reference signal.

The emphasis here is on "certified" and "reference": with the Handheld Satcom Test Source there are no longer any discussions about error tolerances.

Testing an SDR Receiver

We even stumbled across an unusual application for the Handheld Satcom Test Source: the DVB-T COFDM demodulator built in to many USB DVB-T receivers, the Realtek RTL2832U, can also be used for radio reception because this chip makes available the raw I/Q samples.

The thought here was to be able to demodulate DAB,



DAB+ and FM yet with the matching drivers you can also use USB DVB-T receivers with Software Defined Radio (SDR); using special SDR software like SDR# you get a real scanner radio with which for example you could tune into air traffic control.

The problem though is the built-in tuner in the USB DVB-T receiver. Different chips are used here, for example, the FC0012 and FC0013 models. One of the USB receivers in our test center has the FC0012 tuner.

Unfortunately, these tuners are limited to the 50 to 950 MHz frequency range but it's the 117 to 137 MHz aircraft band that's especially interesting. Our test center was thus outfitted with a proper antenna and using an Icom R3 we could listen in to the aircraft band.

Since there aren't continuous transmissions on these frequencies and since I wanted to more closely analyze the sensitivity and reception capabilities of the USB receiver, it was once again time to put the Handheld Satcom Test Source to work.

The test setup was extremely simple: the USB DVB-T receiver was connected to a PC and installed with the special SDR drivers that can be found in the Internet under the name "Zadig".

This freely available SDR# software was automatically recognized by the USB receiver with its RT-L2832U chips and just like that the signal can be displayed on the PC as a spectrum. Demodulation takes place in the modulations typical for a scanner radio: AM, FM, CW etc., whereby the bandwidth can be individually set.

On the Handheld Satcom Test Source a variety of frequencies were tried between 50 and 180 MHz with emphasis on frequencies from 117 to 137 MHz.

The results can be seen in the pictures and vary from spectacular to disappointing. The resolution of the signal displayed by the Handheld Satcom Test Source was excellent. In the aircraft frequency band it appeared that the USB DVB-T receiver would be able to provide a usable signal so the next step was to connect it to the outdoor antenna. Sure enough, after only a few minutes an aircraft could be heard making an approach to an airport.

The disappointment came about because the USB DVB-T receiver in no way could receive this popular frequency band correctly. The signal from the Handheld



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http://www.cosmosat-digital.com.ar



Satcom Test Source was also received on the wrong frequencies; this clearly shows a problem with the DVB-T tuner. Above 950 MHz that FC0012 tuner was sure enough not able to receive any kind of usable signal even though these frequencies could easily be entered.

Conclusion

Even though the manufacturer only suggests using the test source to test high-frequency converters, it can also be used in many other applications. When you're dealing with test equipment calibration, problems due to interference signals or locating the source of unwanted signal attenuation, such a test signal source would be worth every penny. You can directly measure what's going on with a known signal.

We were very impressed by the unbelievable precision of the Handheld Satcom Test Source. Together with its certificate, it would be the perfect tool for smaller operations to verify the precision of their test equipment, calibrate them and create certified protocols that would withstand any kind of scrutiny.

WORK Microwave, with their Handheld Satcom Test Source, has developed an unusual instrument designed specifically for use by technicians. Instead of a large and heavy instrument chained to an electric power cord, you have a compact, portable unit that you can hold in your hands and that runs on rechargeable batteries. It's a device that will quickly become part of many different operations.

EXPERT OPINION



+

- **Compact and portable test source**
- **Two synthesizers for simultaneous generation of two signals**
- **Configurable sweep generator**
- **Extremely high accuracy**
- **Provided with compliance certificate, containing detailed information about the instruments precision**
- **Easy to use software, no installation required**
- **No driver installation required, device recognized by Windows as Human Input Device**
- **Internal battery**

–

- **Parameters have to be confirmed with ENTER key**
- **Sweep Modus does not show current Frequency**

TECHNICAL DATA

Manufacturer	WORK Microwave, Germany
Tel.	+ 49-8024-6408-27
Internet	www.work-microwave.de
Model	RF Signal Generator
Frequency range	50 MHz to 180 MHz and 950 MHz to 2150 MHz
Frequency resolution	0.5 MHz
Output level	-45 dBm to -5 dBm
Output level resolution	0.5 dB
Level tolerance	± 1 dB
Output impedance	50 Ohm
Output mute	< -60 dBc
Reference Output	10 MHz, -10 dBm to +10 dBm, 0.5 dB steps
Temperature range	0°C to +50°C
Interface	USB 2.0
Power supply	ext. 24 V DC, USB, internal Battery
Power consumption	max. 12 W
Connectors	RF out: 50 Ohm SMA female REF out: 50 Ohm BNC-female USB 2.0: USB Standard type B
Weight	1.5 kg
Dimensions (L x W x H)	250 x 125 x 74 mm



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AWARD WINNING 21 DIGITAL RECEIVERS OF 21ST CENTURY

这些是获得最高奖的产品



Manufacturer	AB IPBox
Website	www.abipbox.com
Function	HDTV PVR Satellite Receiver with Internet Media Center
DVB S2/LAN	— / •
PVR	•
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
S-Video/HDMI	— / •
Scart/Digital Audio	— / •

INNOVATION TELE audiovision AWARD 11-12/2013

AB IPBox Prismcube Ruby
Perfectly equipped receiver for multi satellite reception plus for all the worldwide Internet TV

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/13/11/abipbox

Read TELE-audiovision Test Report





eco friendly 0.60 power factor
Energy Efficiency Rating
tested by TELE-audiovision

AB IPBOX

Manufacturer	Amiko
Website	www.amikostb.com
Function	Miniature DVB S / DVB S2 PVR Receiver with external IR remote control
DVB S2/LAN	• / •
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
S-Video/HDMI	— / •
Scart/Digital Audio	— / •

TELE audiovision AWARD 11-12/2013

AMIKO MINI HD
Perfect successful receiver in small format

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/13/11/amiko

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

AMIKO



Manufacturer	Icecrypt
Website	www.icecrypt.com
Function	2 x DVB S2 & DVB T / DVB C PVR HDTV Receiver
DVB S2/LAN	• / •
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	• / •

TELE audiovision AWARD 11-12/2013

Icecrypt S3700CHD
Excellent hardware in tandem with sophisticated but easy-to-use software.

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/13/11/icecrypt

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Manufacturer	Gotech
Website	www.gotechcn.com
Function	DVB S2 & ISDB-Te Combo Receiver
DVB S2/LAN	• / •
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	• / •

TELE audiovision AWARD 09-10/2013

MKTech IS1-19HD
Well equipped for Satellite and local TV in South America

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Expert Opinion

www.TELE-audiovision.com/13/09/mktech

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Manufacturer	TBS Tenow
Website	www.tbsdtv.com
Function	DVB S2 compatible Twin Tuner Streamingbox
DiSEqC	1.0 / 1.1
DVB S2/LAN	• / •
PVR	•
S-Video/HDMI	— / —
Scart/Digital Audio	— / —

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Expert Opinion

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INNOVATION TELE audiovision AWARD 07-08/2013

TBS Streaming Box MOI

Program offers streaming and isolation of hardware and software, a double innovative concept for the future of TV



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

TENOW

Manufacturer	Gotech
Website	www.gotechcn.com
Function	DVB S2 Satellite 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/13/07/mktech

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TELE audiovision AWARD 07-08/2013

MKTechHD

Fully featured Mini Scart Receiver with HDTV via HDMI



Energy Efficiency Rating eco friendly 0.61 Power factor tested by TELE-audiovision



MKTECH



Manufacturer	Fortis
Website	www.tiviar.com
Function	DVB S2 / DVB T2 / DVB C Triple PVR Receiver
DVB S2/LAN	• / •
Channel Memory	10000
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
S-Video/HDMI	— / •
Scart/Digital Audio	• / •

TELE audiovision AWARD 07-08/2013
Tiviar Alpha Plus
Best dissolved integration for reception of all digital TV signals

TELE-audiovision International Magazine
Expert Opinion
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Read TELE-audiovision Test Report



Manufacturer	Changhong
Website	www.changhong.com
Function	DVB C Receiver, Mediaplayer, Android Apps
DVB S2/LAN	— / •
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	— / •

TELE audiovision AWARD 05-06/2013
Changhong Smartcenter
Very successful hybrid receiver for digital TV

TELE-audiovision International Magazine
Expert Opinion
www.TELE-audiovision.com/13/05/changhong
Read TELE-audiovision Test Report

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

TELE audiovision AWARD 03-04/2013

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report





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

TELE audiovision AWARD 03-04/2013

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

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Expert Opinion

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

Read TELE-audiovision Test Report



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

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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	— / •

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Expert Opinion

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

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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
Expert Opinion
www.TELE-audiovision.com/12/11/panodic
Read TELE-audiovision Test Report
HDS275
PCMCIA CARD
eco friendly 0.58 power factor
Energy Efficiency Rating
tested by TELE-audiovision
PANODIC


Manufacturer | AZBox
Website | www.azbox.com
Function | HDTV DVB S/DVB S2 Miniature HDTV Linux Receiver with Multimedia Features
DVB S2/LAN | • / •
Channel Memory | unlimited
DiSEqC | 1.0 / 1.1 / 1.2 / 1.3 / USALS
S-Video/HDMI | — / •
Scart/Digital Audio | — / •
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
AZBOX mini me
eco friendly 0.57 power factor
Energy Efficiency Rating
tested by TELE-audiovision
AZBOX

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	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 AWARD 04-05/2012
Panodic M3601E DVB-T
Extremely small receiver with high-sensitivity HDTV tuner

TELE-audiovision International Magazine
Expert Opinion
www.TELE-audiovision.com/12/05/panodic
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CHINA





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www.TELE-audiovision.com/13/09/horizon

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Manufacturer	Horizon Global Electronics
Website	www.horizonhge.com
Function	Digital Meter DVB-C Signals
Frequency Range	51 ~ 858 MHz
Video Output	—
Built-in Monitor	LCD display



TELE audiovision AWARD 09-10/2013

HORIZON HD-CM+ for DVB-C
Extremely easy to operate,
for professional installers

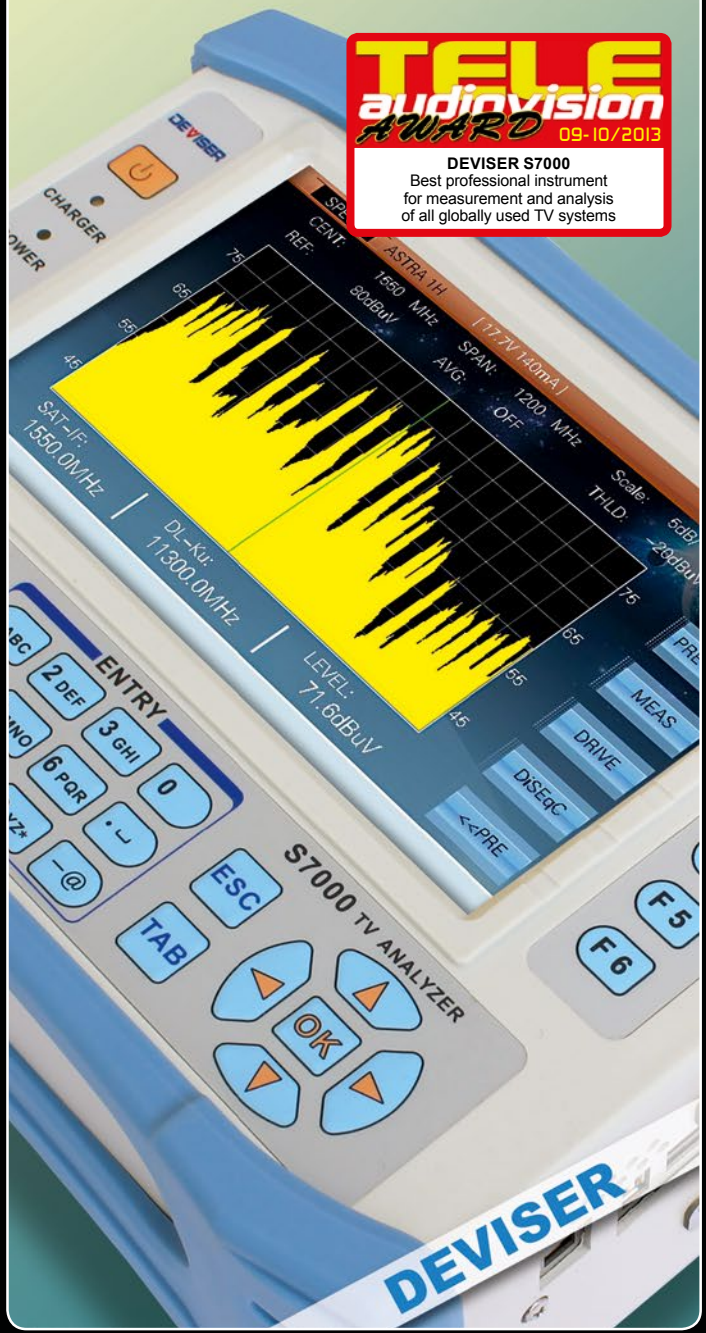
TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/13/09/deviser

Read TELE-audiovision Test Report

Manufacturer	Tianjin Deviser Electronics Instrument
Website	www.devisertek.com
Function	Professional TV Signal Anaylzer
Frequency Range	5 - 1050 MHz (TV); 950-2150 MHz (Satellite)
Video Output	HDMI
Built-in Monitor	7" TFT LCD, 800×480 pixels



TELE audiovision AWARD 09-10/2013

DEVISER S7000
Best professional instrument
for measurement and analysis
of all globally used TV systems

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/13/05/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 05-06/2013

DEVISER S30
Highly accurate handheld meter optimized for the satellite dish installer



TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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



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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



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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 International Magazine

Expert Opinion

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Read TELE-audiovision Test Report

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



TELE audiovision AWARD 11-12/2012

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

DEVISER

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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



TELE audiovision AWARD 09-10/2012

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

DEVISER

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 04-05/2012

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



TELE-audiovision International Magazine

Expert Opinion

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

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Magazine started in 1981 and is by now the world's largest in digital tv trade

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The only way to survive in the oversupply world that exists today is to offer more to your customers than what other manufacturers offer. And this philosophy should not be limited to just the products that you produce, but in everything else that is involved in the making of those products. And the end result? The customers will recognize the long-term advantage of ONLY purchasing YOUR products. They will know that your company will still exist next week, next month, next year. These days products require frequent updates. In the continuously developing digital world, firmware and software need to be regularly upgraded to add new features and to improve on existing features.

在这个供过于求的世界上，供应商唯一的生存之道就是提供其他竞争对手所没有东西。这不仅是产品本身，还有一个简单产品背后实力的展现。这意味着您的客户将知道：在这个瞬息万变的电子世界里，他的供应商将日复一日，年复一年的为他提供专业的人性化服务；精准的硬软件调试；实时的新功能升级。

You can ensure your continued success is by continuously impressing upon existing and potential customers your never-ending dedication to your products.

要保证持续竞争力不仅要关注产品本身，最好的广告是让您的现有客户和潜在客户都看到 您为做好您的产品付出了什么。

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AWARD WINNING 21 IPTV/WebTV RECEIVERS OF 21ST CENTURY

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Manufacturer	AB IPBox
Website	www.abipbox.com
Function	HDTV PVR Satellite Receiver with Internet Media Center
DVB S2/LAN	— / •
PVR	•
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
S-Video/HDMI	— / •
Scart/Digital Audio	— / •



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Expert Opinion

www.TELE-audiovision.com/13/11/abipbox

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AB IPBOX

Manufacturer	TBS Tenow
Website	www.tbsdtv.com
Function	DVB S2 compatible Twin Tuner Streamingbox
DiSEqC	1.0 / 1.1
DVB S2/LAN	• / •
PVR	•
S-Video/HDMI	— / —
Scart/Digital Audio	— / —



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Business Voucher

www.TELE-audiovision.com/13/07/tenow

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TENOW

Manufacturer	D-Link
Website	www.dlink.com
Function	Internet Streaming Box
WIFI/LAN	• / •
Internal Storage	no
HDTV	yes (up to 1080p)
CVBS/HDMI	— / •
USB/SD Card	• / •

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Expert Opinion

www.TELE-audiovision.com/13/07/boxee

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

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Expert Opinion

www.TELE-audiovision.com/13/05/netgear

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

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Expert Opinion

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

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

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Expert Opinion

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

Read TELE-audiovision Test Report

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

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Expert Opinion

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

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TELE audiovision AWARD 09-10/2012

AZBox mini ME

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



Manufacturer	Logitech
Website	www.logitech.com
Function	IPTV Receiver

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Expert Opinion

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

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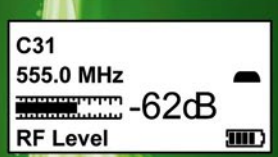


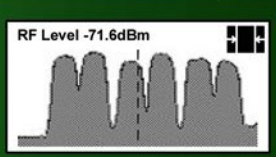
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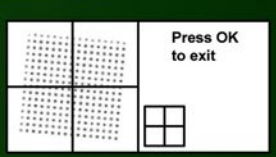
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Introducing the HD-CM+









The new Horizon HD-CM+ meter is the ideal cost effective cable installation and cable diagnostic tool for today's demanding cable television installation environments.

The HD-CM+ offers many features like fast channel scan, leakage and ingress detection, spectrum display, data logging, slope test, constellation display and expanded constellation. These features are typically found on much more expansive analysers.

Fast and accurate, with a long battery life, the HD-CM+ has been designed with the installer in mind, providing maximum flexibility and ease of use. The HD-CM+ is your complete solution for downstream analysis.

The HD-CM+ comes with everything you need to get started. A carry case (with tool pocket), USB cable for channel plan downloads, AC cord for mains charging (internal charger), DC cord for in vehicle charging, protective splash cover and field replaceable F connector input.

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21 THE BEST HEADEND EQUIPMENT OF ST CENTURY

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Manufacturer	WORK Microwave
Website	www.work-microwave.de
Model	RF Signal Generator
Function	Test Signal Generator
Frequency range	50 MHz to 180 MHz and 950 MHz to 2150 MHz
Frequency resolution	0.5 MHz
Output level	-45 dBm to -5 dBm
Output level resolution	0.5 dB
Output impedance	50 Ohm
Output mute	< -60 dBc
Reference Output	10 MHz, -10 dBm to +10 dBm, 0.5 dB steps

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Expert Opinion

www.TELE-audiovision.com/13/11/work-microwave

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WORK Microwave
Handheld Satcom Test Source
Allows for precise and certified high-frequency measurements

WORK MICROWAVE



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Expert Opinion

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

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Manufacturer	Antiference
Website	www.antiference.co.uk
Model	KLA-110 Launch Amplifier & KCC-110 Channel Convertor/Processor
Function	Filtering, amplifying and converting DTT channels to new frequencies
Input / Output frequency range	44 – 862 MHz / 44 – 862 MHz
Input level range	65 – 95 dBµV
Output level adjustment (KCC-110)	60 – 80 dBµV
Gain adjustment (KLA-110)	14 – 45 dB

TELE audiovision AWARD 03-04/2013

KLA-110 Launch Amplifier & KCC-110 Channel Convertor/Processor
Professional handling of DTT signals

KINGRAY

Manufacturer	Dexin Digital Technology
Website	www.dsdvb.com/english
Model	NDS3975 DVB-S2 HD IRD
Function	Professional Integrated Receiver Decorder
Tuner Input	QPSK,QPSK DVB-S2 (DVB-T/DVB-C/ISDB-T optional)
ASI Input	Maximum transmitting rate 90Mbps
ASI Input	Maximum transmitting rate 90Mbps
DVB-S2/LAN	• / •
SDI/YPbPr/CVBS/HDMI	• / • / • / •
Scart/Digital Audio	— / •

TELE-audiovision International Magazine

Expert Opinion

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

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TELE audiovision AWARD 01-02/2013

Dexing NDS3975
Most powerful and versatile IRD ever - its built-in monitor is a unique plus.

Energy Efficiency Rating eco friendly 0.61 power factor tested by TELE-audiovision



Manufacturer	Sat & Sound
Website	www.satson.eu
Model	HD-MOD-001T
Function	HDTV-compatible DVB-T Modulator
Output Frequency	50 - 860 MHz
Video Input Format	Component Video, YPbPr RCA, HDMI
Video Encoding Format	MPEG-2 Video (ISO/IEC 13818-2)
HDMI/LAN	• / •
Modulator Standard	DVB-T (ETSI EN 300 744)
Bandwidth	6, 7, 8 MHz
Constellation	QPSK, QAM16, QAM64

TELE-audiovision International Magazine

Expert Opinion

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

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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

Energy Efficiency Rating eco friendly 0.84 power factor tested by TELE-audiovision





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Expert Opinion

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

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Manufacturer	DekTec
Website	www.dektec.com
Model	DTE-3137
Function	Networked DVB S/DVB S2 Receiver
Frequency range	950 - 2150 MHz)
Transmission Standards	DVB, DVB-RSC, ATSC
Modulations	QPSK, 8-PSK, 16-APSK and 32-APSK
DVB S2/LAN	• / •

TELE audiovision AWARD 11-12/2012

DekTec DTE-3137
Perfectly equipped professional satellite receiver for use in networks and for processing in cable networks.

DEKTEC



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Expert Opinion

www.TELE-audiovision.com/12/09/spaun-vam

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Manufacturer	Spaun
Website	www.spaun.com
Model	VAM 420 NG PAL
Function	VSB Twin Modulator
Frequency range	110 … 862 MHz
TV standard	B/G/D/K/I/L
Output level max	90 dBµV
Output level adjustment	0...-10 dB
Spurious level	<-60 dB
C/N ratio	≥ 50 dB
Input level	1 ± 0.1 V p-p

TELE audiovision AWARD 09-10/2012

SPAUN VAM 420 NG PAL
Easy way to create analogue tv channels

SPAUN

Manufacturer	Global Invacom
Website	www.gloablinvacom.com
Model	FibreIRS DTT Processor
Function	Filtering and amplifying DVB-T signal
Frequency range	470-862 MHz
Number of channels	6 (expandable to 9)
Broadcast standard	DVB-T 8 MHz
Gain	20 dB
Channel flatness	< 2.5 dB
DAB Frequency range	217-230 MHz
Insertion loss	< 2 dB

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TELE audiovision AWARD 06-07-08/2012

FibreIRS DTT Processor
Delivery perfectly clean DTT signals for any distribution system

GLOBAL INVACOM

TELE audiovision AWARD 06-07-08/2012

SPAUN BluBox 16
Great leap forward in headend technology



TELE-audiovision International Magazine

Expert Opinion

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

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Manufacturer	Spaun
Website	www.spaun.com
Model	BluBox 16
Function	DVB-S/DVB-S2 to DVB-C Head End
DVB-S2/LAN	• / •
Number of inputs	4 (cascadable)
Input frequency range	950 ... 2150 MHz
Allowable input signal power	64 ... 94 dBµV
Number of outputs	2 (cascadable)
Output frequency range	47 ... 862 MHz
QAM standard	DVB-C / ITU-T J.83 Annex A (fixed)

SPAUN



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Expert Opinion

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

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Manufacturer	NetUP
Website	www.netup.tv
Model	Dual DVB-T/C-CI
Function	DVB-C and DVB-T PCI-e adapter for professional applications under Linux

TELE audiovision AWARD 12-01/2012

DVB-T/C-CI
Impressive professional card for IPTV servers and multimedia centers that is loaded with the latest technologies for long-term use

NETUP

Manufacturer	NetUP
Website	www.netup.tv
Model	IPTV Combine 4x
Function	IPTV Gateway for DVB Signals, Middleware,Billing, VoD, nVoD, DHCP-, Time- & DNS-Server
Tuners	4
Max. simultaneous Transponders	4
Max. bandwidth	240 MB/s
DISEqC	1.0
Ethernet ports	6 x Gigabit Ethernet 10/100/1000 MB/s
CI Slots	4

TELE-audiovision International Magazine

Expert Opinion

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

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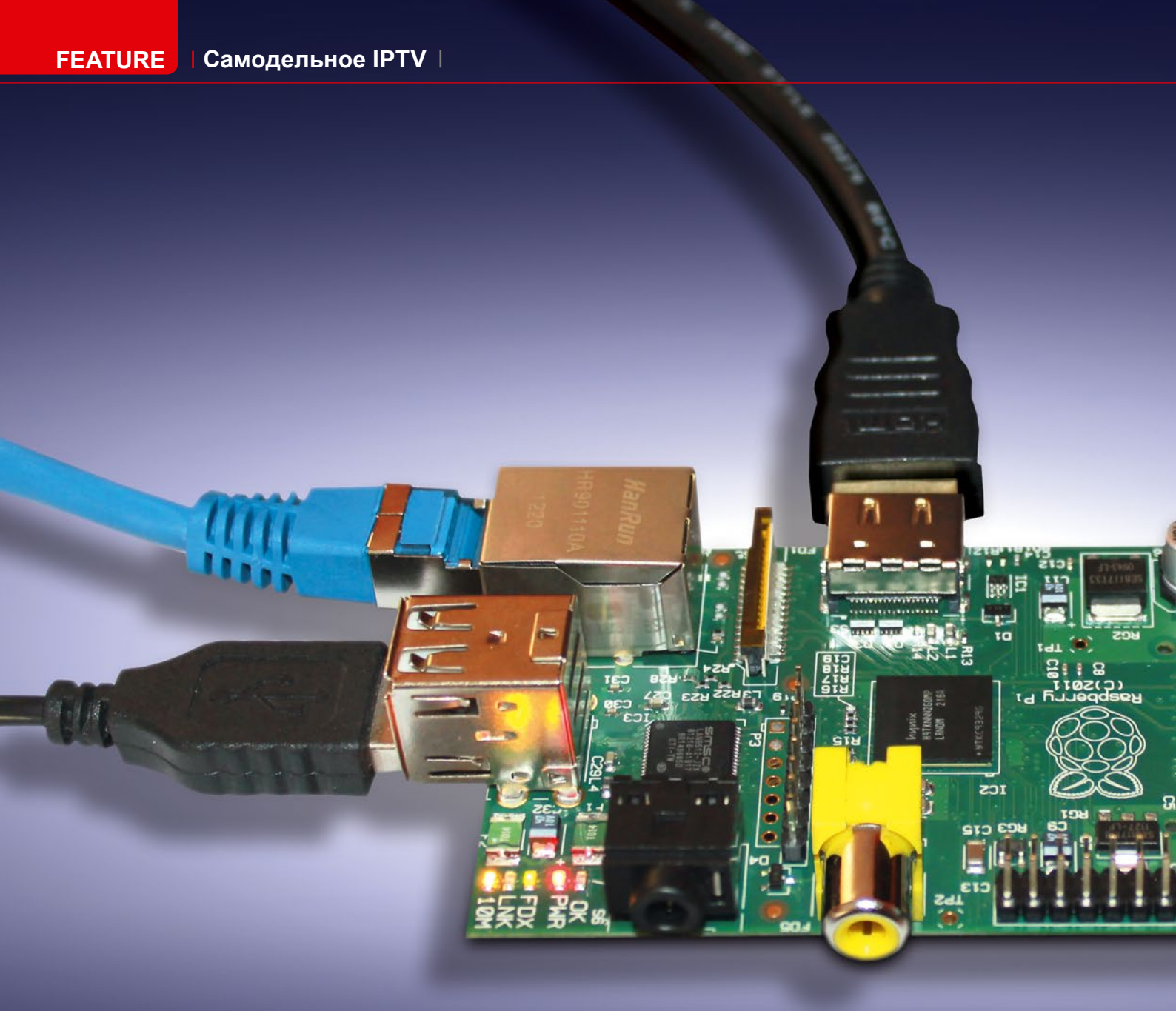
TELE audiovision AWARD 02-03/2011

NetUP DVB-IP Gateway 4x
Perfect ease of use, combined with reliable technology – ideal for IPTV providers.

Energy Efficiency Rating eco friendly 0.98 power factor tested by TELE-audiovision

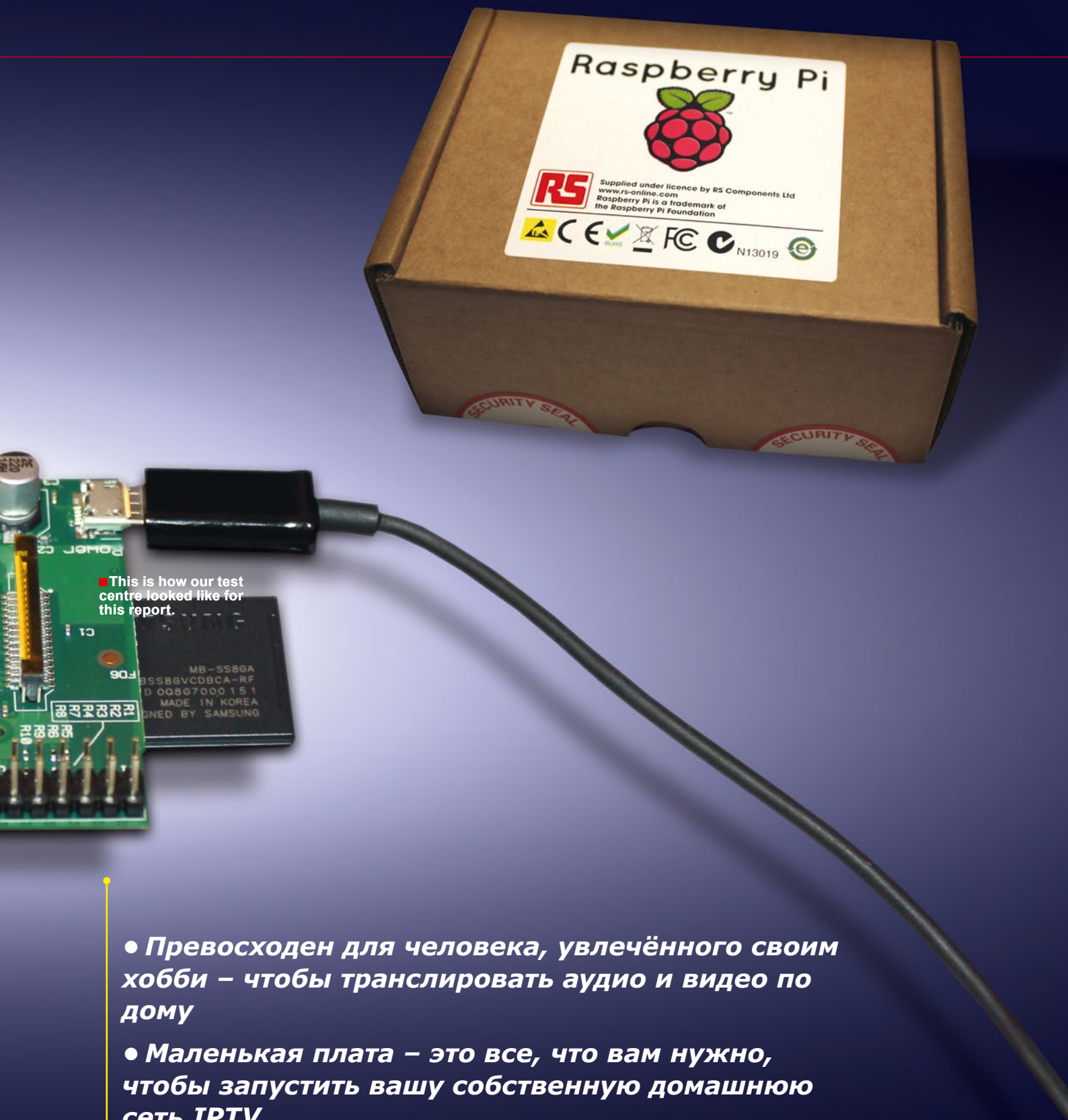


NETUP



Телевидение из сети

Часть 4



This is how our test centre looked like for this report.

- *Превосходен для человека, увлечённого своим хобби – чтобы транслировать аудио и видео по дому*
- *Маленькая плата – это все, что вам нужно, чтобы запустить вашу собственную домашнюю сеть IPTV*
- *MPEG2 и VLC лицензии нужно покупать по-отдельности*
- *Для трансляции используется TSReader Pro*
- *также может быть использован и VLC*

Vitor Martins Augusto

In the first three parts we focused more on the theory of IPTV. In Part 4 we now want to implement an IPTV system. And you don't need all that much: a PC with a digital TV receiver (DVB, ATSC or ISDB) and TSReader Pro would be used as the server. A Raspberry Pi would be used as the IPTV receiver.

The biggest problem with implementing IPTV at home is how do you receive and display IPTV on your TV? Of course, you could set up a PC next to each TV but even so-called "cheap" computers still cost some money and let's not forget the cost of the electricity to run these PCs. So, with all of that in mind, we looked around for some kind of device to use as an IPTV receiver that matched our criteria: cheap, small, easy-to-use and fully featured. After looking at a number of different candidates (from game consoles all the way to a modified AppleTV) we decided on the Raspberry Pi.

The Raspberry Pi is a very small computer; the circuit board is not much bigger than a credit card (85.6mm x 56mm x 21mm). Despite its small size, it is a fully complete computer with an ARM processor. It features:

- SoC („System on Chip"): Broadcom BCM2835 with an ARM1176JZFS Kernel that runs at 700MHZ and includes a Videocore 4 GPU graphics section capable of decoding H.264 at up to 40MBits/sec. OpenGL ES2.0 and OpenVG libraries are also supported.

- "B" models come with 512MB RAM; currently 1GB RAM versions are also being shipped for the same price.

Connections:

o SD-Card: used to load the operating system

o 2x USB: used to connect a keyboard, mouse, USB sticks, etc.

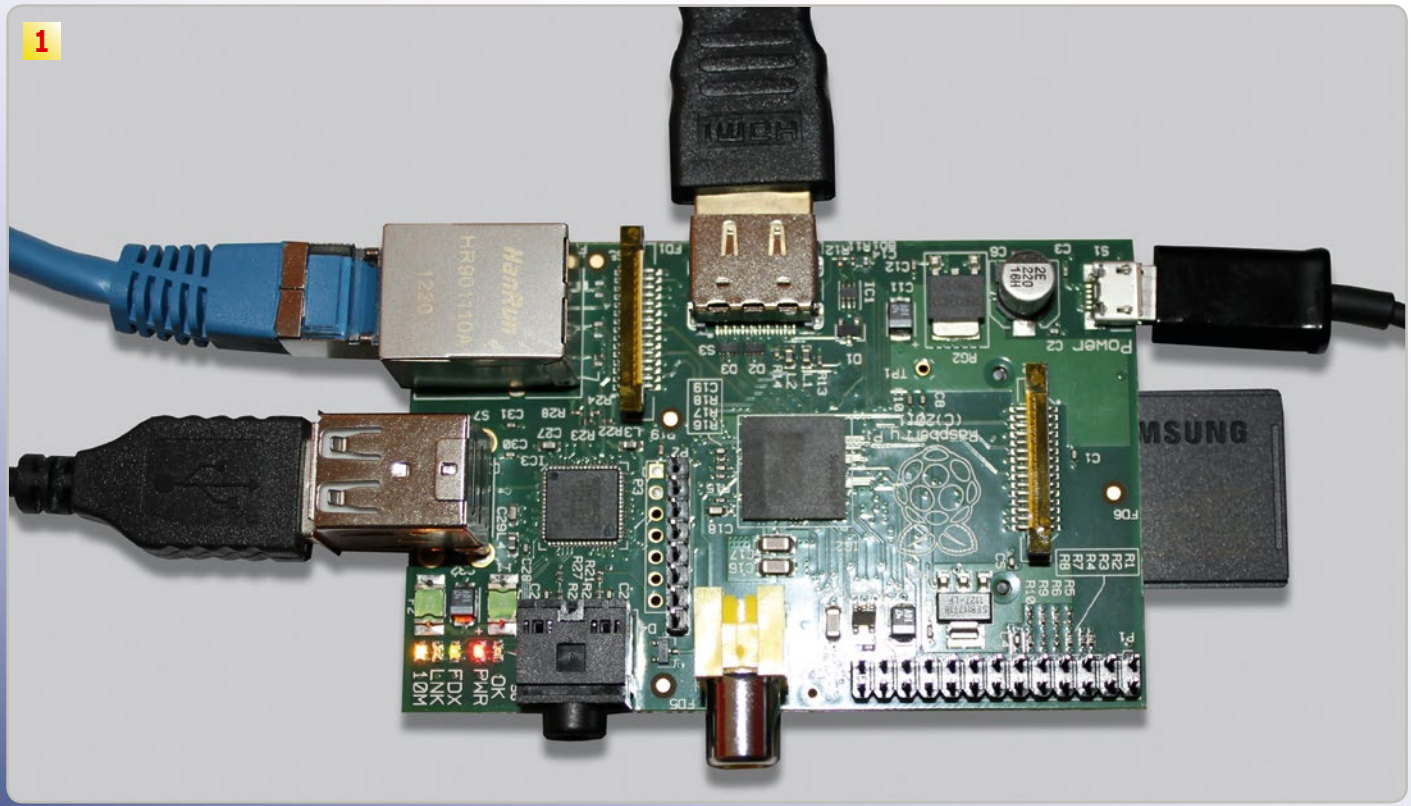
o LAN: RJ-45 with 100MBit/s

o Audio: analog stereo output

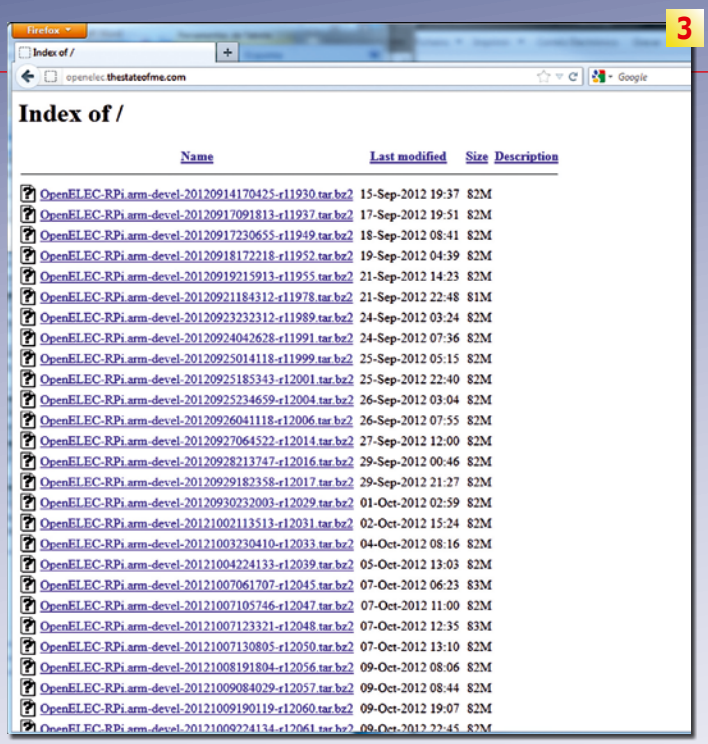


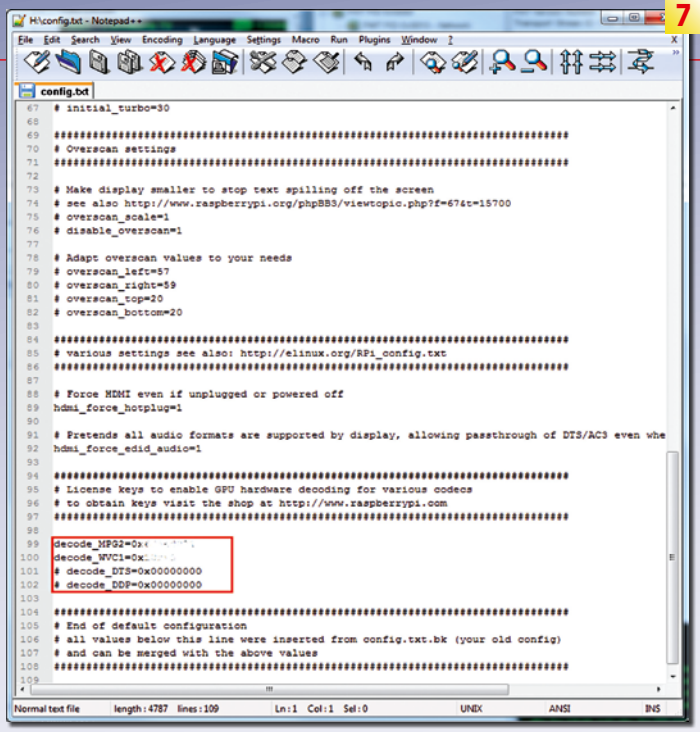
1. The Raspberry Pi is a small computer with the footprint of a credit card. Still, it features all conceivable connections:
- HDMI
- Composite Video
- Analog Stereo Audio
- 2x USB
- 1x Micro-USB for power supply
- RJ-45 Network
- SD card reader
On the PCB there are furthermore connectors for digital and analog inputs/outputs

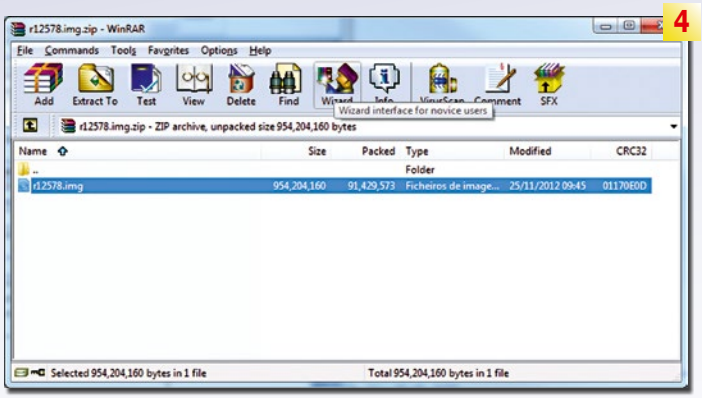
2. The Raspberry Pi will convert any TV or monitor into a full blown media center when using XBMC. Because the Raspberry Pi is so small, it will snug away behind the TV. If you then use a wireless keyboard with integrated trackball or touch pad, you won't even see any loose cables.




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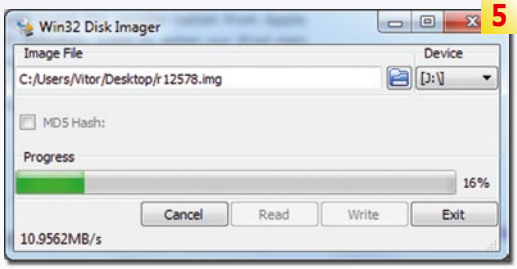
3. The webpage "openelec.thestateofme.com" features all published versions of OpenELEC for Raspberry Pi, including Windows-friendly *.img version, which can be easily flashed using Image Writer, whose Windows version is called Win32 Disk Imager.

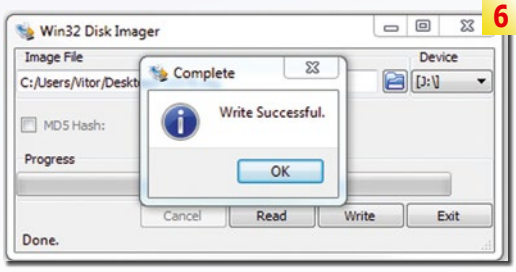
4. Just download the latest rXXXXX.img.zip File and extract it with your favourite compressing tool.

5. Use Win32 Disk Imager to write the image file onto the SD card. We recommend the use of 8GB SD cards with 6x speed or better. The card is written with 10MB/s which is not that bad. Flashing should take less than a minute.

6. When the flashing is finished, a message box appears. Don't remove the card yet, because we need to write the license keys for the MPEG2 decoder.

7. On the root of the freshly written SD card you will find a file called "config.txt". Open it with a text editor (we prefer to use the free Notepad++) and scroll down to the license keys section. Copy & paste the license file you received from the Raspberry Pi store. After completing the purchase our keys arrived about 2 hours later, but the site mentions that it could take up to 72 hours.





o RCA Video: analog composite video output

o HDMI: for digital audio and video output

o Micro-USB: for connection of a power supply

The most interesting part about the Pi is its price: officially the Raspberry Pi Model B costs about US$ 35 plus shipping and any applicable taxes. In Europe you can get the Pi for about 35 Euros. Why such a low price? It's because this mini computer was developed by the Raspberry Pi Foundation; their goal is to make a very inexpensive computer available to every child in an effort to get kids at their young age interested in programming just like it was back in the days of 8-bit computers like the Spectrum and the Commodore 64. For everyone else it's just fun to be as creative as you want to be with this little circuit board and develop applications that would previously have been unrealistic because of the costs that would have been involved.

The Raspberry Pi is manufactured in cooperation with Farnell and RS Electronics. The little circuit board is powered by a Micro USB power supply, the same kind that is used with today's modern Smartphones. You would also need an SD card. We recommend an 8GB card. A suitable housing can now also be purchased for around 6 Euros and this is probably not a bad idea as it would help prevent any accidental short circuits and also help protect it against any static discharge. We used the Pi for weeks without any housing, repeatedly touching and handling it, and nothing happened to it.

Since the circuit board is so small, it can easily be hidden behind any TV. For the keyboard and mouse, a wireless version with both integrated into one unit would be the best option. It would be easy to find a keyboard labeled "Multimedia" or "TV' that would have an integrated trackball or a touchpad as the mouse.

Very important: in order to keep the price of the Raspberry Pi low, the necessary license to play back MPEG2 content is missing from the Pi even though the hardware is available to do just that. But this is necessary to display IPTV since most of the channels that are transmitted in SD are encoded in MPEG2. In the Raspberry Pi Foundation's webshop you can buy an MPEG2 license for 3.00 Euros. You'll get a key e-mailed to you that will activate this function. This key must be placed in the right spot in the config.txt file on the SD card. From this point on, MEG2 encoded content with hardware



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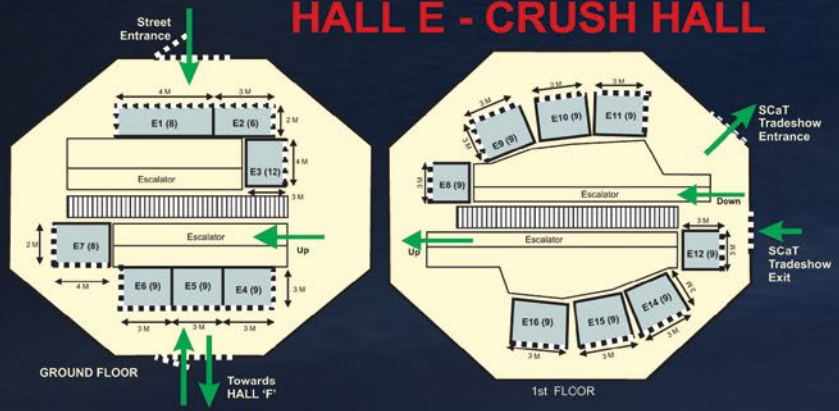
HALL LAYOUT 2014



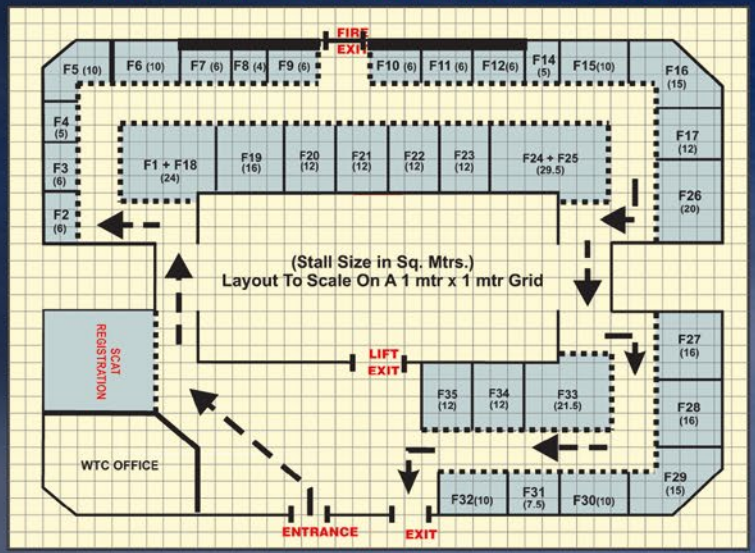
- *Area of each stall indicated in brackets is in square meters.*
- *Grid lines drawn to scale of 1 meter x 1 meter*
- *The open space option is available for a minimum area of 25 square meters*
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supported decoding can now also be viewed. In the same way a VC-1 license can be purchased for 1.50 Euros so that the corresponding content can also be viewed.

The Raspberry Pi works primarily with a customized Linux Distribution although in the meantime you can get a hold of ready-made firmware files (called Images) with XBMC. The name of this media software stems from the abbreviation for "Xbox Media Center": this software was originally developed for the first version of the Xbox. Since then this software has been ported over to every conceivable system including Windows, Linux, MacOS as well as Android and iOS. There's no doubt: with XBMC you're talking about one of the best multimedia programs. Nearly every possible format can be played back (audio, video and pictures), there are what seems to be an unlimited number of plugins and using it is easy as pie. If you're not yet familiar with XBMC, you should load it on Windows, MacOS or Linux and take it for a spin.

Just like with Linux, there are a variety of different versions of XBMC for the Raspberry Pi: OpenELEC, Raspbmc, XBian, etc. We achieved the best results with OpenELEC.

To use the Raspberry Pi with XBMC the following steps have to be carried out:

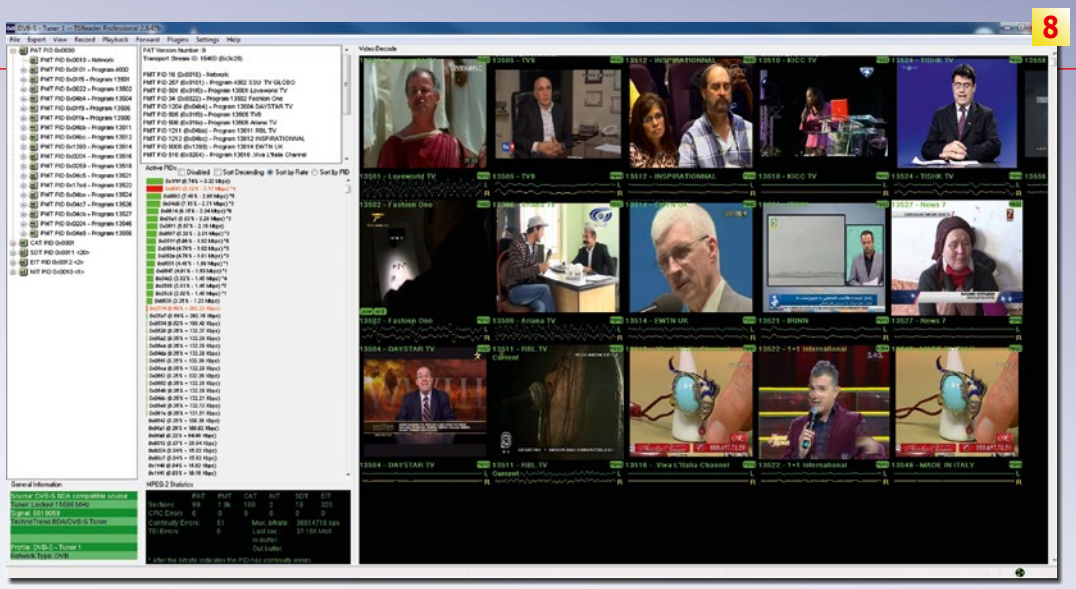
1) The file with the XBMC image must be downloaded from the XBMC website (see the table of links).

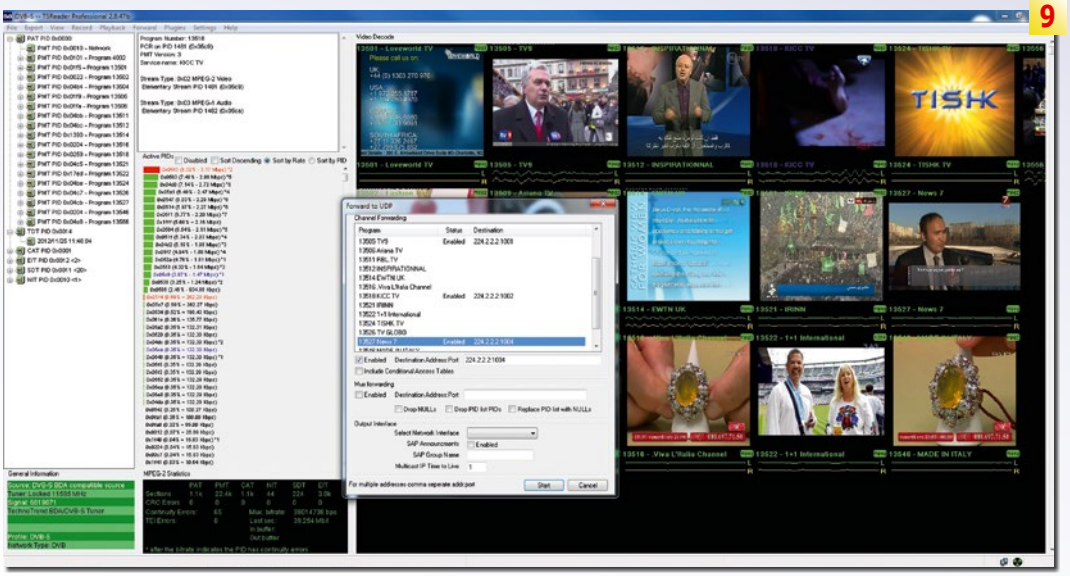
2) Unzip the archive with, for example, WinRAR.

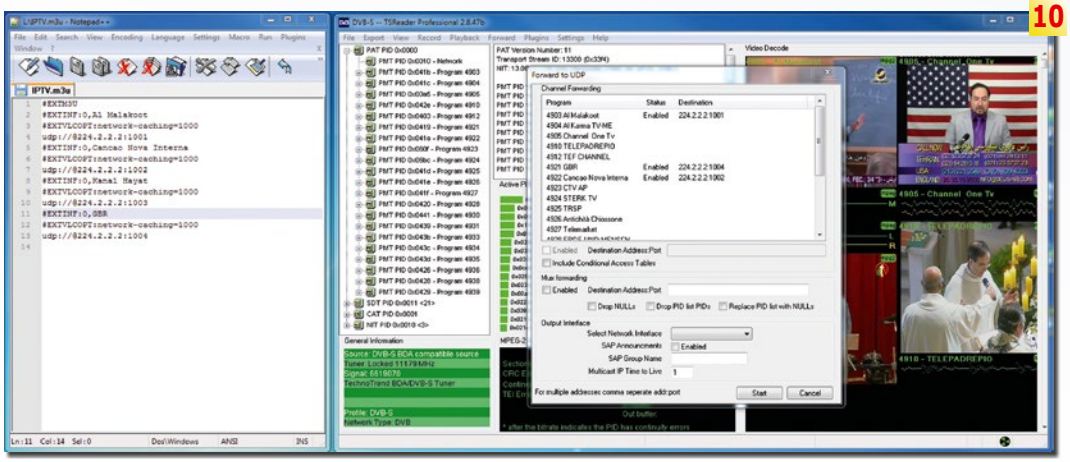
3) Next the *.img file should be flashed onto the SD card using the Win32DiskImager. Make sure that the Win32DiskImager has identified the correct drive for the SD card so that you don't accidentally format the wrong drive.

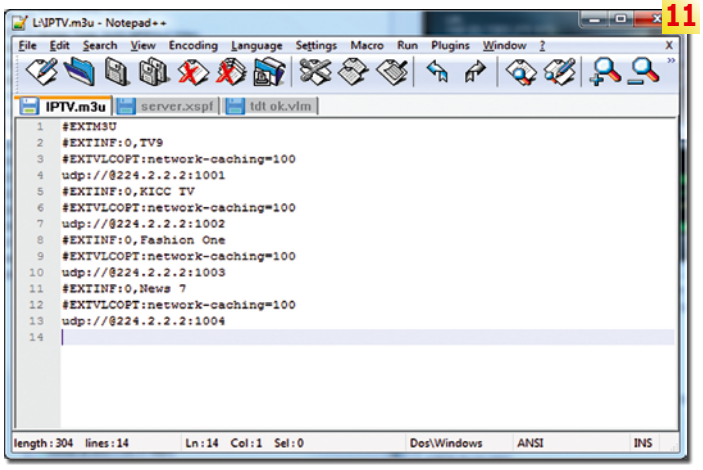
4) Now the "config.txt" file needs to be edited: the MPEG2 license key must be added in the correct spot.

Now the Raspberry Pi can be started and after a few seconds the XBMC interface appears that is very self-explanatory. Important note: when the Pi is started for the first time after the SD card was written to, it is quite normal for the operating sys-









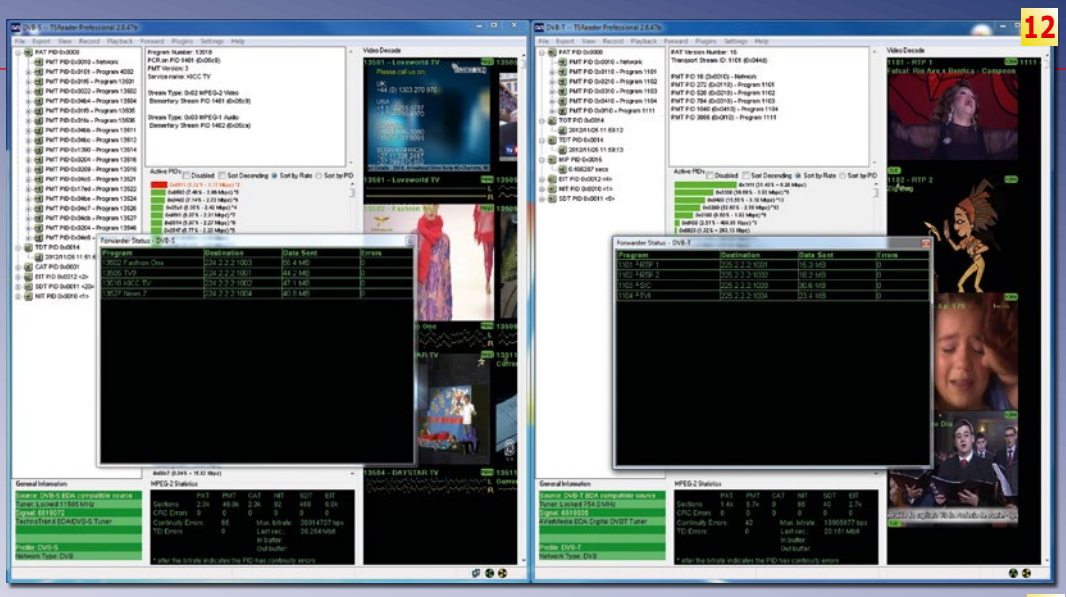
tem to automatically restart. When you start it a second time, XBMC will be loaded. The first pass serves to configure the operating system. Therefore, instead of doing it like we did, just wait a little bit: we thought at first that something had gone wrong and promptly reprogrammed the SD card…

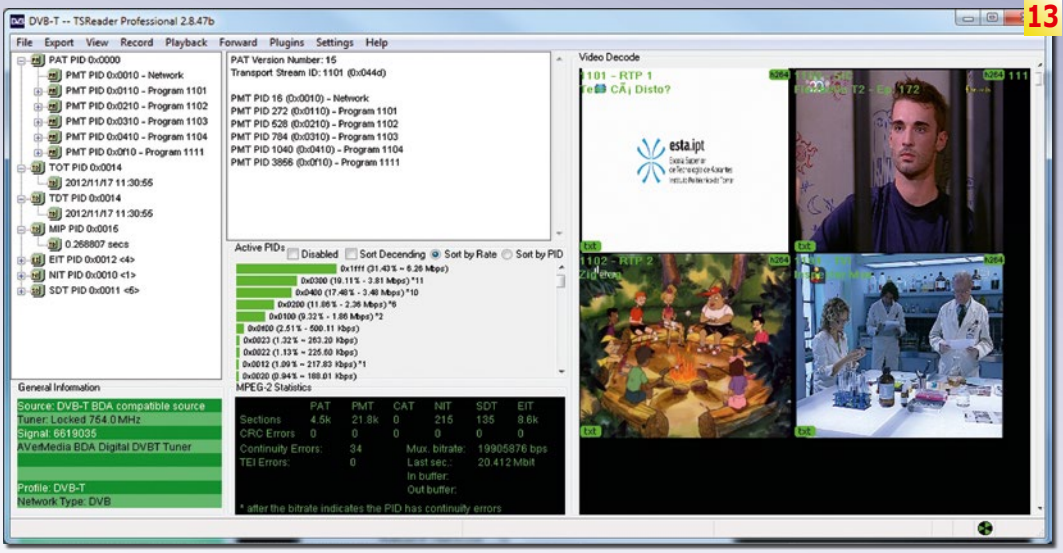
With TSReader Pro it is possible to take the received stream and insert it directly into the network via UDP. The transport stream can either be transferred 1:1 into the network or the integrated Demuxer function can be used. With this function each individual channel in the transport stream can be streamed separately into the network. Since most multimedia devices typically don't come with a Demuxer function, you would not be able to view a transport stream or only one channel in the stream could be displayed without the ability to select any other channel. The same thing happens with XBMC: you try to receive the entire transport stream, but only one channel can be viewed and it's not possible to switch to any other channel.

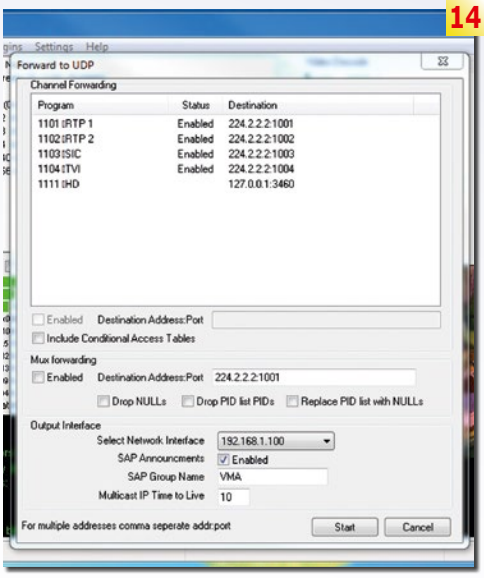
That's why we use the Demuxer function in TSReader Pro so that the desired channels can be streamed into the network via Multicast whereby though for each channel an individual port number is used.

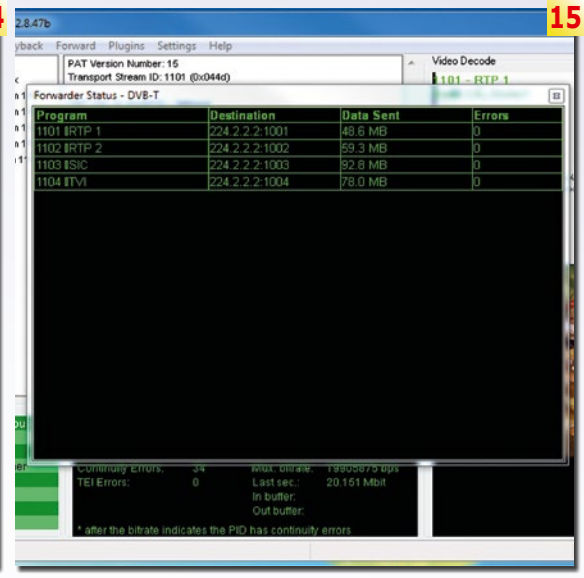
In order for XBMC to be able to receive these streams on different ports, we need to create a Playlist in *.m3u format. In this way a list of all the complete channel names appear in a list in XBMC; channel surfing is now fun!

The great thing is that you can start multiple instances of TSReader Pro, each with a different tuner (it doesn't matter if it's one PC or multiple PCs – don't forget, we're using Multicast), so you can









8. Start TSReader Pro and tune to the desired transponder as usual.

9. Open the "Forward" menu and select "Forward to UDP…". On the list in the upper part of the window select each channel you want to stream and configure the respective IP address and port number. You can use the same IP address for all channels, but then you need to use individual port numbers. Remember that the multicast addresses start at 224.1.1.1 and go up to 239.255.255.255.

10. Using a text editor like Notepad++, you need to configure the play list for XBMC, introducing each streamed channel with the respective IP and port.

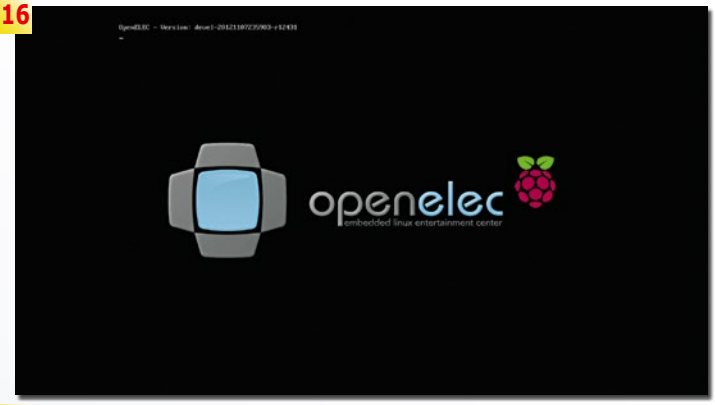
11. In our first experiment, we streamed four channels and configured the IPTV.m3u file accordingly. Naturally you can name the file as you desire, as long as you keep the *.m3u extension.

12. Not too soon, we wanted to try to increase our IPTV bouquet and added a second TSReader session, this time using a DVB-T tuner.

13. With this TSReader session we were receiving the Portuguese digital terrestrial television, which contains only 4 channels.

14. Each channel was assigned an IP address and an individual port number.

15. Streaming has started. TSReader tracks on how much data has been sent and how many errors occurred.



16. Boot screen of the OpenELEC distribution of XBMC for the Raspberry Pi

17. Main menu of XBMC. You can access all functions from here, using the keyboard, the mouse or any other device you connect, including a wide range of remote controllers.

18. The video menu. You can add new folders containing video using the “Add Videos...” entry. These can be folders on the Raspberry Pi or shared folders within the network.

19. Playing a TV channel received over the network – IPTV at its best

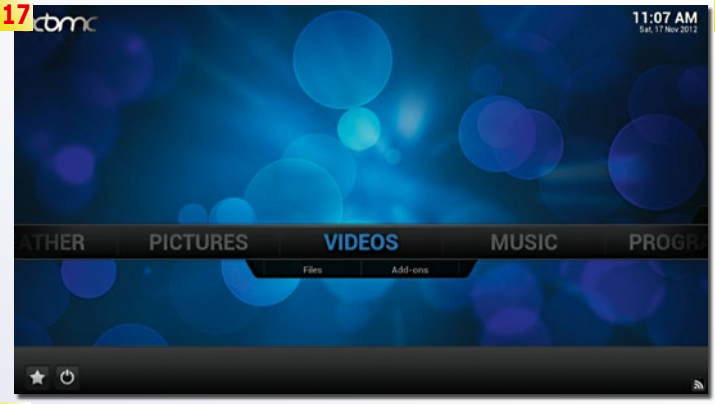
20. XBMC includes a wide range of configurations for audio and video, including the display of subtitles

21. Zapping can be done using the |<< and >>| buttons or by going back to the playlist.

22. Playing a streamed channel from HOTBIRD 13.0E.

23. This is a different playlist, showing the channels we are streaming from our DVB-S/S2 card. You can have as many playlists as you wish.

24. Zapping between the different channels within the playlist is easy, but naturally you have to expect 2-3 seconds to see the next picture. The reason is the buffering that is required, to ensure that sudden delays within the network traffic don’t stop the reproduction.

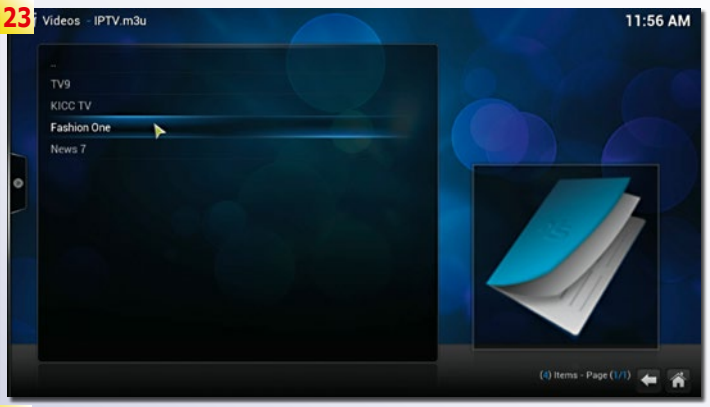
















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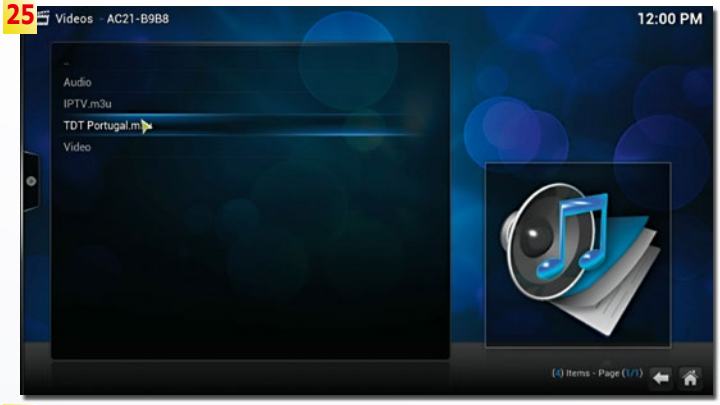
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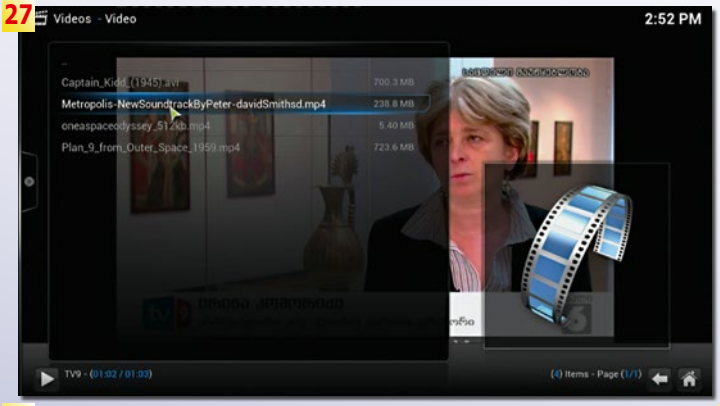
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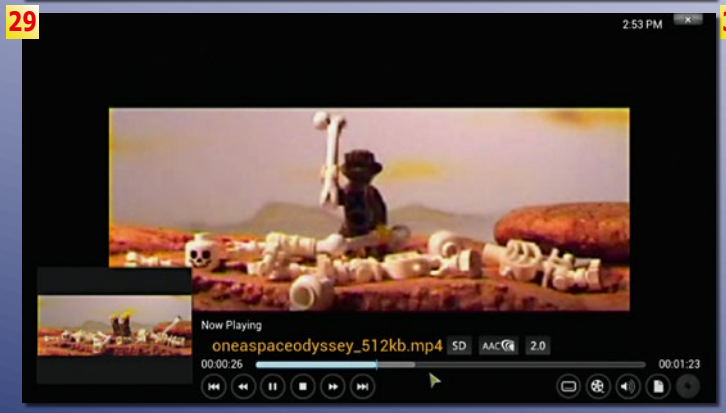
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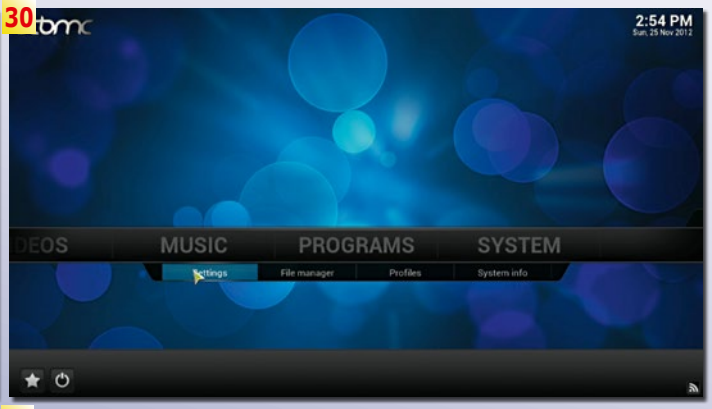
put together an impressive bouquet of channels. For example,we combined several channels from a HOTBIRD (13.0E) transponder that carries Portuguese digital terrestrial TV. These eight channels were now available throughout the entire house via the network and could be received with the Raspberry Pi as well as other devices (PCs, Tablets, Consoles, etc.) as long as they could work UDP streams. It would, of course, be especially easy if these devices had XBMC installed on them.

The *.m3u Playlist format is quite simple and looks like this:

#EXTM3U
#EXTINF:0,RTP-1
#EXTVLCOPT:network-caching=1000
udp://@224.2.2.2:1001
#EXTINF:0,RTP-2
#EXTVLCOPT:network-caching=1000
udp://@224.2.2.2:1002
#EXTINF:0,SIC
#EXTVLCOPT:network-caching=1000
udp://@224.2.2.2:1003
#EXTINF:0,TVI
#EXTVLCOPT:network-caching=1000
udp://@224.2.2.2:1004

The first line identifies the file as an EXTM3U Playlist and must be available exactly like that. Next there are three lines for each channel: #EXTINF offers "Extended Info" so that XBMC shows the name of the channel rather than the file name and IP address. After the "0" can be any text you want, in our case we used the channel name. The next line sets up a buffer to prevent the video from being interrupted from brief network hang-ups. With larger values channel surfing would take longer. We used values between 100 and 1000. The third line identifies the protocol (udp://@) and the corresponding IP address with port number.) Naturally, these values have to match the IP addresses and port numbers in TSReader Pro.

These three lines are repeated for each individual channel. To create and/or edit this file, any preferred text editor can be used since this is nothing more than a





normal *.txt file whereby the file suffix is simply changed to *.m3u. We suggest Notepad++; it's an excellent Open Source editor with many functions and Plugins that can also be used as a Hex editor with the proper Plugin.

The completed *.m3u file can then be saved to a USB stick and simply plugged in to the Raspberry Pi. You can do this while the Pi is running; XBMC will recognize the USB stick automatically. If you now go to video you can click on the Playlist and then select a desired channel. You can also quickly surf to the previous channel or next channel. The only thing you can't do is select a channel directly by number. You can also choose if you want channels from different transponders - that are being streamed from different instances of TSReader Pro - integrated into one *.m3u playlist or if you'd prefer different playlists for different transponders.

The configuration described here can also be setup with VLC as the server. This would actually save you some money since VLC has to do with an Open Source Project but it also would involve investing more time compared with TSReader Pro because configuration of VLC servers is not so easy. For example, we were able to stream a DVB-T transponder via VLC but it didn't work at all with a DVB-S transponder probably because the current version might have a problem with DVB-S tuners. If an older version of VLC were to be installed, then DVB-S reception would work but streaming would no longer function.

Our conclusion: In general, IPTV is not really all that complicated. We achieved completely usable results and with a 1000Mbit/s network you won't be aggravated by an overloaded network. Through Multicasting you can connect as many receivers as you want and with XBMC you can easily access music and movies all at the same time that are available either on a local USB stick or from the network.

In the meantime the Raspberry Fan community have already gotten a number of USB tuners to work which, of course, means that we will also see if we can construct our own „Linux Receiver" based on the Raspberry Pi. Without a doubt, the Raspberry Pi is an interesting device to build things with and if you work with audio and video you'd have a usable platform for very little money.

www.raspberrypi.org

The Raspberry Pi Foundation website. Here you'll find the most important operating system images for download, a Wiki, a forum and documentation. You'll also find new projects introduced here on a daily basis.

www.raspbmc.com

One of many XBMC distributors for the Raspberry Pi. This one we found to be particularly beginner-friendly.

wiki.openelec.tv/index.php?title=Installing_OpenELEC_on_Raspberry_Pi

OpenELEC XBMC Distribution Wiki page for the Raspberry Pi. This one seems to be very sophisticated and offers the widest range of features.

sources.openelec.tv/tmp/image

On this official web page the OpenELEC XBMC Image for a variety of platforms, including the Raspberry Pi, can be downloaded. This image can only be loaded via Linux.

openelec.thestateofme.com

On this website OpenELEC XBMC Images for the Raspberry Pi are also made available in Windows compatible format. These can be flashed to an SD card using Image Writer. At the end of the list choose the newest Zip file (rXXXXX.img.zip).

https://launchpad.net/win32-image-writer/+download

Website for the Image Writer for Windows. This tool writes the firmware image to the SD card.

www.tsreader.com/tsreader

TSReader's website. The professional version is needed for the streaming function. There is a cost involved.

www.videolan.org/vlc

If you prefer to use free solutions, you should try VideoLAN's VLC. With this software it's also possible to demux a transport stream and then stream the channels it contains individually via separate IP addresses and/or ports. The configuration is far more complicated though.





25. Here you can see both playlists: one for the Portuguese TDT transponder and one for the HOTBIRD 13.0E satellite transponder

26. If you prefer, you can merge the channels of different playlists into a single playlist. Here we see all streamed channels in one single playlist, despite the fact that these channels come originally from different tuners.

27. Naturally, XBMC has many more capabilities. Why not watch a movie? Almost all formats are recognized and supported, including subtitles and multiple audio channels.

28. Time for a break: watching the classic Metropolis. Did you know that this masterpiece can be downloaded for free, because the copyright expired long time ago?

29. Here a different movie, encoded and encapsulated differently (*.mp4): a recreation of the Space Odyssey, but using Lego actors...

30. XBMC can be adjusted to your preferences and needs. Just go to the settings menu.

31. Here you can setup every detail, including the weather settings.

32. We specified the location of our test centre.

33. There are many options to setup audio and video. The Raspberry Pi features a full HDMI connector and is capable of resolutions up to full HD at 1920x1080

Расширения для DVB-S2



- ***модернизация дает возможность повысить скорость передачи данных***
- ***более прямоугольный спектр транспондера предоставляет больше места для дополнительных транспондеров***
- ***уменьшение уровня бокового лепестка также дает больше места для большего количества транспондеров***
- ***широкополосные транспондеры добавляют эффективности***
- ***новая модуляция с 6 битами***



What's coming next after DVB-S2?

Jacek Pawlowski

The DVB-S2 standard was first published in 2005. While the performance it offers may still impress us nowadays, the advances in technology and growing demand for higher and higher data rates make the satellite industry search for even more efficient ways to transfer huge amount of data most notably the high demands generated by Ultra High Definition TV (UHDTV) and high speed IP services over satellite.

Recently in TELE-audiovision 07-08/2013 we have published a feature articles about the new UHDTV standard and the video compression standard HEVC, also known as H.265 – a successor of MPEG-4 (H.264). These new solutions require new hardware and software. It makes a good moment to improve also the modulation, coding and error correction standard as defined by the DVB-S2 standard.

As the proposed improvements have not yet been blessed by the DVB organization we will call them the proposed extensions to DVB-S2. However, real hardware devices have been built and various test have been performed to prove these new concepts. These new DVB-S2 extensions are labelled as DVB-S2EB1, DVB-Sx or even DVB-S3 although such a standard does not yet officially exist in this moment.

The proposed extensions can give a 20% increase in data rate compared to DVB-S2 in DTH (Direct-To-Home) broadcasts. For professional services, like VSAT communication, the gain can be as high as 64%.

So, what exactly are these extensions? Here is our list:

- reduction of the roll-off factors and the side lobes of digitally modulated carriers
- use of wide bandwidth transponders
- additional modulation: 64 APSK
- more modulation and coding (MODCOM) schemes and forward error correction (FEC) choices and non-linear MODCOMs

Not all of the extensions are easy to comprehend but in this features article we try to help you to get a general idea on most of them.

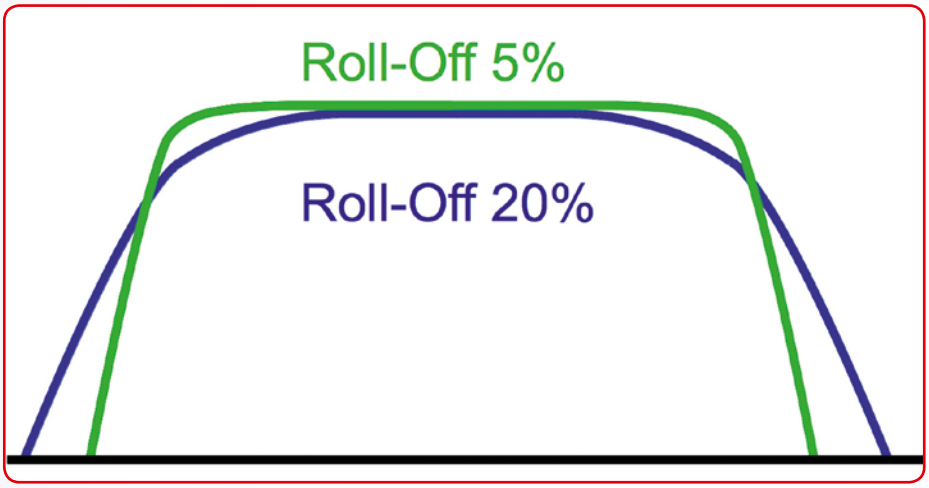


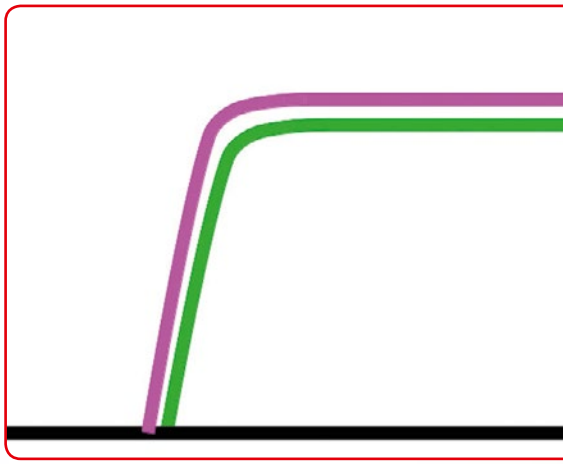
Figure 1. With smaller roll-offs, transponders can be squeezed closer to one another.

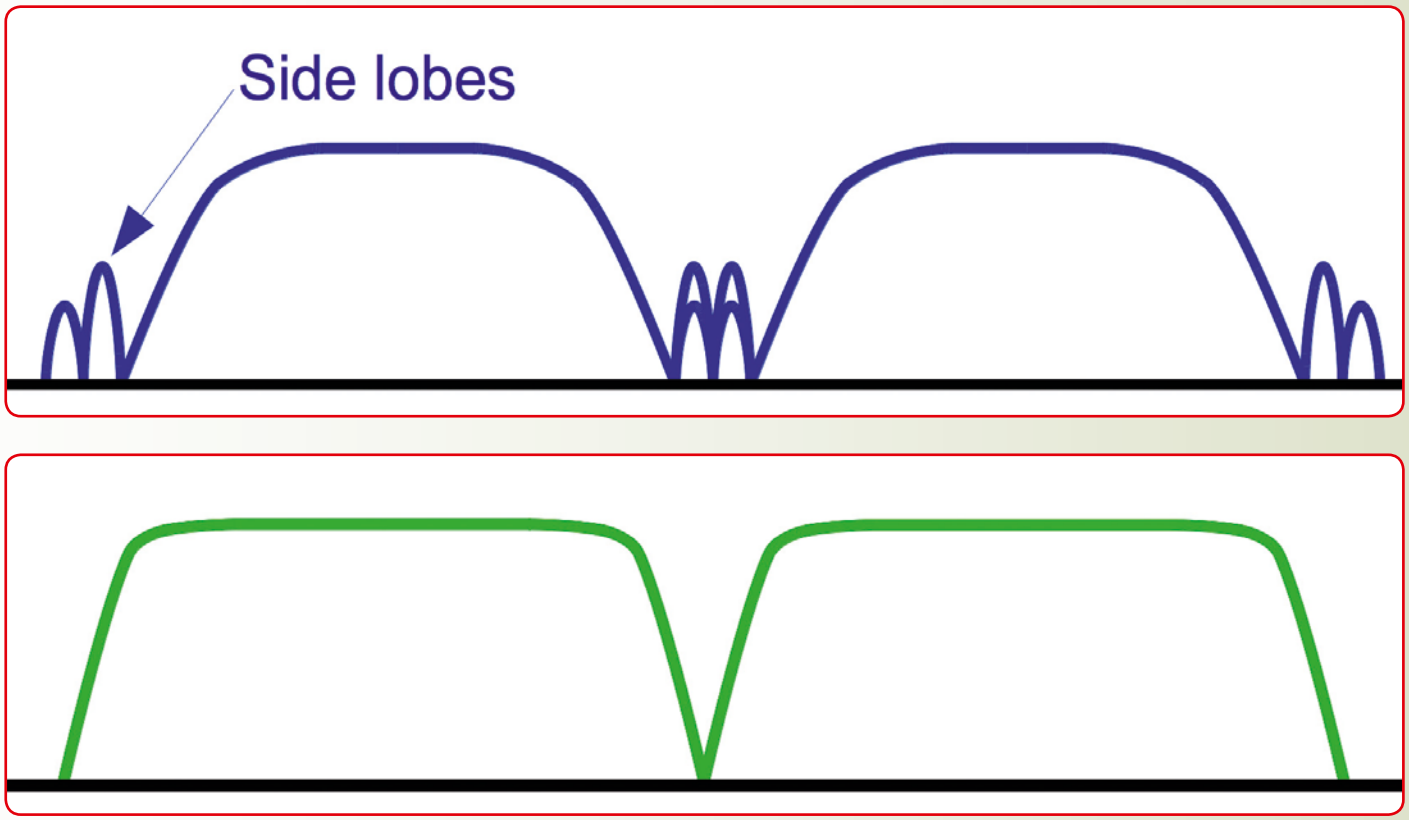
The roll-off factor describes the shape of the transponder spectrum as seen on a spectrum analyzer. Its value tells you how close to an ideal rectangular the spectrum is. The smaller it is the more steep are the slopes of a transponder spectrum. DVB-S requires a roll-off of 35%, DVB-S2 of 20% and 25% while the the proposed S2 extensions aim at 15%, 10% and 5%. It is easy to understand that with smaller roll-offs one can position transponders closer to one another in the frequency domain and gain a free space for additional ones in the same Ku-Band or C-Band.

However, not only (relatively) big roll-offs prevent closer location of the DVB-S2 transponders. So called side lobes are normally present on both sides of the useful signal. These are unwanted artifacts after modulation. With today's technology it is possible to practically get rid of them thanks to improved filtering. Once they are removed, the center frequencies of the neighboring transponders can be set closer to one another.

If you take a look at Figure 2, you can come to the conclusion that even after removing side lobes and improving roll-offs, there is still some spectrum wasted between the transponders. And that's why wideband transponders are the next trick in improving efficiency. Their throughput is increased to 72 Ms/sec. When compared with the most popular 27.5 Ms/sec transponders, the wideband ones are three times wider in spectral view.

Every new DVB standard introduces a new modulation schemes. DVB-S2 ended up with 32 APSK. The proposed extensions call for 64 APSK. In this modulation, every symbol is made up of 6 bits. Of course, the higher the order of modulation, the smaller the differences in amplitude and phase between similar symbols. We can send more data in the





■ **Figure 2. Reducing side lobes by more efficient filtering contributes to better bandwidth utilization.**

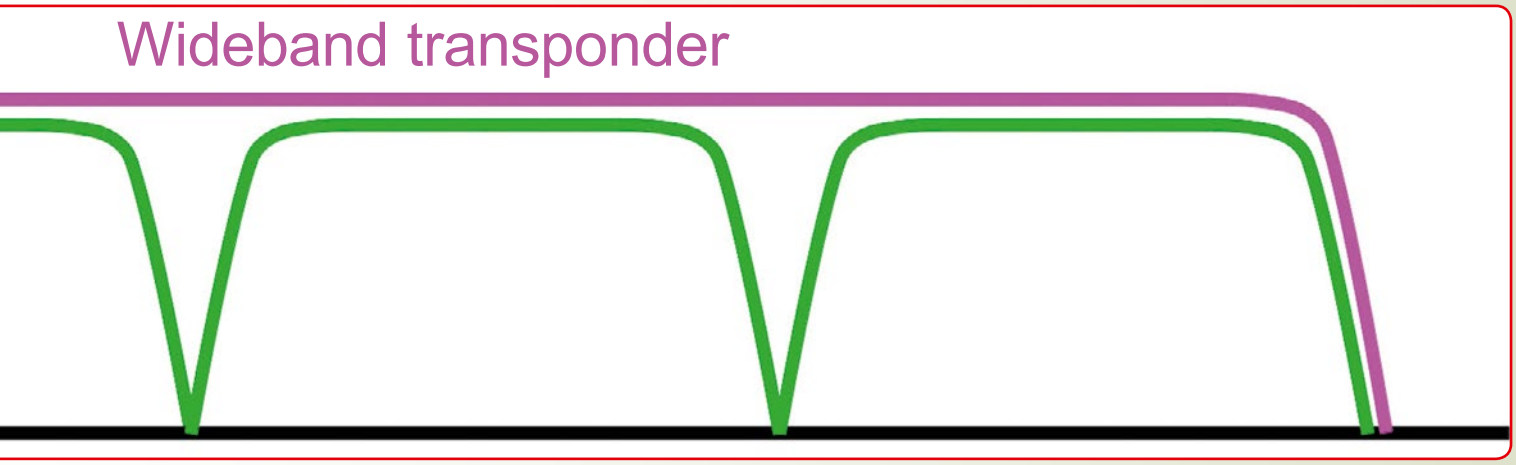
same bandwidth but the signal is more sensitive to interference and noise. 64 APSK will be used in professional set-ups with large antennas rather than in DTH transmissions.

Probably the same goes true for the last extension mentioned in the beginning of this article: more MODCOM and FEC values. These parameters generally describe how big overhead is introduced in the data stream to the useful payload. The overhead in bit rate is needed for error correction. Once we have more possibilities here, we can almost smoothly change the proportion between useful and corrective bits in order to find a minimum overhead still ensuring faultless processing. Such thing is possible when we have a point-to-point two-way communication. In case of a reception problem, the system automatically adjusts MODCOM/FEC.

Also the wideband transponders described above require the reception system to be of a higher performance because the carrier-to-noise ratio degrades proportionally with the bandwidth increase. The best way to maintain a good C/R is to use a bigger dish. Therefore, it is not certain if wideband transponders will be used for DTH broadcasts. After all, not too many end users will be eager to replace their 60-90 cm dishes with larger ones.

That's why the experts assume that in DTH transmissions only about 20% increase in the efficiency is realistic while in professional links even 64% would be possible. Anyway, we can not say today which particular extension proposals will be included in the eventual settlement of the DVB-S3 standard. Maybe only some of the above, maybe all of them. We will not be surprised though if brand new concepts are worked out in meantime and included in the new standard.

One thing is for sure: the improvements will enable higher useful data rates in the existing satellite communication channels and this will be an important factor enabling UHDTV and other wideband services.

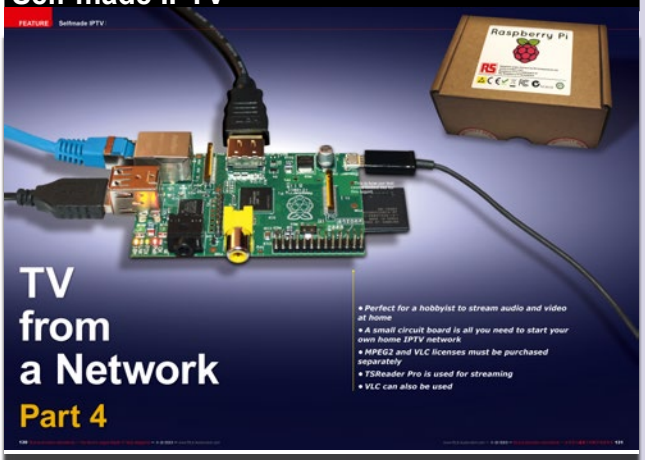


■ **Figure 3. Wideband transponders use frequency spectrum more efficiently.**

Take Advantage

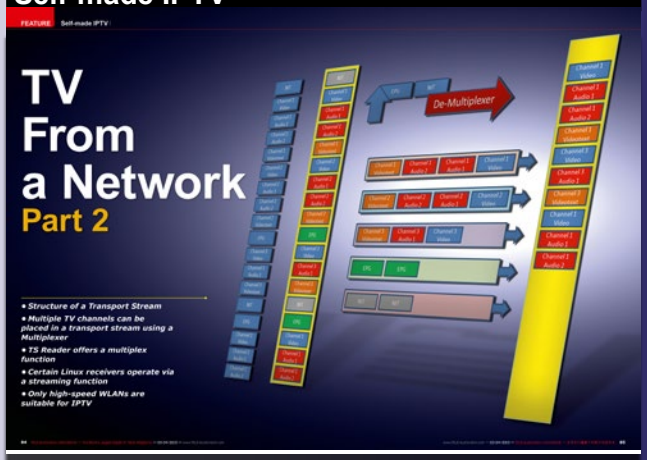


Self-made IPTV



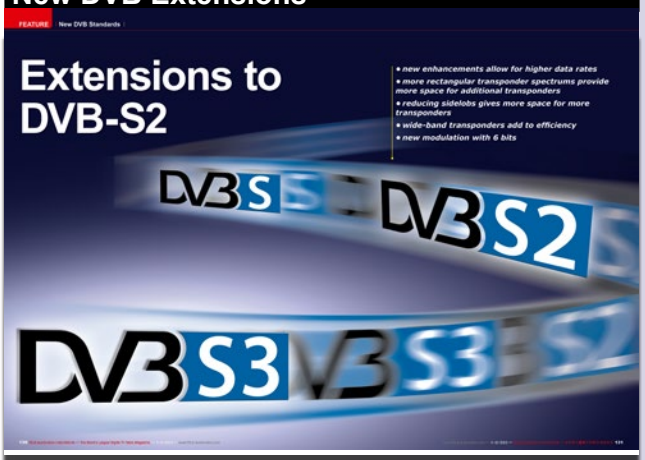
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New DVB Extensions



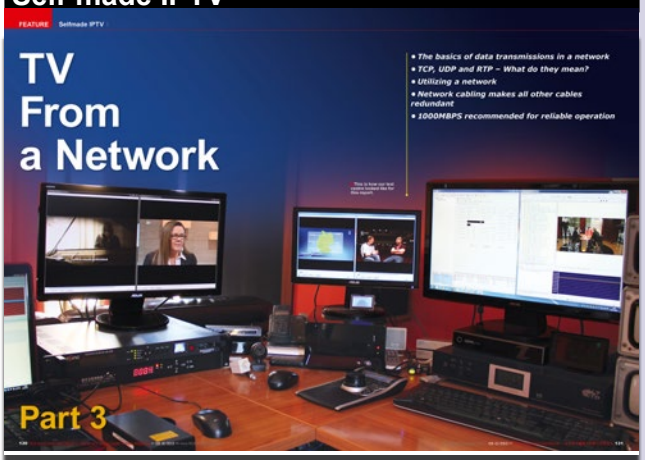
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Ultra High Definition



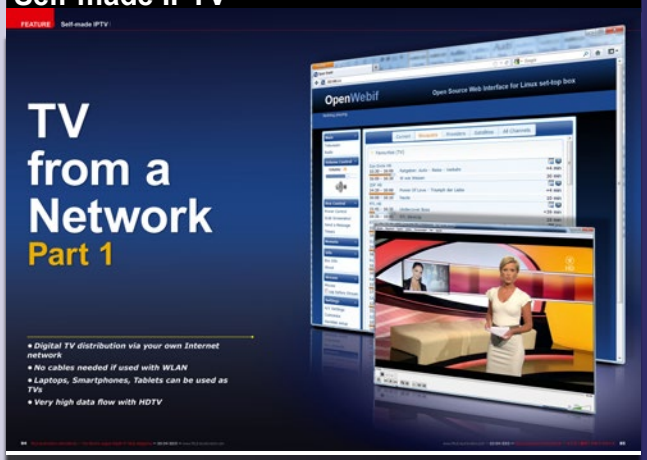
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Self-made IPTV



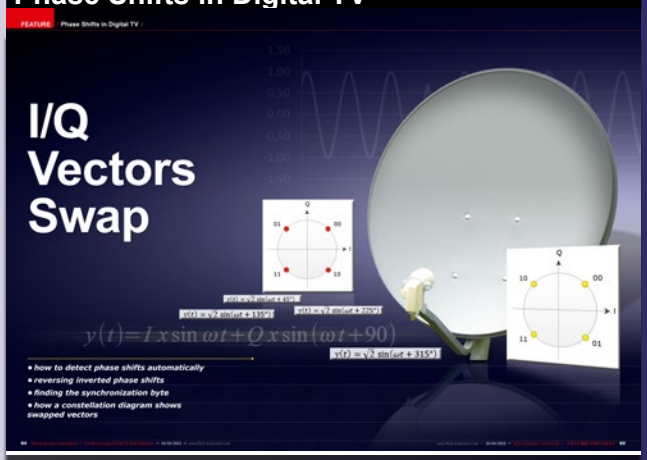
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Ultra High Definition TV



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Phase Shifts in Digital TV



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Digital Terrestrial TV - 2nd Level



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DVB-S2: Hide the SD inside the HD



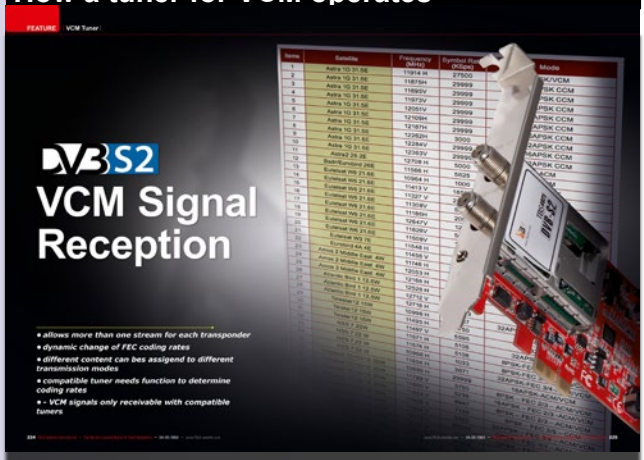
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The Secret Special Transmission Modes



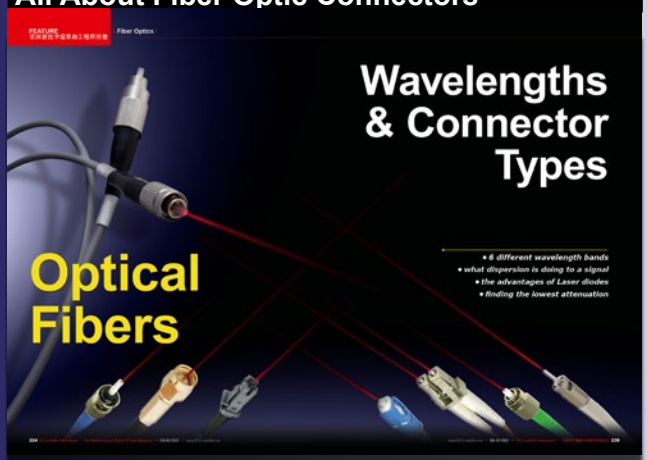
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How a tuner for VCM operates



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All About Fiber Optic Connectors



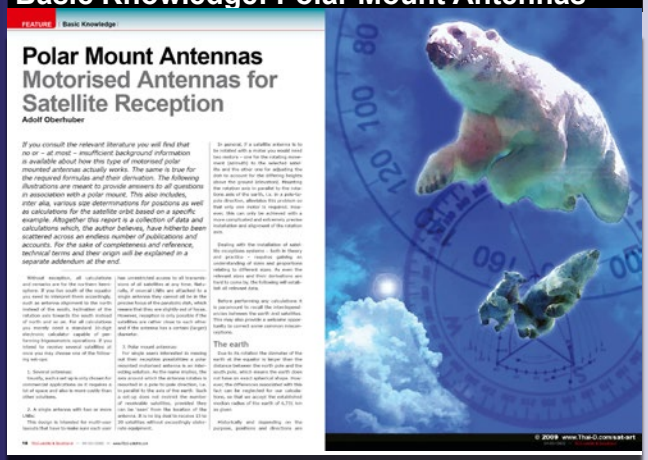
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DVB-S2 MIS Reception with VCM/ACM



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Basic Knowledge: Polar Mount Antennas



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Automatic Creation of 3D



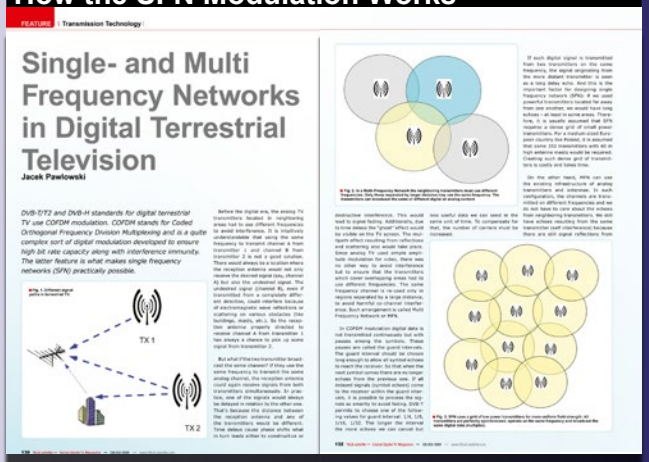
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How a Silicon Tuner Works



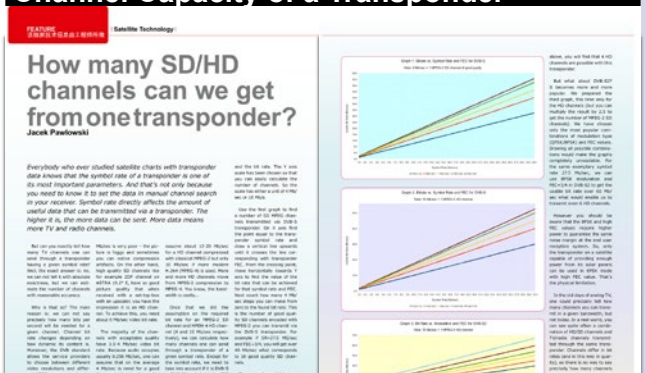
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How the SFN Modulation Works



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Channel Capacity of a Transponder



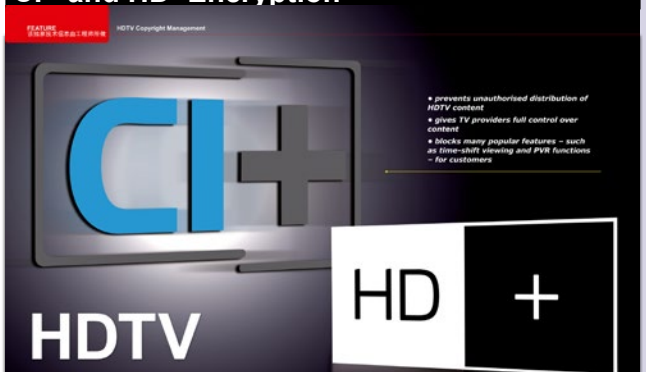
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How HbbTV Works



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CI+ and HD+Encryption



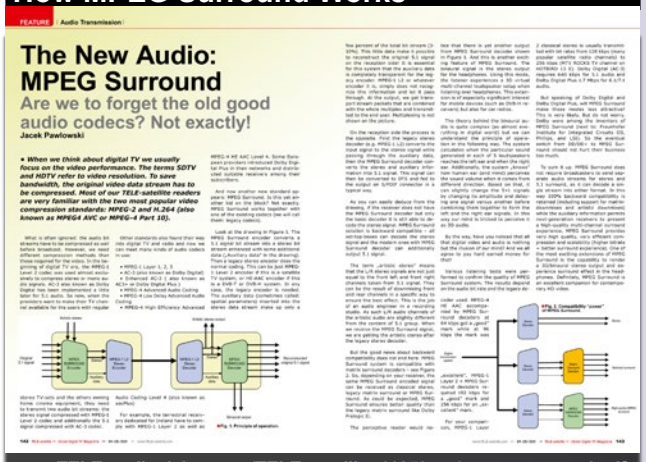
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How DVB-C2 Works



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How MPEG Surround Works



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Streaming TV via the Internet



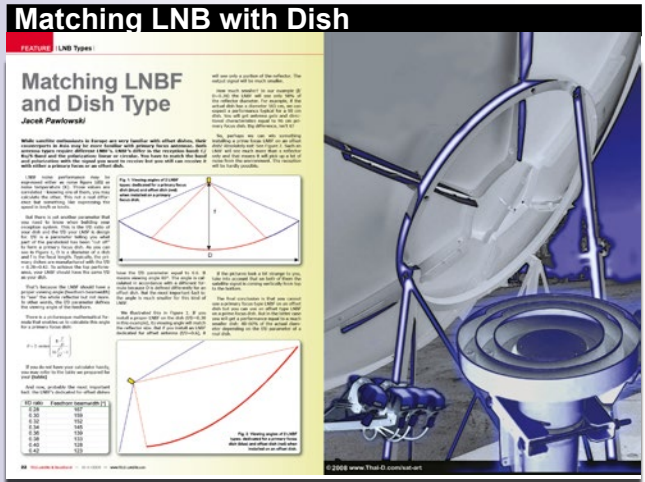
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Testing Horizon to Horizon Actuator



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Matching LNB with Dish



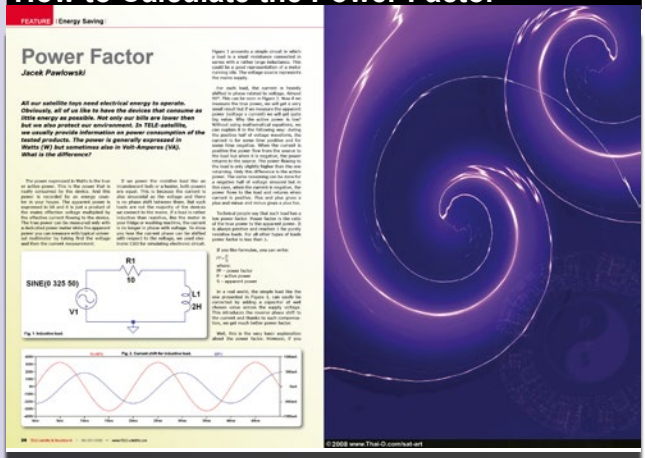
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How SCR Works



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How to Calculate the Power Factor



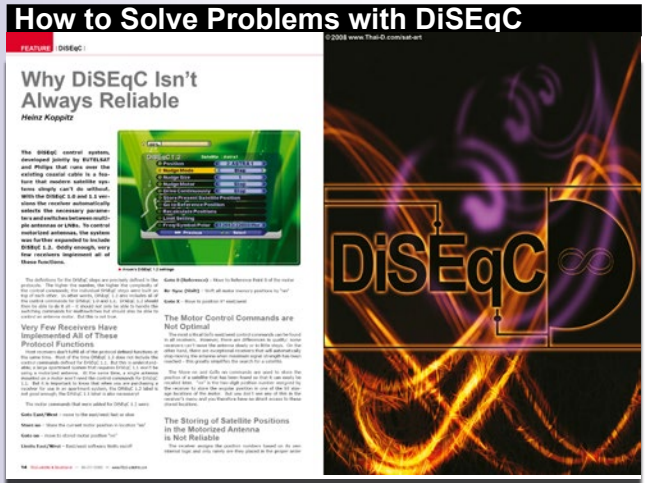
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How Decoding Works



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How to Solve Problems with DiSEqC



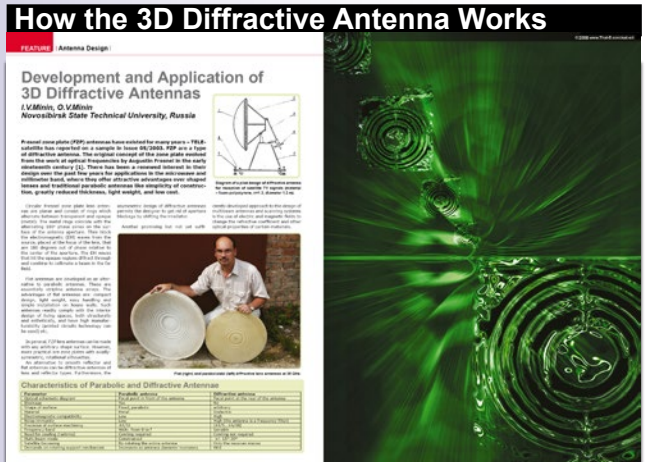
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How ABS-S Works



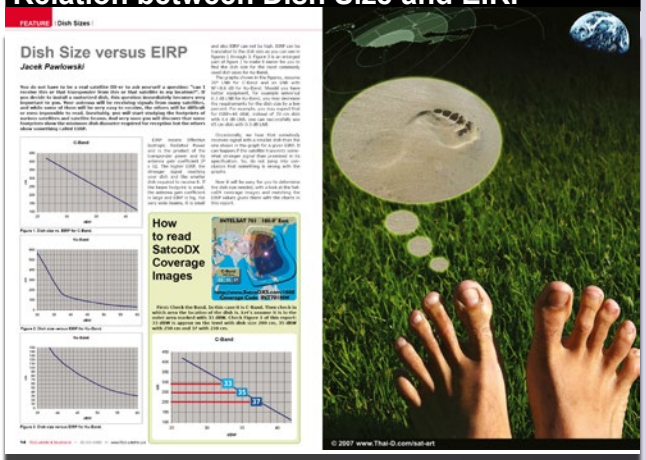
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How the 3D Diffractive Antenna Works



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Relation between Dish Size and EIRP



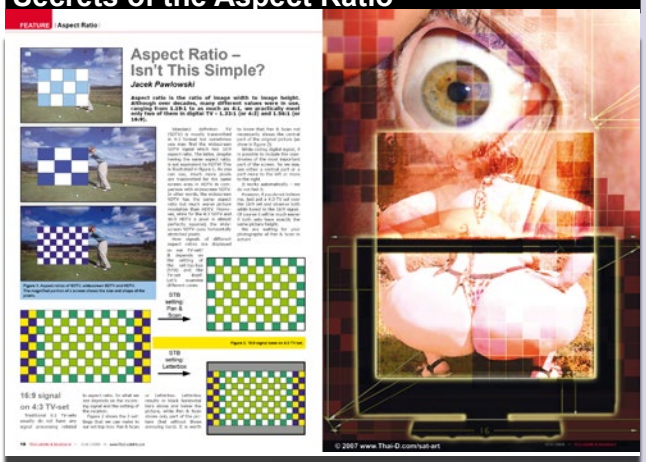
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How MPEG Works



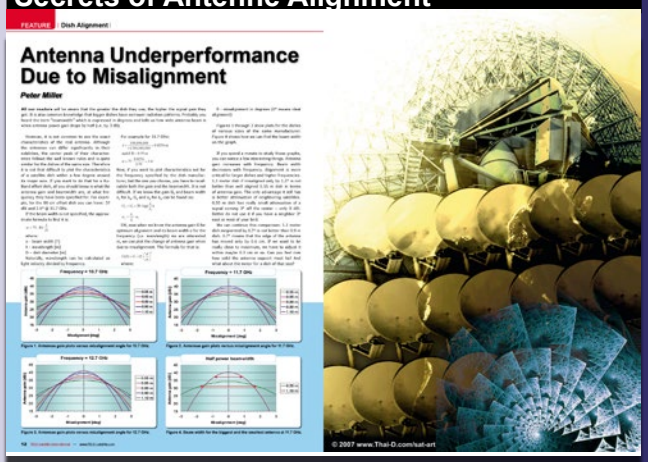
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Secrets of the Aspect Ratio



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How the Network Connection Works



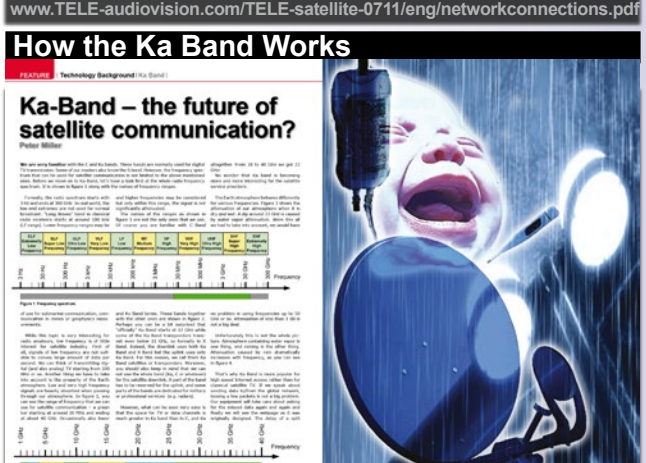
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The Secrets of HDMI



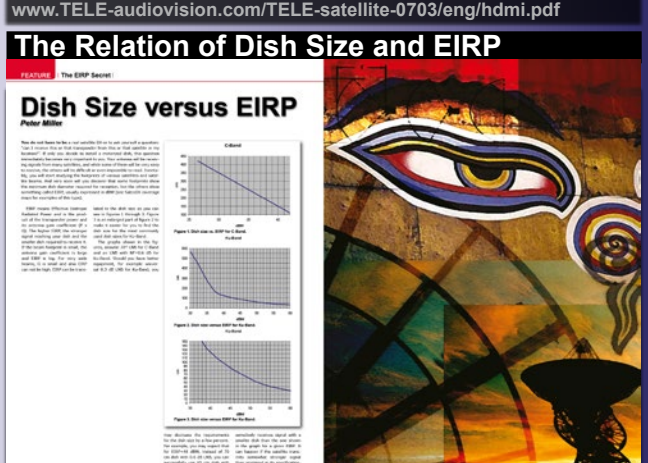
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How the Ka Band Works



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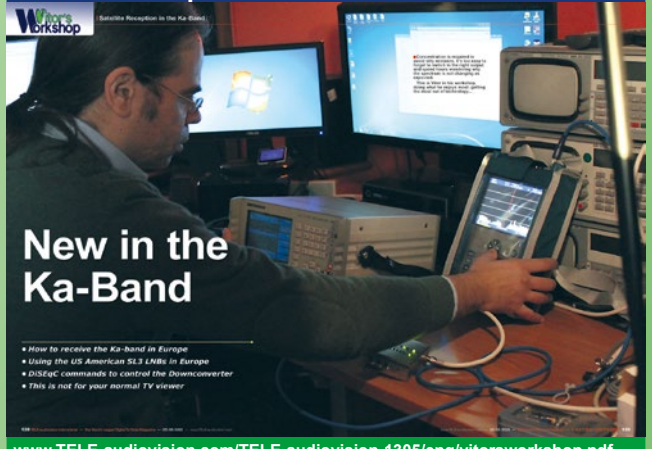
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Satellite Reception in the Ka-Band



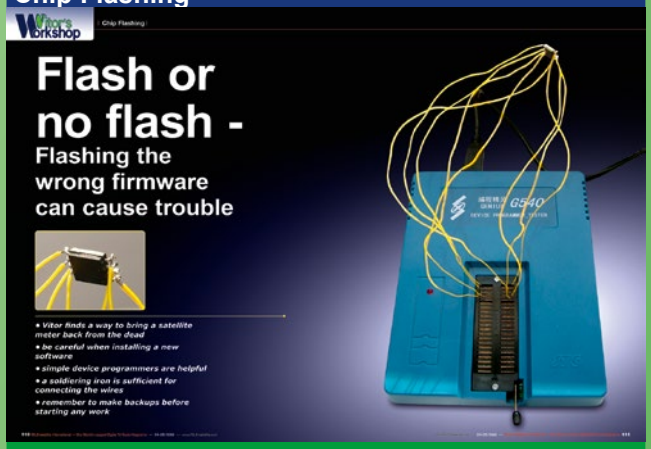
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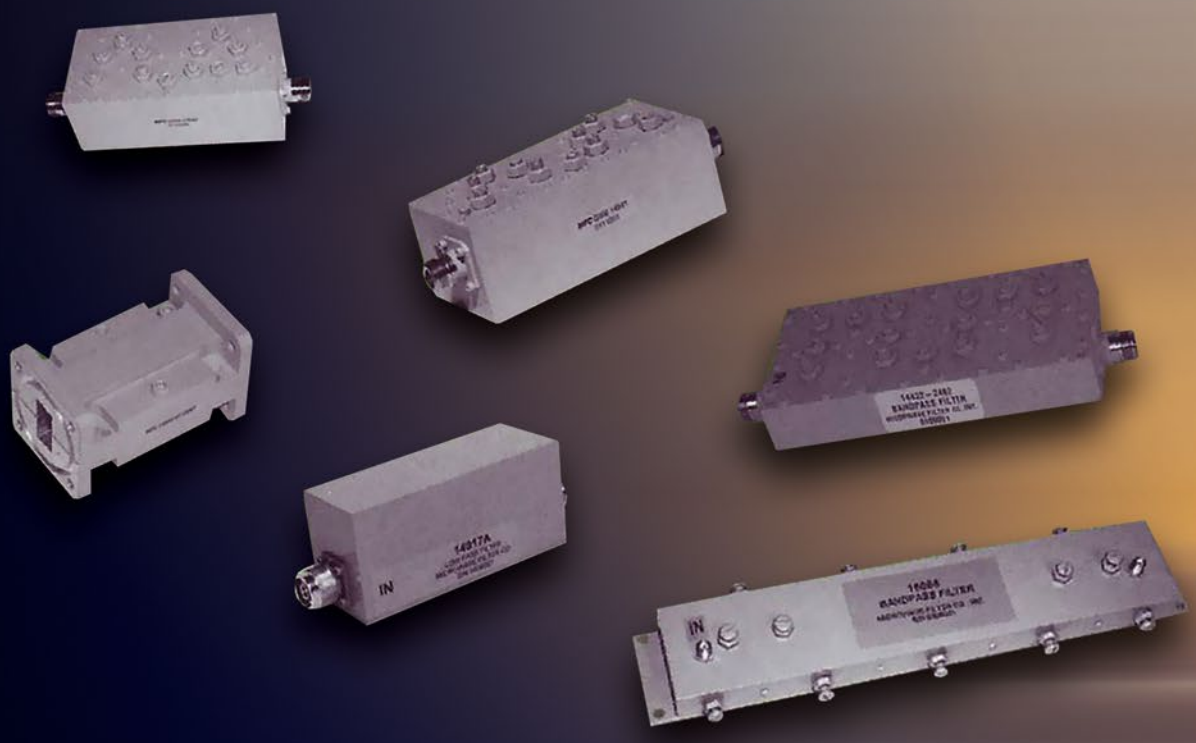
Receiver Firmware

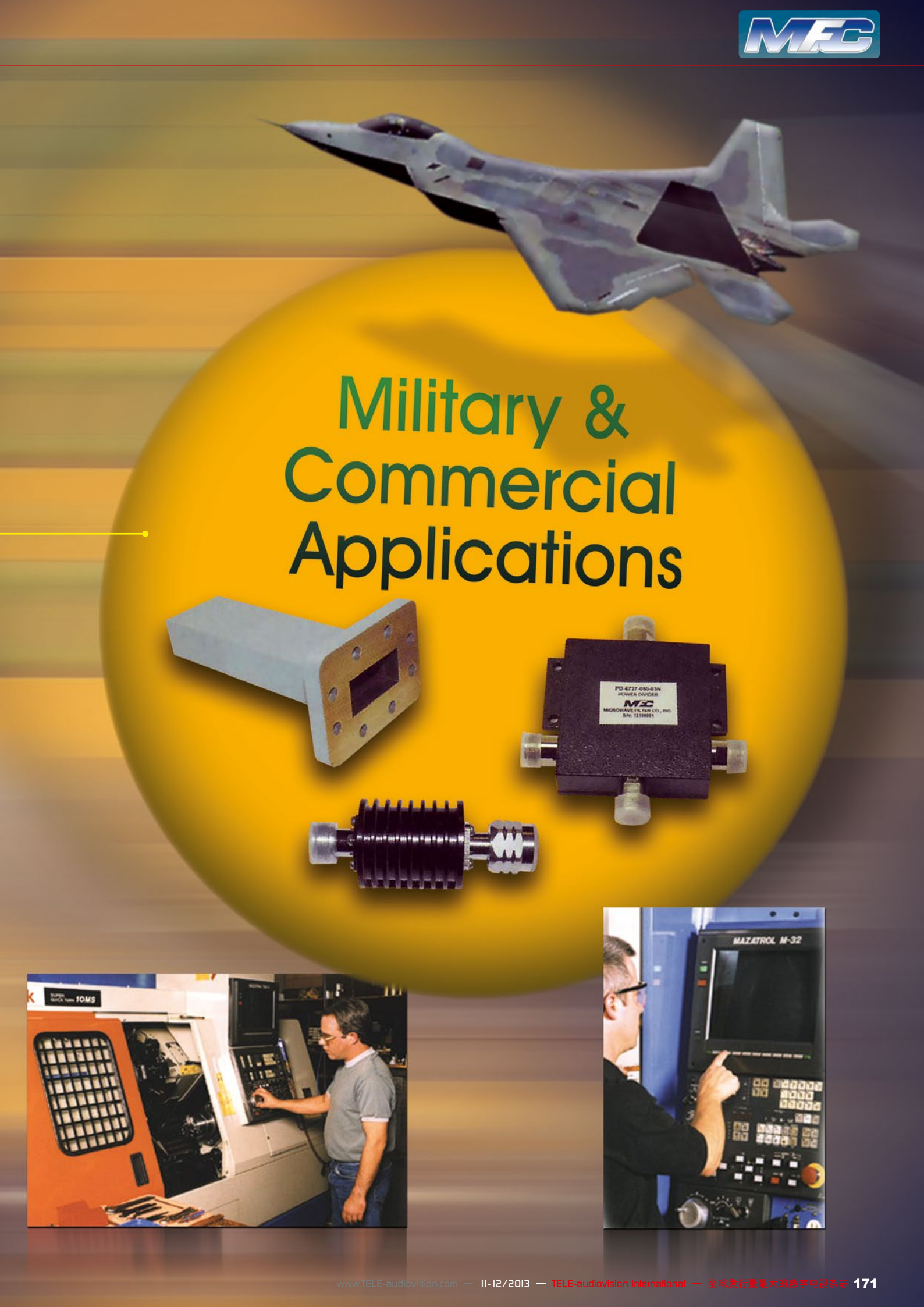


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Фильтры, произведенные MFC

- ***HFфильтры для всех видов приложений***
- ***огромный успех в сегменте фильтров C-диапазона***
- ***среди прочего, фильтры превосходно адаптированы предотвращать WiMAX влияние***
- ***можно комбинировать фильтры высоких частот и фильтры низких частот, чтобы заменить разделительные фильтры частоты***




Military &
Commercial
Applications
MAZATROL M-32

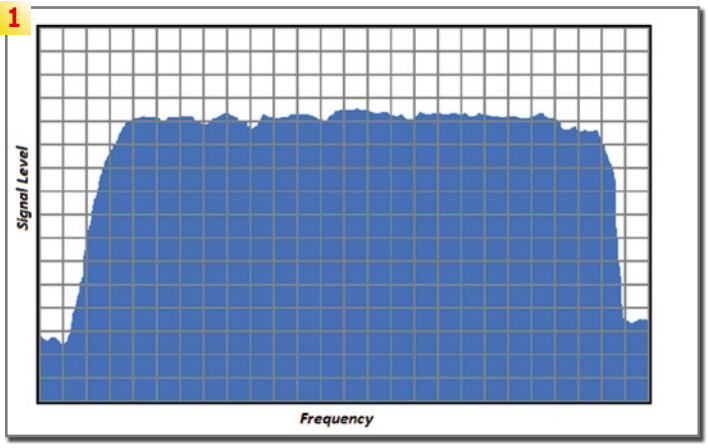
The Benefits of HF Filters

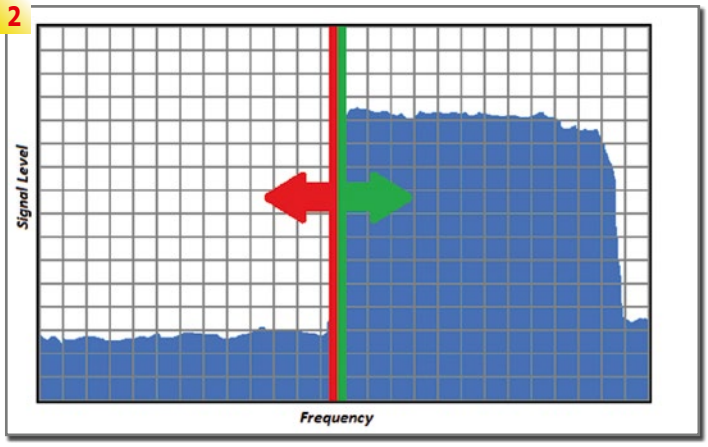
If you're an average end user planning to set up your own Ku band satellite reception system you simply get your antenna, LNB, receiver and coax cable to connect LNB and receiver – no need to worry about anything else. If, however, you're the kind of satellite enthusiast who always wants to dig a little deeper, or if you run a professional cable head-end or even a satellite uplink station, then you might need some more equipment, such as high-frequency filters. The market for those accessories is rather small, and this is why only a handful of manufacturers can actually supply such filters.

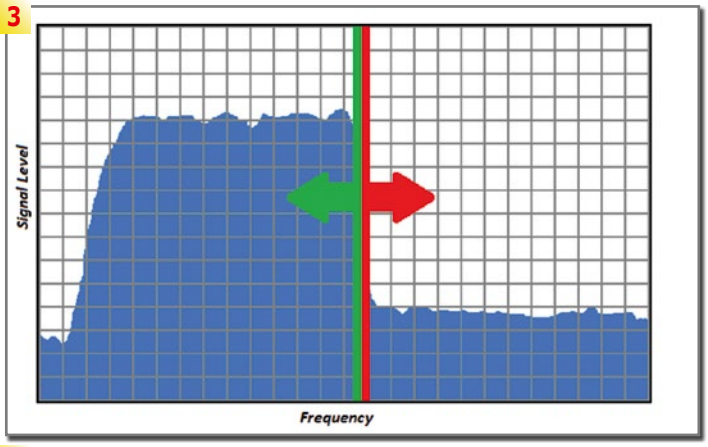
MFC (Microwave Filter Co., Inc.) is one of them – a company that specialises in filters and optional equipment for the high-frequency range between 5 Hz and 50 GHz. MFC's product portfolio includes waveguides, dielectric resonators, frequency-separating filters, standard filters, load resistors (frequently called 'dummy loads'), adapters and all accessories that come with those items.

Demand is particularly high for C band filters, because this is where interference frequently occurs and – more importantly – the right filter can work wonders in eliminating such interference.

High-frequency filters are mostly used for eliminating unwanted signals. More often than not, such interfering signals cannot only be noticed on a single frequency, but also have a nega-







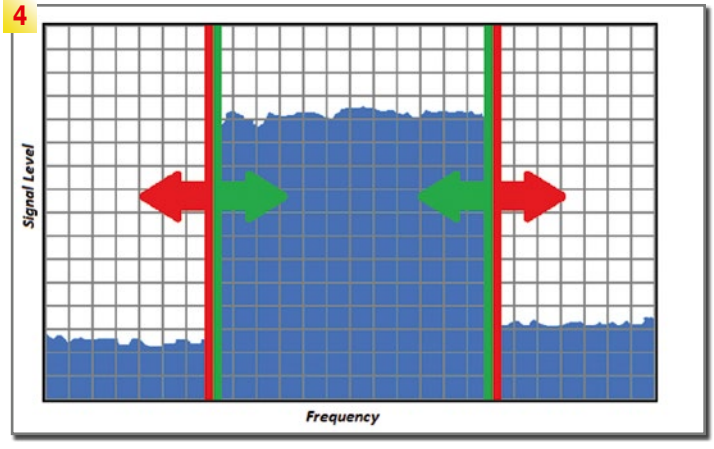
1. A sample spectrum: the signal level is high over a great frequency range, no filter is used.

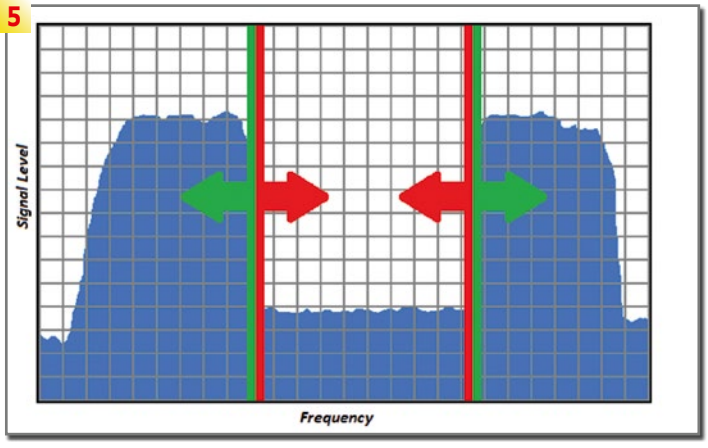
2. Using a high pass filter: only frequencies above the cut-off frequency pass the filter, low frequencies are attenuated substantially.

3. Using a low pass filter: only frequencies under the cut-off frequency pass the filter, high frequencies are attenuated substantially.

4. Band-Pass filter: combining both a high pass filter with a lower cut-off frequency and a low pass filter with a higher cut-off frequency. The result is that the centre band will pass the filter with minimal attenuation.

5. Band-Rejection filter: in this case a low pass filter with a low cut-off frequency is combined with a high pass filter with a high cut-off frequency are combined. The result is that the centre band is attenuated substantially.





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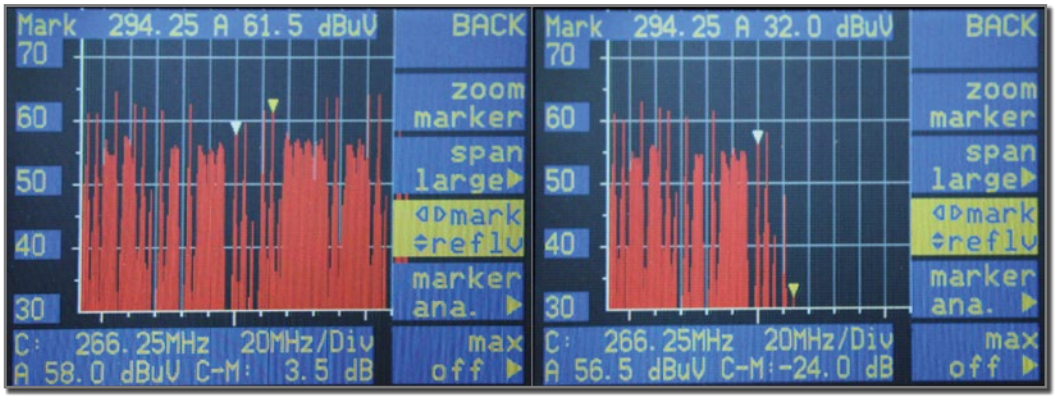
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■ **Example with a UHF filter of a pay TV operator: The left picture shows the whole CATV spectrum without any filter. The right picture shows the result of using a low pass filter with a cut-off frequency of 296 MHz.**



■ **The new catalogue by MFC gives an extensive overview of all available filters made by MFC. The catalogue can also be downloaded directly from their website: www.microwavefilter.com**

tive impact on neighbouring frequencies. In addition, receivers and other active elements within the system are at risk of malfunctioning due to interference.

The trick now is to filter out those unused frequency ranges that carry the interfering signals.

Existing signals can be filtered in a number of different ways. For one, it is possible to filter out signals above and/or below a certain specified frequency. Low-pass and high-pass filters are used to that end. A low-pass filter allows all frequencies below the cut-off frequency, while a high-pass filter lets through all frequencies above a set cut-off frequency. Unwanted frequencies that are outside the cut-off frequencies are highly attenuated, whereas the target frequency range comes through with minimal attenuation.

Now if you combine a high-pass filter with low cut-off frequency and a low-pass filter with high cut-off frequency it is even possible to only allow a single frequency range through the filter set-up. The correct term for such a configuration is band-pass filter.

If, on the other hand, a low-pass filter is used in conjunction with a high-pass filter that has a higher cut-off frequency, only the centre frequency space is filtered and what we get is a so-called reject filter.

Then again, what's the use of all those filters? To start with, they allow providing individual frequency bands to different receivers without those receivers having to share frequency bands. SCR (Single Cable Routing) distribution setups, for instance, make use of this approach, with up to eight receivers having independent access to all satellite channels via a

single cable that is led from one wall outlet to the next. In such a configuration, each receiver is assigned a dedicated frequency band with a central router modulating the required transponder onto the corresponding frequency band.

Network operators, on the other hand, use filters in analog CATV networks as well to make sure customers with less expensive subscriptions cannot receive premium channels. Those channels are usually transmitted on higher frequencies and a sealed low-pass filter at the transfer point just outside the house or apartment prevents those subscribers from watching channels they don't pay for.

The most important reason for installing filters, however, can be found in the fact that neighbouring signals are generally prone to interference from each other. Unlike the number of different applications and uses sharing the same resources, the frequency range cannot be increased at random and has to be accepted as a given, with all its capacity constraints. Even very strict technical regulations and mandatory frequency charts cannot do much in terms of interference prevention.

A prominent everyday example is interference in the DVB-T/T2 and ATSC range caused by LTE signals. As far as the regulator is concerned, all applications should work side by side in the frequency spectrum without doing harm to each other by using only those frequencies that have been specifically sat aside for each application.

We all know too well, however, that in the real world it's often an entirely different story.

Generally speaking, high-frequency interference can by caused by a number of different phenomena.

As far as receivers are concerned:

- Interference from neighbouring frequencies
- Interference in the IF (intermediate frequency)
- Interference in the LO (local oscillator) frequency

Interference can also be caused at the transmitting end:

- In addition to the desired emission frequency, neighbouring frequencies may be affected by unwanted emissions that are caused by the modulator.
- Harmonics emissions
- Interference caused by intermodulation

When it comes to selecting an appropriate filter it is paramount to understand all parameters given by the manufacturer. Listed below are the most important of them:

• Attenuation

Attenuation is measured in decibels and indicates the level by which the input signal is decreased. To find out the exact attenuation the signal level is measured first at input and then again at output, with the resulting difference in decibels (dB) being the achieved attenuation.

• Bandwidth

This parameter indicates the bandwidth of a band-pass filter, that is to say the frequency range that passes through the filter with a relative insertion loss of 3 dB or less.

• Cut-off frequency

This is the frequency that triggers either the high-pass

New High-Frequency Filters by MFC

for the C-Band

Model 18253 - C-Band (INSAT) Transmit Reject Filter

- This TRF provides deep rejection of the transmit band with minimal effect on the receive band.
- Ideal for INSAT and other Region-Specific Receive Applications
- Alternate Flange Configurations are Available Upon Request

Pass band	4.5 - 4.8 GHz (C-INSAT Downlink)
Insertion Loss	0.50 dB Max
VSWR	1.30:1 Max
Reject Band	6.725 - 7.025 GHz (C-INSAT Uplink)
Rejection	80 dB Min
Operating Temperature Range	-10°C to +60°C
Flanges	CPR229G
Dimensions	3.95" x 3.88" x 2.75" (100mm x 98mm x 70mm)
Finish	Gloss White Lacquer

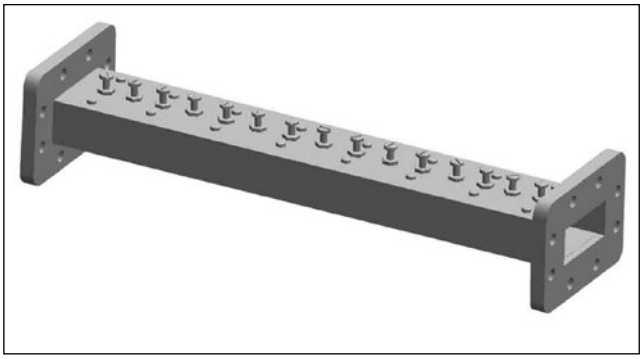
Model 18323 - C-Band (INSAT) Receive Reject Filter



- Same as before but rejection of the receive (Downlink) band

Passband	6.725 - 7.025 GHz
Insertion Loss	0.10 dB Approx.
VSWR	1.22:1 Max
Reject Band	4.5 - 4.8 GHz
Rejection	80 dB Typ
Flanges	CPR137/CPR137G
Dimensions	5.00" x 2.69" x 1.94" (127mm x 68mm x 49mm)
Finish	White Lacquer

Model 18506 - Multi-Purpose C-Band Transmit Filter



- This Uplink filter not only rejects the entire receive band (below 4.2 GHz), but it also rejects transmissions from other potential sources of interference etc., that RRFs do not.
- Ideal for use in high-density transmit paths, like:

Wireless Services (Point-Multipoint)	4.55 - 4.9 GHz
Maritime & Aeronautical Radio Navigation	4.2 - 5.6 GHz
Broadcast Auxiliary Services	6.95 -7.15 GHz

- Ideal for all "standard band" C-Band Uplink Applications
- Easy bolt-on installation and no power supply required

Passband	5.925 - 6.425 GHz
Passband Loss	0.3 dB Max
Passband Return Loss	17.7 dB Min
Rejection	50 dB Min @ 5.625 GHz 40 dB Min @ 6.725 GHz
Power Rating	400 Watts
Flanges	CPR137F
Dimensions	9.50" x 2.69" x 1.94" (241mm x 68mm x 49mm)
Finish	Gloss White Lacquer

filter or low-pass filter.

• Decibel

This measuring unit gives the relation between two signals (P1 and P2) based on the following equation:

dB = 10 Log10 (P1/P2)

• Insertion loss

Like any other active or passive element between the antenna and the receiver/transmitter the use of a filter causes a certain amount of overall signal attenuation. The insertion loss parameter indicates that attenuation, which should be as low as possible (max. 3 dB).

• Phase shift

This parameter indicates the runtime shift of the signal that is caused by the filter. In general, phase shifts become more pronounced with higher frequencies, which means digital signals are more affected than analog signals.

Problems in the C Band

WiMAX and radar applications (weather radar, in particular) are major sources of interference in the C band. For uninterrupted C band reception it can therefore be recommended to use band-pass filters that only allow the required frequency range to pass through.

As far as the C band is concerned, we have to draw a line between the standard C band and the extended C band. To complicate matters even further, some regions, such as Russia for example, use a slightly different frequency range for the C band.

This means that the actual frequency band defines the filter to be used. In recent years, WiMAX (Worldwide Interoperability for Microwave Access) has become a source of much frustration. WiMAX is used for wireless Internet access in the 2300 MHz, 2500 MHz and 3500 MHz bands and as such has enormous potential for causing interference in the C band.

The standard approach in such a case calls for adding a highly selective band-pass filter, whose frequency range corresponds to the local footprint (that is 3700-4200 MHz, 3400-4200 MHz, etc.). More recently, however, WiMAX was also launched in many regions worldwide in the 3400-3800 MHz frequency band. The resulting in-band interference in the C band can no longer be eliminated with the help of conventional band-pass filters, since signals from WiMAX transmitters using 3700 MHz and consequently impacting the 3700-4200 MHz range, will still come through with a standard band-pass filter that allows all frequencies between 3700 and 4200 MHz to pass through. This means the interfering WiMAX signal is not blocked and such a filter does not solve the problem. A special filter is required in such a scenario – one that only lets through signals on frequencies of 3750 MHz and above, for example.

Filters for such high-frequency applications are extremely complex and a lot of expertise and experience are necessary for designing state-of-the-art filters. What's more, special manufacturing processes must be adhered to, since we're not only talking about the odd electronic switch or circuit here. High-frequency signals are transmitted even without electronic conductors in place, which is why such filters mainly consist of hollow conductors in the form of waveguides.

When you look at one of those filters as an absolute layperson, it's almost impossible to tell where and how the filter can be integrated into the existing reception system. The answer is surprisingly straightforward: right at the antenna between the feed horn and the LNB/LNA.

Filters of this kind are mainly produced with computer-assisted milling in combination with special CAM software which calculates the exact milling movements. As far as the C band is concerned, MFC is the leading manufacturer worldwide of filters for eliminating interference. No other company even comes close to MFC and its comprehensive portfolio of filters for radar, WiMAX or any other signal causing interference.

All it takes is a look at recently introduced filters, which MFC has started to produce not too long ago to see what this company is made of. And of course TELE-audiovision readers can take a first-row seat when some of MFC's major new developments take centre stage below.

For filters in the C band there's no way around MFC, a company specialising in the development and production of those special purpose filters, and which therefore is in a position to offer products with top-notch specifications.

C-Band	TX(MHz)	RX (MHz)
Standard	5850–6425	3625–4200
Extended	6425–6725	3400–3625

New High-Frequency Filters by MFC

for the C-Band

Model 13961W-I - International (Extended)
C-Band Interference Elimination Filter



• No other filter in the industry provides as much rejection of undesired signals in such a compact size.
• Eliminates WiMAX, RADAR and virtually all other sources of out-of-band interference
• Lightweight - Aluminium Construction
• Ready to install between LNB & feed horn

Pass band	3.6 - 4.2 GHz
Pass band Loss	0.5 dB Typ @ centre band 0.5 dB Typ roll-off @ band edges
Pass band VSWR	1.5:1 Typ
Group Delay Variation	8 ns Max
Rejection	45 dB Typ @ 3.55 GHz / 4.25 GHz 55 dB Typ @ 3.45 GHz / 4.35 GHz 70 dB Typ @ 3.40 GHz / 4.40 GHz
Flanges	CPR229G (Input), CPR229F (Output)
Length	5.49" (13.9 cm)
Weight	1.125 lbs. (0.51 Kg)
Finish	Gloss White Lacquer

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10 лет BSD интернет форуму в Бразилии



■ Marcos Benni set up his new office here in Jundiai.

- ***Самый большой интернет форум по цифровому ТВ в Бразилии***
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- ***Внедряют новый тип он-лайн шоппинга по цифровому ТВ – видео-магазин***
- ***Активны также в области IP TV и IP радио***

Thank You from BSD



10 years of BSD was only made possible by the cooperation of everyone who sent in satellite and terrestrial channel information. 10 years of BSD was also made possible through the partnerships with the BSD portals who supported all of the work. A special thank you to all the hobby friends, antenna installers, technicians, engineers and satellite and TV channel directors. BSD is especially grateful to Gilson Teles for his news and reports in the BSD SatClub forum, to Danilo Rodrigues for the programming of the BSD website and to all the other IT workers and to Valdecir Adorno and Francisco Crispim for their tireless work in the BSD SatClub forum satellite channel section.

Marcos Benni
portalbsd.com.br

New Concept at BSD

The Brazilian Internet forum BSD went online for the first time in October of 2006 under the address portalbsd.com.br. The forum that deals with anything and everything related to digital reception is the brainchild of Marcos Benni who himself is a very enthusiastic DXer. We introduced you to him and his enormous 5.0-meter antenna in the 12-01/2012 issue of TELE-audiovision. A lot has happened since then and the 10th anniversary of the forum provided us with a good opportunity to find out how BSD is doing today.

It turns out that Marcos Benni is working on something new and big! He moved into a brand new office and is in the process of starting a new concept in Internet business. „My idea is to introduce the products in short videos. This would make it much easier for anyone interested to see what the products are good for and where they can be used." To make this all as professional as possible, he set up a real TV studio in his office. At the time of our visit, everything was still under construction but by the time you read this issue of TELE-audiovision, bsdshop.com.br should be fully operational.

„I will be offering all products related to digital TV, from satellite dishes, normal and fiber optic LNBs, up to cables and all varieties of receivers and satellite finders", lists Marcos Benni known



Marcos Benni in his office. He enjoys reading TELE-audiovision that regularly reports on Brazilian companies - just like his own company BSD.

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www.ccbn.tv



■ You can see the parade of dishes on the roof of his BSD office from a side street.

to everyone simply as Benni. But Benni is also active in IPTV: „I have here an IPTV showroom where customers can see the technology live in action while I explain how it works." Not only that, IP Radio is also one of Benni's hobbies so he's able to offer the necessary technology to anyone who's interested. „Starting in October 2013 I will once again be broadcasting Radio BSD over the Internet, this time through Shoutcast."

Benni set up everything he needs for his activities in his new 140 Sq-meter office. „With 400,000 visitors every month of which 80% are from Brazil, my forum is one of the largest in the country", says Benni referring to portalbsd.com.br's impressive polling numbers.

Anyone who needs digital TV information can get it from his forum. „I've installed several satellite dishes here in my office that I use to watch every receivable channel as well as keep the news section in my forum up to date." Benni has a row of dishes ranging from 3.0-meter C-band dishes to smaller Ku-band antennas. Benni in his office is now living the dream of any satellite DXer. With his new product-video-based store he wants to take the success of his Internet forum and apply it commercially. We wish you the best of luck over the next ten years!



■ We first reported on Marcos Benni and his BSD Internet forum back in the 12-01/2012 issue of TELE-audiovision. The full report can be viewed here:
www.TELE-audiovision.com/TELE-satellite-1201/eng/bsd.pdf





■ Telephone orders from BSD customers are taken here.

1. Customers that come directly to BSD's headquarters are met here in the Reception area.

2. A small selection of digital TV receivers that Benni will offer in his BSD shop.





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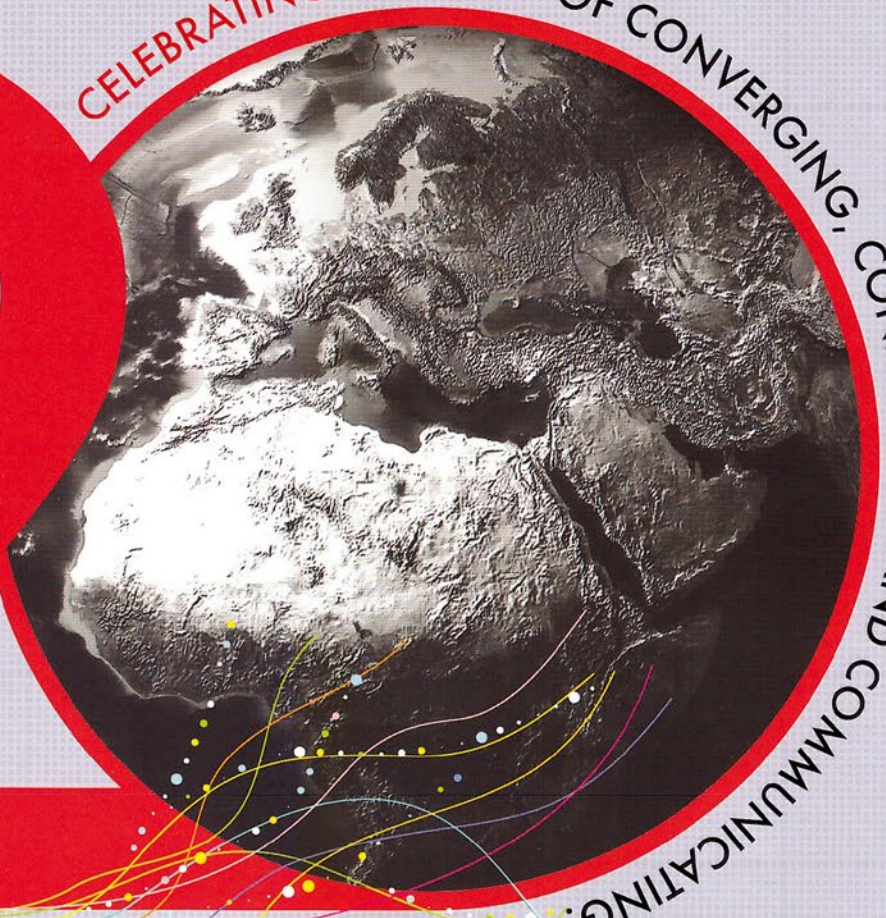
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■ The TV studio is not quite ready to go yet although the first test recordings are already taking place. Gilson Teles can be seen here presenting GlobalInvacom's fiber optic LNBs; he wants to make them known in Brazil.



Benni in his element: Benni has set up the video mixer and PCs in the control room of his new TV studio.

Два миллиона подключений с Global Invacom‘s FibreIRS



- *Изобрели новую технологию IF спутниковой передачи через оптоволокно*
- *В 2015 году ожидается 5 миллионов подключений с FibreIRS*
- *Благодаря постоянным технологическим улучшениям, FibreIRS могут теперь поддерживать более чем 4000 подключений от одного спутникового конвертера; а для профессиональных приложений - это несколько десятков тысяч.*
- *14 различных инженеров и исследователей постоянно работают над улучшением системы*
- *Северная Европа, Северная Африка и Юго-восточная Азия – самые большие FibreIRS рынки*



GlobalInvacom's headquarters in Stevenage north of London. GlobalInvacom used to occupy only the left hand side of the building, now they have leased the right side as well. That's where you'll find their FibreIRS R&D group.

Congratulations! Five Years of Fibre Optic Systems from GlobalInvacom

Alexander Wiese





■ Ivan Horrocks is happy: GlobalInvacom's FibreIRS system is celebrating its fifth birthday with two million users connected to optical satellite signals.



1. Gary Stafford is responsible for GlobalInvacom's business development. He came up with the idea in 2007 to distribute the satellite IF of an LNB via fibre optic cables. From there came the FibreIRS products.

2. Matt Presdee looks after their Technical support for the sales department and is very familiar with the wiring of GlobalInvacom's devices. Here we see him on the balcony of GlobalInvacom's headquarters in Stevenage north of London. Using a number of satellite dishes (equipped, of course, with GlobalInvacom fibre optic LNBs) he tests their products.

3. Dr. Andrew Collar is especially familiar with optical technology. Here he is performing experiments with an optical polarization controller to determine the system performance characteristics of an optical system.

4. Mike Jones is one of the principle technical designers for the optical system

In 2008 the first fibre optic LNB was introduced by GlobalInvacom. This made it possible to carry a satellite signal from a fibre optic LNB across miles of fibre optic cable and then, even more importantly, split it multiple times without any concern for signal attenuation. Five years have gone by since then so we wanted to know how things were going with fibre optic technology; has it been successful?

The answer to this question is a resounding YES! This is true even though this involves a completely new technology; distributing satellite signals via coaxial cable is still standard today. Coax technology has long been a proven method and has been in use for more than 100 years. A fundamentally new technology would be difficult to push through - it would have to have many advantages and these advantages would have to be obvious.

Sure enough, Ivan Horrocks, GlobalInvacom's Sales Director, says the FibreIRS system has been a great success: „In the five years since its introduction, we estimate that this technology has been used to connect in excess of two million households."

Over the past several years GlobalInvacom has continued to develop this fibre optic technology under the name FibreIRS (Fibre Integrated Reception System). Especially interesting is the expansion to terrestrial TV signals such that today GlobalInvacom's system can be simultaneously used for satellite signals as well as terrestrial TV signals.

Ivan Horrocks explains to us how this all got started: „Gary Stafford came up with the original idea." He runs the Business Development section and began working on an LNB system that distributed signals via fibre optic cable. „Our first FibreIRS product was still fed directly from the LNB and distributed the signal through a 16-way split regime." An improved model was introduced in 2009 where the LNB signal could be distributed so a maximum of 32 users could be connected directly to the fibre optic satellite signal.

„In 2010 we expanded the system again by introducing the ODU32 which allowed terrestrial TV signals to be added. In 2011/2012 we introduced the wholband splitter which allowed us to combine 4 X ODU32's together catapulting the maximum number of subscribers to 256. But this was still not enough."

But it still wasn't enough: „Our newest system is the just recently developed O2E Converter: with this system we can connect sixty four 64-output ODU32's." This results in an incredible 64 x 64 = 4096 connections, all fed from a single LNB that can be installed on a single satellite antenna installed in an optimal location since distances are not a factor when using a fibre optic signal distribution system.

GlobalInvacom FibreIRS product sales have been increasing 20% year after year. „Of course, this is subject to fluctuations", we learn from Ivan Horrocks, „Our largest market is northern Europe. There we sell 40 -50% of all our fibre optic products. Another important market is MENA (the Middle East and North Africa), 20% of our fibre optic products are shipped there." He sees the strongest growth in Southeast Asia: „Sales have greatly increased there. Right now it encompasses about 30% of our fibre optic products."

GlobalInvacom's best-selling fibre optic product is the Quattro model. „Multiswitches are connected to these and are therefore best suited for smaller communities." The highest growth can be seen with the Quad model: „Four receivers can be directly connected to this model and is the best way to go with individual reception in homes (Direct-to-Home)." As you can see, more and more private homes as well as the installation in single apartments or houses are opting for GlobalInvacom's fibre optic system.

And there's even more news from GlobalInvacom. Business Development Manager Gary Stafford tells us more: „In 2012 we acquired the two produc-



2



3



4

tion operations in China that produce our fibre optic products; we have been trading since then as a Plc on the Singapore stock exchange." Because of this and also because of the steadily increasing number of employees, the total number of employees right now totals 1600. „About 1200 of those are involved in production", explains Gary Stafford, „In Great Britain there are about 300 employees and in our branch offices in the USA, Singapore and Ma-



A monitor in the main reception area shows the FibreIRS system in action with the pictures then being relayed by the new wireless link.

laysia there are another 100 workers." GlobalInvacom has 60 engineers in their R&D group and they focus on new products and the further development of existing products. „14 engineers in the R&D group work on the FibreIRS product line." This is quite amazing considering that at the beginning of FibreIRS development in 2007 there was only one single developmental engineer.

It comes as no surprise that GlobalInvacom consistently introduces new fibre optic products. „We're opening a completely new segment within the fibre optic system with a converter set that would take the frequency range starting at 87 MHz all the way up to 2300 MHz and convert it into the optical range. This product is ideal for the transmission of a single satellite polarization level simultaneously with terrestrial signals." In this way GlobalInvacom's fibre optic system will also be compatible with C-band systems where usually only one polarization level would be carried.

„Especially interesting is the very low price of this new system consisting of the coax-fibre converter and the corresponding fibre-coax converter", comments Ivan Horrocks. „You don't even need any special knowledge of fibre optics in order to install this system and thanks to this system you can span

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Monthly Broadband＊Broadcasting＊Business Magazine

Cable Television, Multi-Channel Satellite Broadcasting, IPTV, Mobile TV etc.





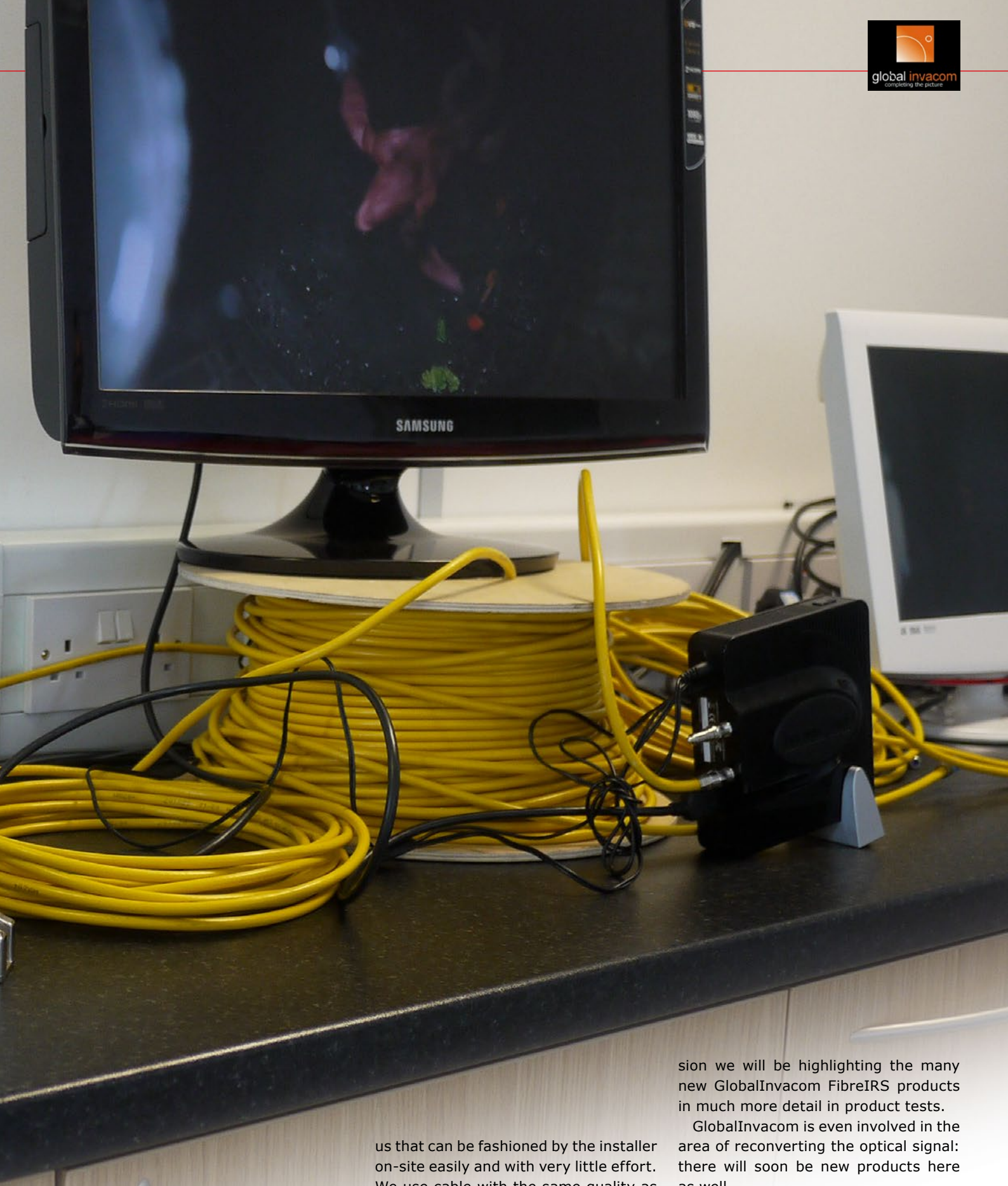
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Monthly B-Maga (Broadband Broadcast Business) / Founded June 2002 / Single issue price: 1,500 yen / In Japanese (cover and table of contents in English)

www.satemaga.co.jp



Another new GlobalInvacom product: the development of the tvLNK HD system. The HDMI signal, for example from a satellite receiver is distributed using a standard coaxial cable. Using a wideband splitter the HDMI is split into four receivers; allowing four TV's to be connected to one HDMI source. It is noteworthy to mention that additional services such as Digital TV and satellite can be combined onto the same coax cable using the loop through. Being in the tvLINK family means that remote control functions are passed back along the coax to enable changes from each remote location. The addition of a USB dongle enables further expansion to connect a number of streaming devices via a local router.



extreme distances that you couldn't do with standard coax cable."

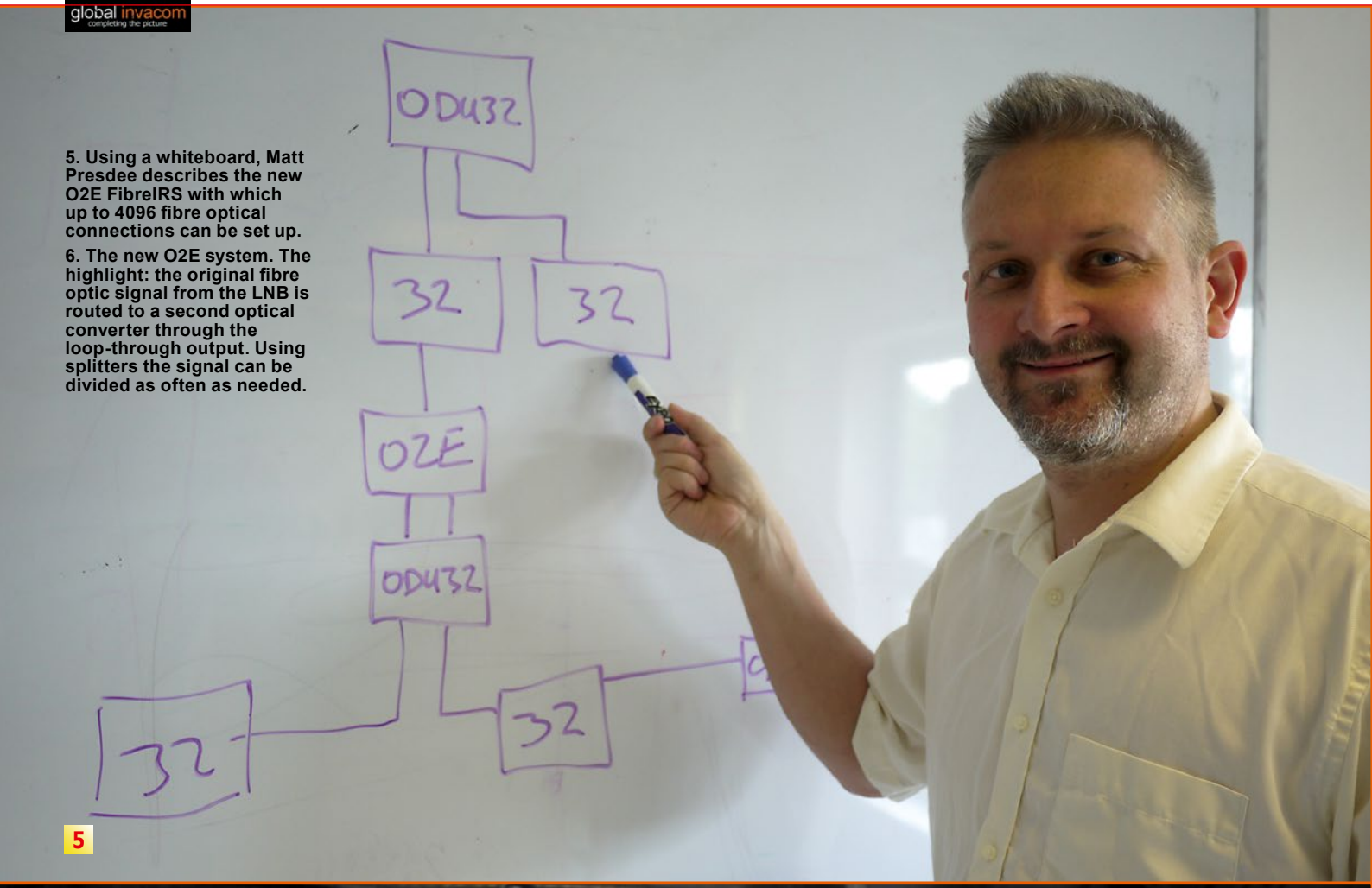
This new system that can carry a single satellite polarization level is further enhanced with another new system for fibre optic cables. „For our professional systems we offer pre-made cables but now you can get fibre optic cables from us that can be fashioned by the installer on-site easily and with very little effort. We use cable with the same quality as G657A2 cable except that it can be prepared using an easier and less expensive splicing device." This would allow the installer to utilize precise cable lengths by simply cutting them from a roll of cable. This would be much easier for the installer.

In upcoming issues of TELE-audiovision we will be highlighting the many new GlobalInvacom FibreIRS products in much more detail in product tests.

GlobalInvacom is even involved in the area of reconverting the optical signal: there will soon be new products here as well.

Five years ago GlobalInvacom began moving in a direction away from ancient coax cable technology towards the future of optical signal transmission with its enormous bandwidth and extremely low attenuation.

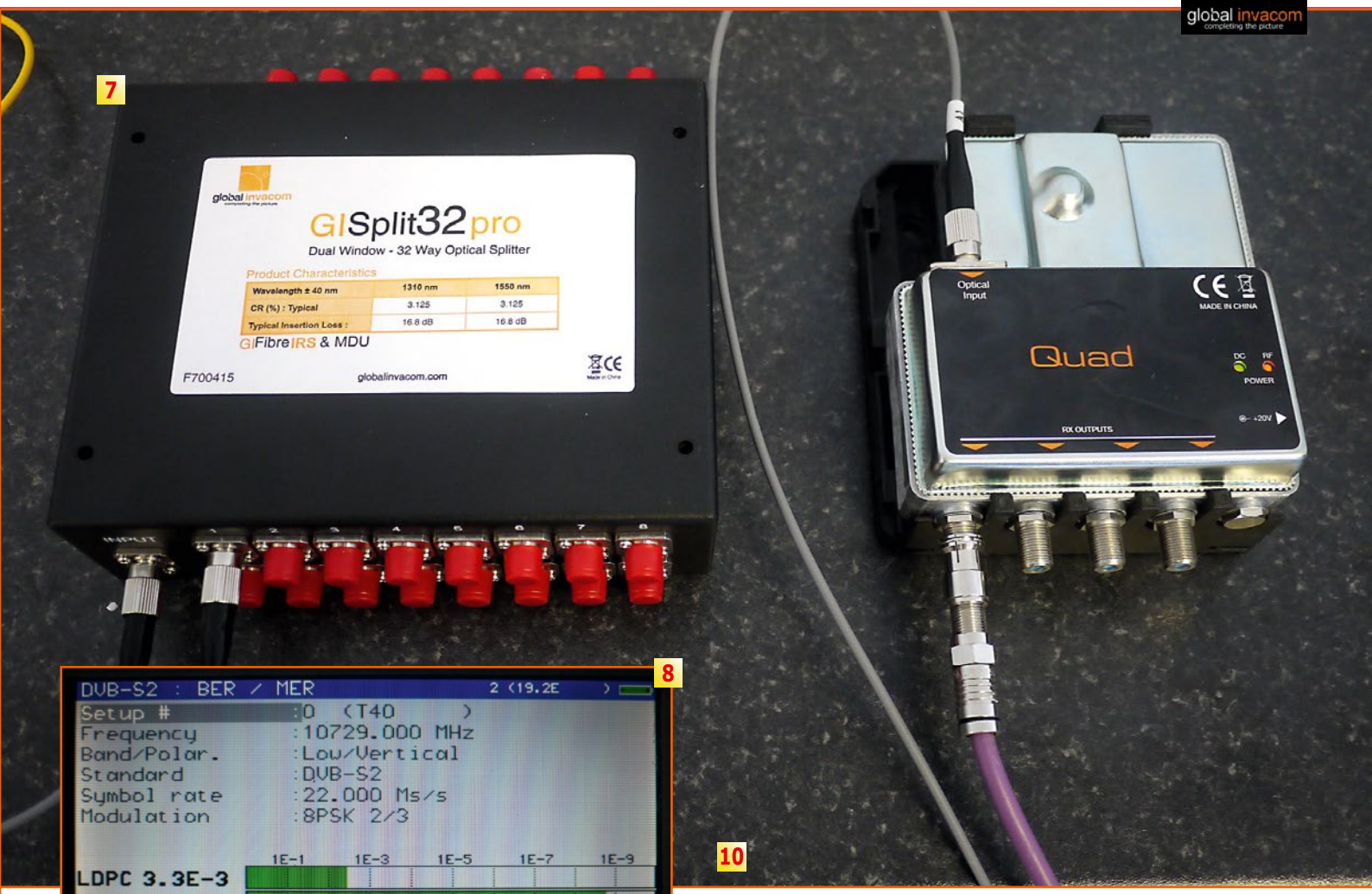
The technology of the future is being offered by GlobalInvacom today.

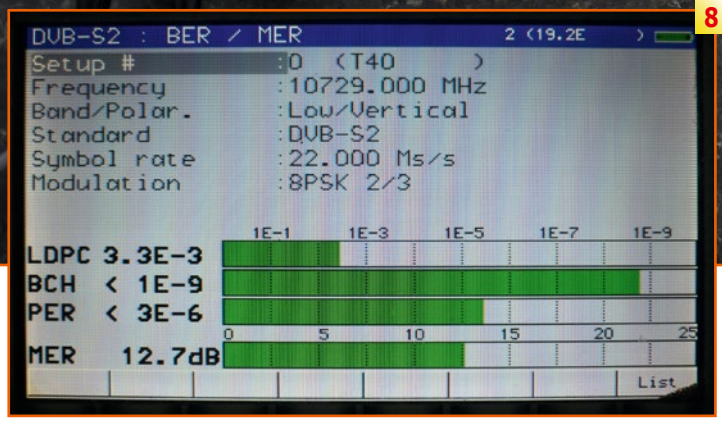


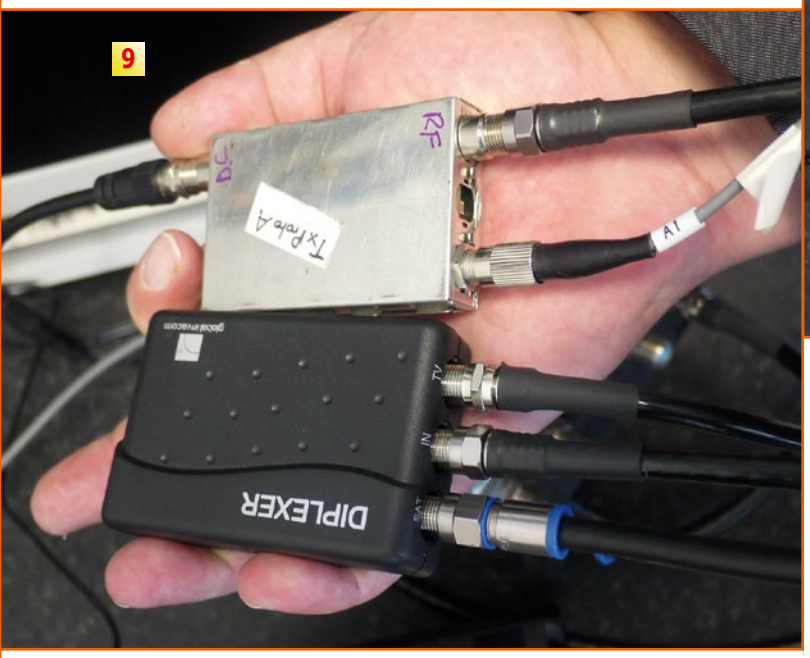
5. Using a whiteboard, Matt Presdee describes the new O2E FibreIRS with which up to 4096 fibre optical connections can be set up.

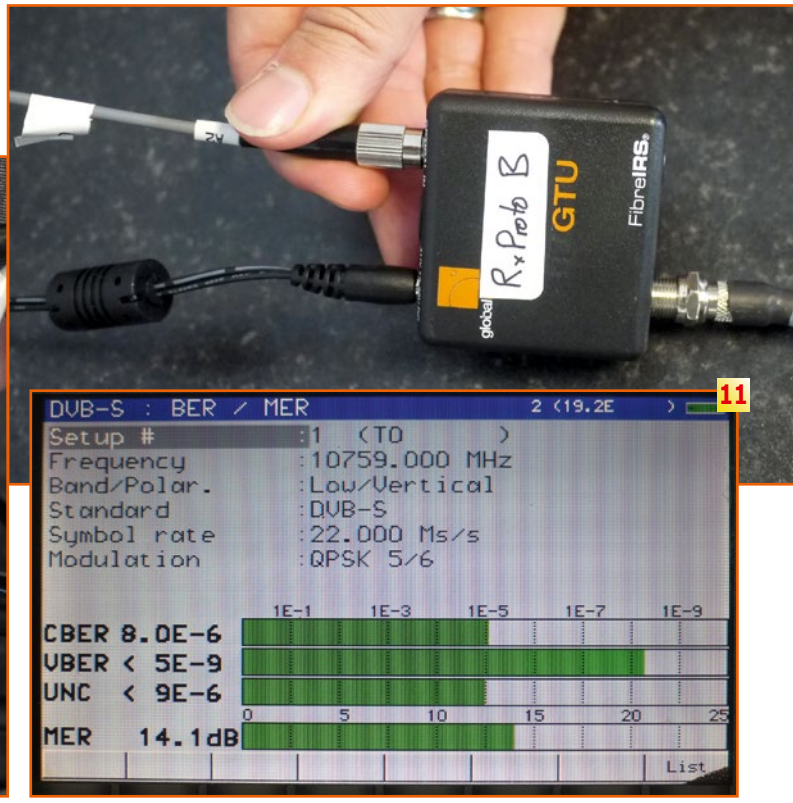
6. The new O2E system. The highlight: the original fibre optic signal from the LNB is routed to a second optical converter through the loop-through output. Using splitters the signal can be divided as often as needed.











7. Here we see a Quad GTU connected to a 32-way splitter.

8. The display on the analyzer shows the result: the signal quality is flawless

9. Prototype of the first coax-fibre and fibre-coax converters: the satellite IF signal is combined with the signal from a terrestrial antenna in a switch. The combined signal, that could lie in the range from 87 to 2300 MHz, is converted to an optical signal that can then be carried over very long distances.

10. At the other end the optical signal is then reconverted back to the original frequency range. The system is available as a set and is meant for use in inexpensive installations.

11. Here too: the analyzer shows the exceptional signal quality after conversion from the optical range back to the original frequency range.



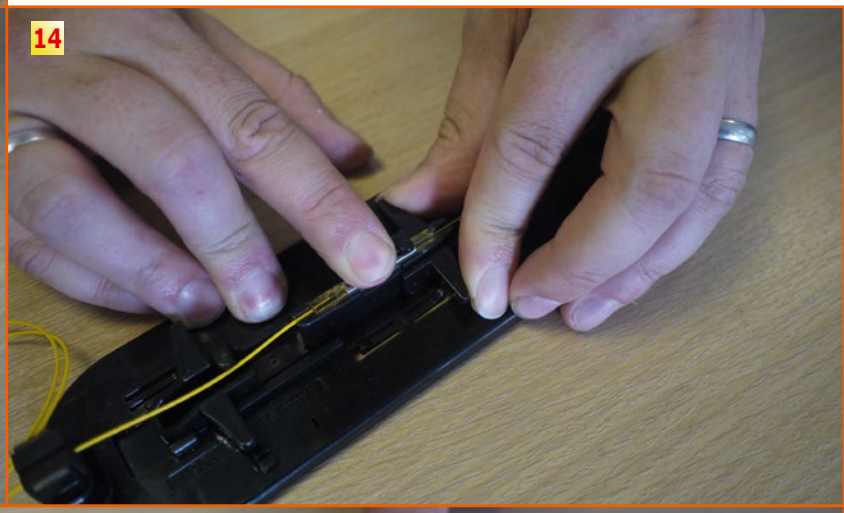
12. One of the problems that has slowed down the practical implementation of fibre optic technology and that has essentially put up a road block is the connecting of two fibre optic cables. With this new system GlobalInvacom is incorporating a much easier method that doesn't involve high-priced splicing machines. The picture shows how the core of the optical cable is cut with this device such that a flat and lossless edge results. The optical cables need to be connected edge to edge. In order to actually achieve a true flat edge, the best method is the effective breaking of the optical cable.

13. The connector plugs are placed in this holder and the ends of the fibre optic cables can be inserted through the template easily and securely.

14. A push on the ends locks the flaps. The inner conductor of the optical cable is then tightly pressed and the two cable ends touch each other without any loss (nearly).

15. The complete set with the cable cutter (actually, cable breaker), the connection template and a set of plugs. The small yellow section of fibre optic cable shows the two types of plugs: One with a pre fitted connector for customer connection and the second to splice bare fibres together.





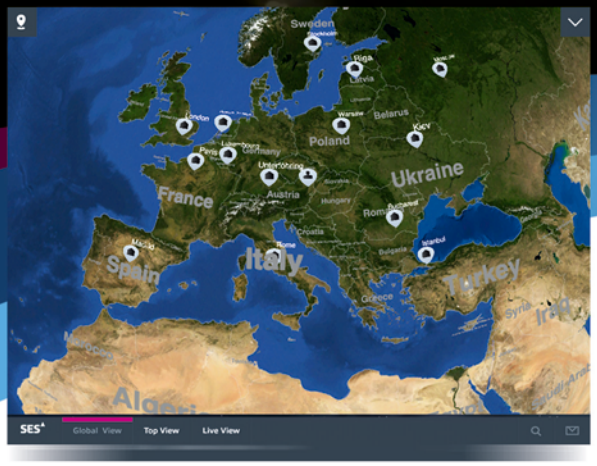


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(Niclas Friese Greene, Senior Vice President of Marketing and Corporate Communications, **SES)**

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Five Years FibreIRS from GlobalInvacom

1

Here INVACOM is constructing the future



Andrew is INVACOM's Fibre Project Manager. He has the stressful job of building a new future: linking the LNB with fibre optic cables.



Mike checks out the prototypes. Here we see a sample product: an artificially produced satellite signal is sent over a 30-meter long fibre optic cable to a converter. He uses a test probe to determine if the original signals arrive at the analyzers within tolerance.



This is what the wall plate prototype looks like: the fibre optic input is on the front while the standard connection for a receiver coax cable is on the back. As you can see, the wall plate needs power. In actual use later, the wall plate will get its power from the satellite receiver's LNB input.



The future has already started and TELE-satellite readers already know more: here is the first prototype of an LNB with a fibre optic connection. The "F" connector is only used to supply the LNB with power.

2

TEST REPORT | Optical LNB |

The Future Starts Now:

Global Invacom Optical LNB

The Satellite Reception Revolution

Time flies when you're having fun! It was just about a year ago when TELE-satellite ran an exclusive on an optical LNB; a Global Invacom invention.
This wouldn't be the first time that this company, based in Stevenage near London, has made headlines when it comes to direct satellite reception, but the introduction of the optical LNB will undoubtedly become a developmental milestone that has occurred in the age of satellite reception over the past several years, if not decades. But what is it that's so revolutionary about an optical LNB?



Back in the 04-05/2008 issue, TELE-satellite published an exclusive report on the first official public demonstration of optical LNB from Global Invacom





ognizable by any standard satellite receiver.

These GTU's from Global Invacom are available in Twin, Quattro or Quad versions. While the Twin and Quad versions are connected directly to a receiver, each output of the Quattro version delivers one of the four band/polarization combos and is typically integrated with existing multiswitches. This means that one fibre-optic cable can carry the entire frequency range of a satellite. A 3mm thick fibre-optic cable running from the optical LNB is all that's needed.

Since the light beam contains the entire frequency spectrum of a satellite, it is possible to connect as many receivers as is needed with each operating independently from all the others – all from this one fibre-optic cable. Even, for example, if an entire large apartment building needs to be supplied with satellite signals, the optical LNB brings with it enormous possibilities.

From this point it would be enough to lay one fibre-optic cable from the LNB to a central distribution point. It would then be split into multiple fibre-optic cables with one routed to every floor of the apartment building. On every floor the cable would be further split and routed to each individual apartment. The end user would then be able to connect not just one receiver, but, for example, he could easily connect a Twin Tuner PVR in the living room, another receiver in the kids room and yet another in the bedroom.

If standard coax cable were used, each apartment would need four coax cables from the multiswitch in order to accomplish the same thing.

It's not hard to recognize the enormous potential that optical LNBs have. It greatly simplifies and reduces the installation costs of larger satellite reception systems. It also brings with it new possibilities even for individual users. We all know this problem: while planning a satellite system a few years ago, who would have expected the big boom in Twin Tuner PVRs? Many of these systems only included one signal cable and in many cases there's no more room to add any extra cables in the ductwork.

Up until now, you had to make do with fairly decently functioning stackers or muddle through using the loop-through feature on a receiver. But in the future it will be enough to swap the existing cable with a fibre-optic cable so that four or even more receivers can be used at the same time and totally independently from each other.

Installation

The optical LNB is somewhat larger than a standard LNB and elongated. It's not surprising; the entire electronics needed to convert to an optical signal has to fit inside. Underneath the LNB are two connections, the optical output for the fibre-optic cable and also an "F" connector. The "F" connector is not used for any signal transmissions; instead it is used as the power connector for the LNB since no power can be carried by the fibre-optic cable.

Global Invacom chose an "F" connector for good reason. Yes, a typical power supply connector could have been used but why go that route if a coax cable is already in place? Many existing systems will convert to using an optical LNB and that's why the "F" connector makes sense. The existing coax cable is simply plugged into the "F" connector on the LNB; the other end of the coax cable is connected to the included power supply which in turn is plugged into a wall outlet. The coax cable becomes the power cable for the LNB.

Unlike coax cable which is relatively insensitive to dirt accumulation, the cleanliness of fibre-optic cable is much more critical. The problem is not with the cable itself – it is encased in a metal jacket that helps prevent the cable from getting bent, twisted or otherwise deformed – but with the connectors: they require extreme cleanliness. For this reason, Global Invacom offers their own special cleaning cloth which is used to clean the ends of the fibre-optic cable before being connected to the LNB or converter box. And while we are on the subject of cables, Global Invacom will also be offering matching prefabricated cables once the sale of the optical LNBs has begun. Sizes will include 1m, 3m, 5m, 10m plus various additional lengths up to 200m.

With the help of an adapter plug, these prefabricated cables can be connected together so that any desired length can be achieved. Global Invacom will also make the fibre-optic cable available by the meter without any connectors. In this case special equipment will be needed to attach the optical connectors. The fibre-optic cable, like other standard cables, is further protected from dirt and moisture with a rubber outer casing that surrounds the metal protective jacket. This outer casing is available in a variety of colors or if necessary can be painted to match the environment. Additionally, it is an LSZG (Low Smoke Zero Halogen)

material that won't give off any poisonous smoke if it should catch fire.

Another important advantage of fibre-optic technology is that it is completely immune to any electromagnetic interference. Fibre-optic cables can therefore be placed in close proximity to strong electrical fields without any problems at all. Nothing like that exists in the TELE-satellite building but in order to be prepared for future applications, we ran a 50m long fibre-optic cable through existing ductwork past electrical and data cables from the roof all the way to our test center.

The small diameter of the fibre-optic cable came in handy here: roughly three fibre-optic cables fit in the same space that one coax cable required. Since the cable is quite robust thanks to its metal jacket, we were able to pull it through ductwork without any complications and even bend it around corners that were less than 90°.

Everyday Use

Once we laid the fibre-optic cable all the way to the office roof, we swapped the old standard 0.3 dB noise figure LNB that was on our offset antenna with the optical LNB.

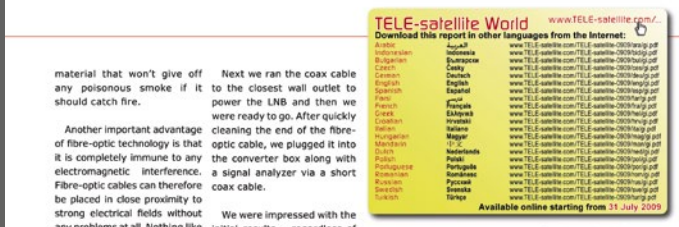
Next we ran the coax cable to the closest wall outlet to power the LNB and then we were ready to go. After quickly cleaning the end of the fibre-optic cable, we plugged it into the converter box along with a signal analyzer via a short coax cable.

We were impressed with the initial results – regardless of what frequency was received and the satellite we were pointed to, the optical LNB was a step ahead in terms of signal quality. These results did not change when the fibre-optic cable was split four times and connected to four receivers that were operated at the same time. The higher MER values on HOTBIRD at 13° east were clearly recognizable as were the strong signal peaks in the spectrum.

The results that the optical LNB delivered were so impressive that our standard 0.3 dB noise figure LNB together with 50m of coax cable simply could not keep up.

According to the manufacturer, the splitting of the fibre-optic cable is currently limited to 32 outputs. This limitation exists because of the laser's signal strength. For special applications, Global Invacom can generate a stronger laser signal so that the number of outputs can be increased as needed.

The extremely small signal attenuation through the fibre-optic cable of a mere 0.3 db over 1000 meters (!) definitely comes into play here.



Optical LNB Applications

If the Global Invacom idea catches on, then there will no longer be a need to use coax cable for direct satellite reception and we don't see any reason why this vision shouldn't become reality.

Fibre-optic cable is not any more expensive than good quality coax cable. The optical LNB is in practice identical to standard LNB models; even supplying the power via the coax cable should become the norm.

Not only that, fibre-optic cables can be used anywhere;



1. TELE-satellite first reported on GlobalInvacom's new optical system in the 02-03/2008 issue. Back then the system was still in the development stage

2. The first test report of the new optical system was published by TELE-satellite in a worldwide exclusive in the 08-09/2009 issue.



At first you might be thinking that it's one of Luke Skywalker's newest weapons, but in reality it's one of the most ingenious ideas that we have seen in several years; an idea that does away with the biggest problem facing the direct reception of satellite TV: namely the signal attenuation or signal loss in the coax cable between the LNB and receiver as well as the problems associated with signal distribution to multiple users.

But what's so special about an optical LNB? First we want to remind you how a standard LNB works: the LNB receives the focused satellite signals from the antenna, converts them to a different frequency range and routes these signals to a satellite receiver tuner via a coax cable.

Since this frequency range is limited to 950 to 2150 MHz, two tricks had to be used in order to receive the entire frequency spectrum of a satellite. The first would be the polarization of the signal and this would be either a vertically or horizontally polarized signal. Circularly polarized signals (left and right) are also used but on a much smaller scale. It really isn't necessary to go into any additional detail on circular polarization; for the purposes of this article they behave in the same way.

The 13V or 18V control voltage carried by the coax cable to the LNB dictates whether vertically (13V) or horizontally (18V) polarized signals are received by the LNB. The second is the 22 kHz control signal that is used to switch between the low and high bands. The low band covers the satellite frequency range from 10.7 to 11.75 GHz while the high band covers from 11.8 to 12.75 GHz.

If the LNB "sees" the 22 kHz control signal from the receiver, it sends the high band signals via the coax cable to the tuner. If the 22 kHz signal is not there, the LNB switches to low band. In the end there are four possible scenarios (vertical or horizontal in low band OR vertical or horizontal in high band) but only one of them can be used at any one time.

If it's a single satellite antenna system for just one user, then everything is fine and dandy. But the moment there are more than one user receiving satellite TV from the same antenna, that's when the first problems surface. If, for example, user "A" needs the LNB to operate in the vertical low band, everyone else on the same system would be stuck receiving the same vertical low band signals; the number of available channels would be severely limited. In reality, such a setup would make absolutely no sense; none of those users would have any fun watching TV.

Up until now, this type of problem was solved using LNB's with up to eight individual outputs; each attached receiver would be able to operate independently of all the others and get whatever band/polarization it needed.

If more than eight end-users were involved, multiswitches would then come into play. In this case a Quattro LNB with four unique outputs that cover the four band/polarization combinations would be used. These signals would then be distributed to as many users as is needed. But all is not as simple as it seems. All of the coax cable that is used along with the various multiswitches used for signal distribution bring with it signal attenuation that in truth cannot be ignored. The signal attenuation associated with 8 to 10 user outputs can still for the most part be considered negligible. But with 20, 30 or even 40 outputs, the signal attenuation problem could be quite significant.

This is where the optical LNB comes in. A stacker built into the LNB converts the four band/polarization combinations into different frequency ranges between 0.95 and 5.45 GHz. Afterwards, the RF signal is converted to a digital signal and transmitted by laser via a fibre-optic cable. Hence the name optical LNB.

At the other end of the fibre-optic cable, the light beam enters a converter box called a GTU (Gateway Termination Unit) where it is transformed back into a signal that is rec-





30m Fibre-Optic Cable with Connectors

it doesn't matter if it's placed next to high-voltage lines or even a powerful electric motor. Global Invacom even thought about those customers that receive DVB-T signals via a coax cable: thanks to a special adaptor, fibre-optic cable can be used here too.

Optical LNB Advantages

The biggest plus with the optical LNB is that all four band/polarization combinations can be transmitted through the one cable at the same time.

That brings with it the advantage that the signal can be split as often as needed and that each output can operate completely independently from all the others. The extremely long distances that fibre-optic cables can be run without any appreciable signal attenuation is another huge bonus.

Fibre-optic cables are small in size and will easily fit in any ductwork. Because of its extremely low signal loss, it is significantly better over very long distances than coax cable in terms of signal quality.

With weak signals this could easily be the difference between receiving a signal and not receiving it. Distances covering several kilometers can be run without any significant signal loss; Global Invacom has already performed some field tests in that regard. Additionally, the optical system has lower material costs compared to systems using expensive multiswitches.

Price

What would it cost to convert to an optical system? In many cases, the implementation of an optical LNB can actually lead to cost savings since the setup of a system for multiple users can now be calculated differently than in the past. Only one LNB at about 200 Euros is needed. The material needed to connect two or four receivers is also around 200 Euros. The necessary fibre-optic cable runs a little under 2 Euros per meter (shorter lengths with connectors cost more per meter versus longer lengths that cost less).

Then there are the optical splitters that run about 30 Euros for a two-way splitter, roughly 70 Euros for a four-way splitter up to 160 Euros for an eight-way splitter. The installer would also have one-time costs associated with optical test equipment.

Outlook for the Future

For Global Invacom the market introduction of the optical LNBs is only the first of many large steps. At the moment the signal makes its way from the LNB to the converter box via a fibre-optic cable but the remaining short distance to the tuner is still covered by a coax cable. For this reason Global Invacom has already been in contact with tuner manufacturers with the idea of incorporating fibre-optic technology directly in the receiver. For the end user this means that no converter box would be needed and that the signal could be carried digitally all the way to the chipset in the receiver.

As we would expect, Global Invacom is thinking even further ahead and already has the technology to carry not only satellite signals but also telephone, Internet and local network services.

This would mean that the TV, receiver, PC, telephone, etc, would not only be served by a single cable, but that all of these devices could communicate with each other through the fibre-optic cable. Controlling all of these devices now takes on a whole new meaning. The optical LNB should prove to be a formidable competitor to the classic coax cable system setup. Who would be satisfied with a limited preset number of channels when they can receive the entire frequency spectrum of a satellite with 1000 channels free of charge?

And thanks to Internet access and telephone via Global Invacom's fibre-optic technology, cable's Triple Play promotion doesn't count for much anymore. An optical LNB allows the transmission of these three communication services more cost effectively to as many households as is needed over long distances and with more choices for the end-user. We should also mention that Global Invacom's fibre-optic technology could revolutionize Internet access in the future since no other type of connection today is as fast as via a fibre-optic cable and let's not forget that the same fibre-optic cable can carry all of your favorite satellite TV signals.

We are witnessing the dawn of a new age in direct satellite reception and in just a few years we will only be able to marvel at coax cable in a museum and no longer on our satellite antennas and receivers thanks to innovative companies like Global Invacom!



Metal Protective Jacket to Protect the Fibre-Optic Cable

Comparison Between a Standard LNB and the Optical LNB



Transponder	MER Invacom Optical LNB	MER Standard 0.3dB LNB
NILESAT 7° West 11938V	7.8dB	6.0dB
TÜRKSAT 42° Ost 11804V	17.1dB	15.0dB
HELLAS SAT 39° Ost 12605H	14.6dB	12.4dB
HISPASAT 30° West 11931 H	15.5dB	13.0dB
HOTBIRD 13° Ost 11278V	15.5dB	14.2dB

Table: Comparison between the optical LNB and a standard LNB – the optical LNB is on average 20% better!

Expert Opinion



Thomas Haring
TELE-satellite
Test Center Austria

+

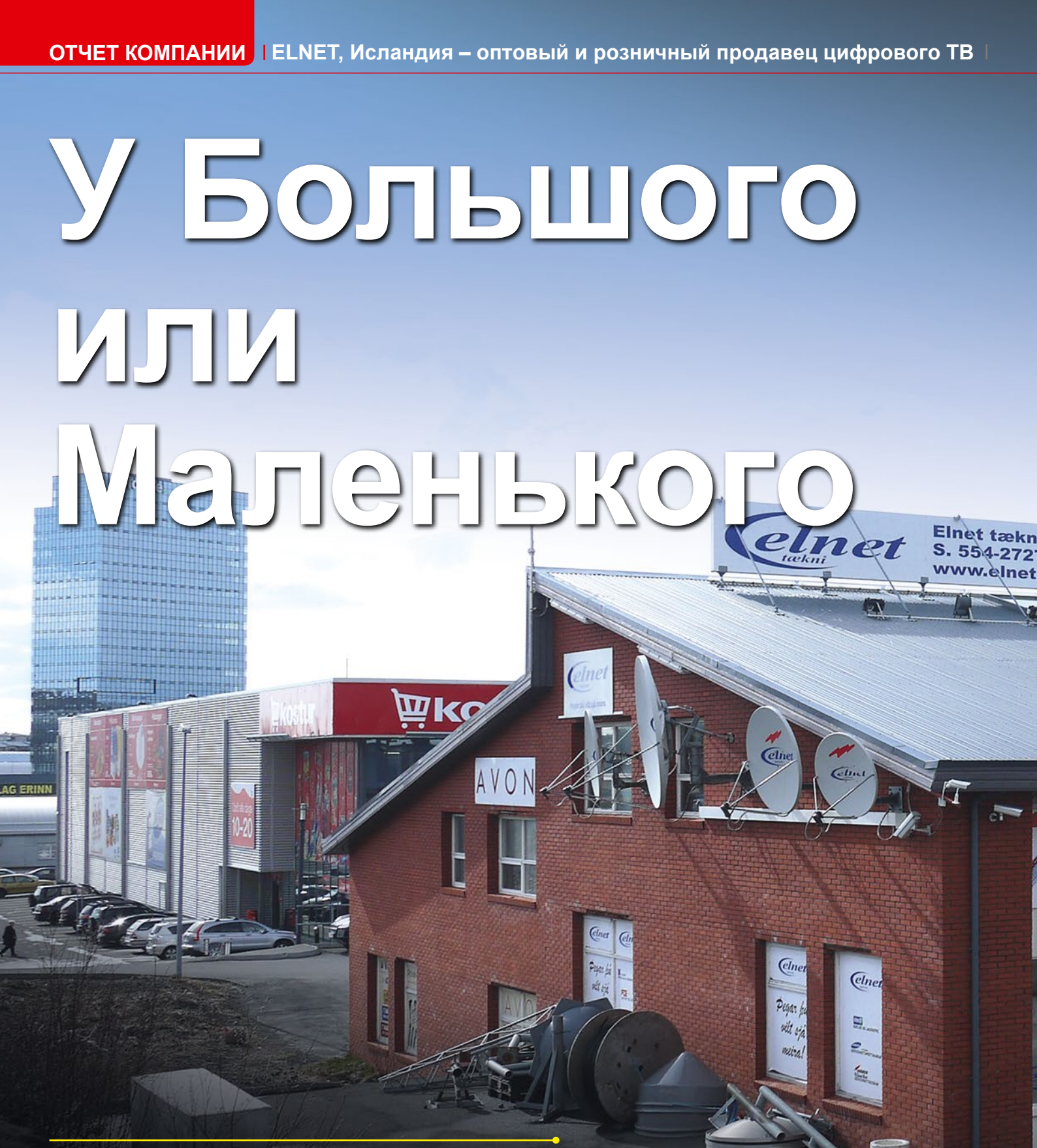
- Excellent reception results due to the lack of any signal attenuation
- Only one LNB per satellite
- Extremely thin cables
- Expandable to 32 users with no signal loss
- Original satellite signal reaches every end-user
- Optical LNB provides reception reserves even with weaker signals

-

- Optical LNB by default requires its own power source



У Большого или Маленького



- *может поставлять все: от DVB передатчиков до DVB ресиверов*
- *всегда адаптирует свой широкий выбор продуктов под текущие требования рынков*
- *верят в наземный и спутниковый DVB прием*
- *ожидают, что в ближайшем будущем, оптоволоконные продукты завоюют широкую популярность*

ELNET найдется все!



Clearly visible from freeway 41 in the Kopavogur commercial area, you can see the numerous satellite dishes on the front wall of digital TV wholesaler and retailer ELNET.

Large Premises with Large and Small Products



ELNET is a digital TV wholesaler and retailer in Iceland and offers a huge range of digital TV products at its large 600 square meter premises. This is the way business works in Iceland, according to General Manager Asmundur Einarsson: "Iceland is a large country, but has a population of only 300,000 – this means you can't just focus on a niche market but must be able to offer as wide a range as possible."

Asmundur Einarsson is no man of many words. Instead, he takes two coax connectors and demonstrates the obvious differences: One is used for thick broadcast technology cables and the other one is a mini-connector as required by signal meters (see picture). This is living proof of the overall range of products offered by ELNET, ranging from small DVB meters to huge DVB transmitters, so to speak. "We are the local Rohde & Schwarz distribution partner here in Iceland, and as such were directly involved in rolling out digital terrestrial television across the country." According to Asmundur Einarsson, roughly half of all digital TV transmitters in Iceland were supplied by his company.

"Iceland's special geography with lots of mountains and valleys, and its low population density with houses spread out across large distances all call for



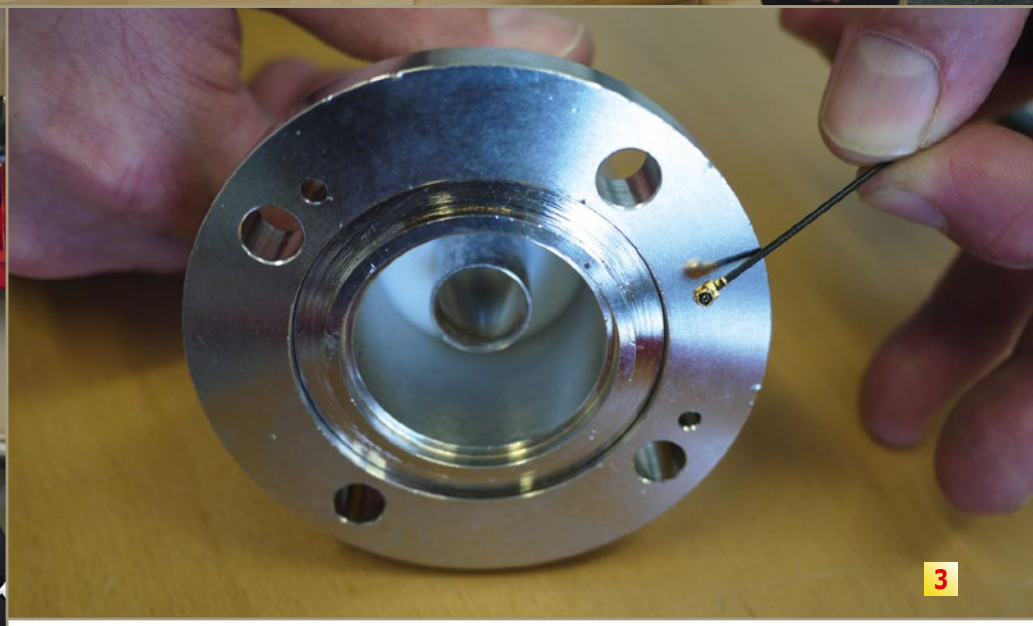
■ Asmundur Einarsson has been owner and General Manager of ELNET since 2000. And we're proud to count him among our TELE-audiovision regular readers.



2



1



3

1. Magnus Eyjolfsson is partner at ELNET and responsible for sales.

2. Inside the ELNET sales room: Advising a customer.

3. Large or small: A huge connector for transmission equipment right in the centre, with a tiny coax connector, like the ones used for meters, placed in front. This picture speaks volumes about the range on offer at ELNET.

a very high number of transmitters in relation to population covered. The maximum transmission power is 500 Watts." That's what you're faced with in a huge place and only few people. And it is one of the driving forces behind Asmundur Einarsson's optimistic business outlook: "Signal distribution via cable networks such as CATV or IPTV only makes sense in urbanised areas. All the remote areas will have to rely on satellite reception and terrestrial distribution in the future as well."

ELNET was established back in 1982. The original founder Örlygur Jonatansson then sold the business to Asmundur Einarsson and has been teaching at a public vocational school since. The new owner Asmundur Einarsson had been employed as a technician for many years by Iceland's two TV channels at the time when Örlygur Jonatansson offered ELNET for sale. "The business



Asmundur Einarsson with the best selling antennas at ELNET: Dishes with diameters of 1 m and 85 cm, as well as UHF antennas for DVB-T reception.

CHINA'S BEST FORUM on Digital Video Broadcast

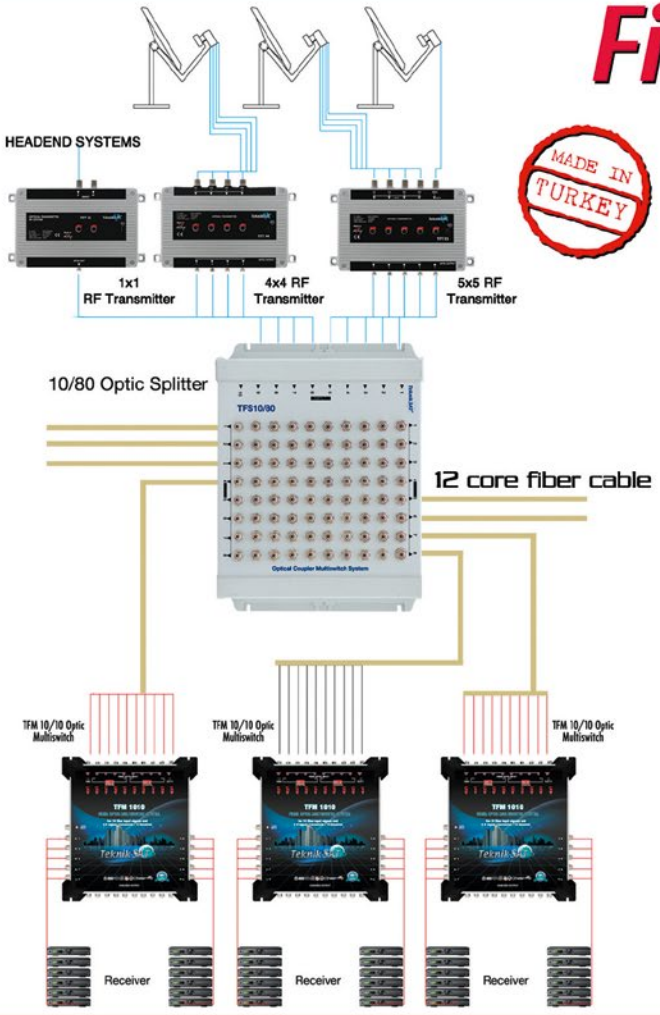
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Read it in English: **http://translate.google.com/translate?hl=en&sl=zh-CN&tl=en&u=http://www.dvbcn.com**

Fiber Optic Systems



MADE IN TURKEY

Fiber Optic Group Transmitter 9 IF + 1 RF

NEW



- Quat & Quatro LNB
- LNB feed property 14v18v22KHz
- All types LNB to adapt Qu band C band, MDU.
- Each polerite different IF signal input
- Low probability of failure
- Each input desired polarite broadcast input.

Optic Connectors	:	FC/UPC
Frequency range SAT	:	950-2150 Mhz
Frequency range TERR	:	47-870
Optical wavelength	:	1310nm
Optical output power	:	2mW



Fiber Optic Multiswitch

"The first in the world"

10 Optic input
10 Subscriber output

FIBER OPTIC MULTISWITCH

TeknikSAT®
PROFESSIONAL SATELLITE SYSTEMS - SECURITY SYSTEM

e-mail: tekniksat@tekniksat.com
web : www.tekniksat.com





had a staff of two at that stage, and satellite business was booming in those years." 2007 turned out to be ELNET's most successful year, and it was the year in which the business moved to its current location in the commercial area of Kopavagur, a suburb of Reykjakvik. "We achieved sales totalling 1.5 million EUR in that year. Today it's more like one million, but at least business is stable, so we're quite satisfied."

The year 2000 saw the advent of a business partner. Since then, Magnus Eyjolfsson has been looking after sales, above all. "We sell approximately 200 to 300 satellite dishes each year," he lets us know, "with the most popular sizes being 85 cm and 1 m." Yet, ELNET also has 1.8 m antennas in stock and even 3 m dishes are waiting for buyers. Since 2011 ELNET has been offering fibre-optic systems from GlobalInvacom in addition to its standard range. "As far as the price is concerned, the gap between conventional coax systems and GlobalInvacom's fibre-optic systems is closing," says Asmundur Einarsson and predicts that "in one or two years the tide will turn in favour of fibre-optic distribution systems."

At any rate, ELNET is ready for the future and will continue to service the huge country of Iceland with all sorts of products, both large and small.

1. Fibre-optic systems from GlobalInvacom were added to the ELNET portfolio in 2011. Their contribution to total turnover is still minor, but ELNET expects sales to pick up in the immediate future.

2. This tube section is an example of a 1 5/8-inch cable as used for DVB-T transmitters. ELNET supplies these cables. On the wall you can see segments of a 3 m dish (above) and some smaller antennas (below).

3. The signals from all outside dishes are led right to this engineering room.

4.View of the engineering room. We won't go into any details about the many pieces of equipment here – just see for yourself…

The Decision Makers in Worldwide Digital TV Industry

according to TELE-audiovision's Company Reports

BSD, Brazil - Digital TV Internet Forum

www.TELE-audiovision.com/**TELE-audiovision-1311**/eng/bsd.pdf

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TELE audiovision Recommended



GM
Marcos Benni



- Largest Digital TV Internet forum in Brazil
- Reaches 400,000 readers every month
- Starting a new form of digital TV online shopping with a video shop
- Also active in IPTV and IP Radio

Elnet, Iceland - Distributor

www.TELE-audiovision.com/**TELE-audiovision-1311**/eng/elnet.pdf

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GM
Asmundur Einarsson



Sales
Magnus Eyjolfsson



- can supply everything from DVB transmitters to DVB receivers
- always adapts its large range of products to meet current market demands
- believes in terrestrial and satellite DVB reception
- expects fibre-optic products to gain popularity in near future

GlobalInvacom, UK - Fibre Optic Products

www.TELE-audiovision.com/**TELE-audiovision-1311**/eng/globalinvacom.pdf

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Business Development
Gary Stafford



Sales Director
Ivan Horrocks



Technical Support
Matt Presdee



- Invented the new satellite IF transmission technology via fibre optics
- Five million FibreIRS connections are expected by 2015
- Through continuous technological improvements FibreIRS can now serve more than 4000 connections from a single LNB; for professional applications it's several 10,000's
- 14 Multiple R&D Engineers are consistently working to improve the system
- Northern Europe, North Africa and Southeast Asia are the largest FibreIRS markets

Oreind, Iceland - Distributor

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Founder
Baldur Sveinsson



Founder
Sigurour Gunnarsson



- successful in the home electronics segment
- all antenna installation material always in stock
- focus on IPTV for sustained business development
- sizable repair shop for home electronics equipment

Deviser, China - Signal Analyzer

www.TELE-audiovision.com/**TELE-audiovision-1307**/eng/deviser.pdf

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President
Zhong Changgan



MD
Liu Lian Jun



Production Manager
Li Hong Xiao



Sales
Jason Wu



- new company headquarters streamlines production and administration at a single site
- expansion of a dedicated repair and logistics centre in and for Europe
- strong growth in export markets
- state-of-the-art test benches for EMS and overvoltage protection

Dexin, China - Digital TV Head-ends

www.TELE-audiovision.com/**TELE-audiovision-1307**/eng/dexin.pdf

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GM
Sun Yu



- Established in 1994 in Chengdu
- Specializes in professional tv head-end equipment
- 50% of their production is exported
- Intense quality controls

Forcetech, China - IPTV Solution Provider

www.TELE-audiovision.com/**TELE-audiovision-1307**/eng/forcetech.pdf

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TELE audiovision Recommended

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Sales
Ren Nan



Marketing
Lan Haidong



- offering technically mature and fully-fledged IPTV solutions
- large Chinese movie provider as showcase customer and shareholder
- small-scale IPTV systems can be realised on a tight budget
- excellent video quality thanks to P2P technology

Tianditong, China - Antennas

www.TELE-audiovision.com/**TELE-audiovision-1307**/eng/tianditong.pdf

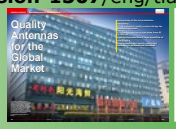
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GM
Bang Xian Peng



Production Manager
Bang Xing Peng



- uses state-of-the-art production machinery
- fully automatic quality control during the production process
- volume production of dish sizes from 45 to 180 cm
- ready for production of large quantities at short notice
- environmentally-friendly production according to international standards

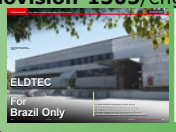
ELDTEC, Brasil - Dish, Antennas and Cables

www.TELE-audiovision.com/**TELE-audiovision-1305**/eng/eldtec.pdf

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Sales Manager
Jefferson Cruz



- Large market coverage within Brazil
- OEM production for other brand names
- Concentration on just a few product series
- Also offers antennas for 2.4 and 5.8 GHz (WiFi)

LIANXING, China - Satellite Dishes

www.TELE-audiovision.com/**TELE-audiovision-1305**/eng/lianxing.pdf

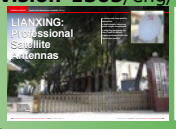
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Product Manager
Wen Liang Yuan



Sales Manager
Liao Wen Fei



- using only top-quality materials
- individually checking each single component
- offering antennas for the C and Ku bands
- very successful on the Japanese market

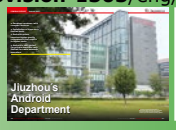
Jiuzhou, China - Android Receivers

www.TELE-audiovision.com/**TELE-audiovision-1303**/eng/jiuzhou.pdf

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Product Manager
Yongjun Zhang



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

Sat-Link, China - Signal Analyzers

www.TELE-audiovision.com/**TELE-audiovision-1303**/eng/sat-link.pdf

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GM
Qing Zhang Lin



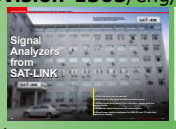
Project
GuiHuang Huang



Sales
Nancy



R&D
Han Guang Rong



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

Tecsys, Brazil - Professional Equipment

www.TELE-audiovision.com/**TELE-audiovision-1303**/eng/tecsys.pdf

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CEO
Jose Marcos Freire Martins



COO
Jorge Alberto Ganuza



Production
Adilson da Silva



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

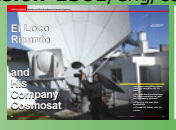
Cosmosat, Argentina - Satellite Dishes

www.TELE-audiovision.com/**TELE-audiovision-1301**/eng/cosmosat.pdf

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Owner
Ricardo



- 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

Horizon, UK - Signal Analyzers

www.TELE-audiovision.com/**TELE-audiovision-1301**/eng/horizon.pdf

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CEO
Paul Pickering



Technical Director
Paul Hardcastle



Technical Manager
Rob Sydee



- 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

Satson, Belgium - HDMI

www.TELE-audiovision.com/**TELE-audiovision-1301**/eng/satson.pdf

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CEO
Stefaan Cornelis



Technical Manager
Didier Debey



- 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

Antiference, UK - Antenna and HDMI

www.TELE-audiovision.com/**TELE-satellite-1211**/eng/antiference.pdf

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MD
Trevor Paintain



Sales
Arnold Boeijen



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

USATel, Brazil - Distributor

www.TELE-audiovision.com/**TELE-satellite-1211**/eng/usatel.pdf

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MD
Jose Manuel Pereira



CFO
Allam Almughrabin



- Imports all of its products from China
- Optimized assortment for digital TV needs in Brazil
- Sells and ships almost exclusively to end users
- Expanding into new business segments such as WLAN and IPTV

DMS International, USA - Distributor

www.TELE-audiovision.com/**TELE-satellite-1209**/eng/dms-international.pdf

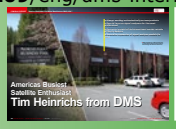
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CEO
Tim Heinrichs



President
Vicky Heinrichs



- Always working enthusiastically on new products
- Special focus on signal analyzers for the semi-professional
- Enormous growth of the international market outside of North America
- Innovative expansion of signal analyzer models for 2012

Topsignal, China - Satellite Dishes

www.TELE-audiovision.com/**TELE-satellite-1209**/eng/topsignal.pdf

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TELE audiovision Recommended

QM Qualified



Chairman
Zongbao King



GM
Chaofeng Ge



Sales
James You



- OEM delivering exclusively to Wholesalers
- Specializes in large production quantities
- Produces millions of satellite dishes and LNBs
- Majority of shipments go to South America
- Expanding product palette to include high-quality LNBs and VSAT

DVBCN, China - Internet News and Job Forum

www.TELE-audiovision.com/**TELE-satellite-1207**/eng/dvbcn.com.pdf

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TELE audiovision Recommended



Owner
Anna Xie



Chief Editor
Victor Ho



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

SVEC, China - Satellite Dishes

www.TELE-audiovision.com/**TELE-satellite-1207**/eng/svec.pdf

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CEO
Wang Duo



Sales
Becky



- Large investment in Quality Assurance
- Expanding VSAT and Ka-Band production
- Opening a new fully automatic satellite dish production line
- Focusing on top-of-the-line Quality dishes

TSReader, USA - Analyzer Software

www.TELE-audiovision.com/**TELE-satellite-1207**/eng/tsreader-rod-hewitt.pdf

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Owner
Rod Hewitt



- Wrote one of the most successful stream reader programs
- Developed a technical solution to archive TV channels for 'Internet Archive'
- Working on IPTV application programs
- Planning on a program for OCR recognition of BBC's EPG data

Hypex, UK - Distributor

www.TELE-audiovision.com/**TELE-satellite-1205**/eng/hypex-icecrypt-uk.pdf

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MD
Neal



- Ships large dishes to Great Britain and Europe
- Offers successful product lines from ICECRYPT and GLOBALINVACOM
- Low prices thanks to minimal overhead costs
- Consistent sales despite pricing pressure

Ricks Satellite, USA - Distributor

www.TELE-audiovision.com/**TELE-satellite-1205**/eng/ricks-satellite-azbox.pdf

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Owner
Rick Caylor



Owner
Rick Caylor



- celebrates its 10th anniversary in 2012
- distributes AZBox's receivers in North America
- is an enthusiastic satellite feedhunter
- sees a good future for the FTA market in North America

SPAROS SAT HD

SPAUN™
www.spaun.com Quality made in Germany

SATELLITE TV METER
*SPAROS SAT HD**

- High quality and bright display (4.3 inch)
- MPEG4-display and measuring
- SCR single cable switching commands
- DiSEqC 1.x and SCR EN 50494 control
- Spectrum analysis
- Robust, impact-resistant housing
- Splash-resistant keypad

* *also available as Combo Analyzer*
SPAROS SAT HD DVB-C
SPAROS SAT HD DVB-T



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StelliteGuys, USA - Internet Forum

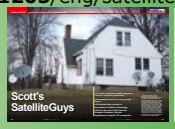
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TELE audiovision Recommended



Owner
Scott Greczkowski



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

Sowell, China - IPTV Receivers

www.TELE-audiovision.com/**TELE-satellite-1205**/eng/sowell-iptv.pdf

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TELE audiovision Recommended

QM Qualified



GM
Eagle Chain



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

Wadt, Brazil - Headends

www.TELE-audiovision.com/**TELE-satellite-1205**/wadt-brazil.pdf

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Owner
Neide Wadt



Technical Director
Joao Wadt



- Involved in HF for more than 60 years
- New allocation of cable licenses in Brazil opens up huge opportunities for the company
- Specialized products for cable headends
- Only ships domestically

Jiuzhou, China - Receivers

www.TELE-audiovision.com/**TELE-satellite-1203**/jiuzhou-ott.pdf

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TELE audiovision Recommended

QM Qualified



Vice Marketing
Jimmy Zhang



Vice GM
Richard



- Developes Digital TV receivers optimized for OTT
- Dedicated OTT development team
- Market for OTT in Europe and North America
- Upgrade of older digital receivers possible with a software upgrade

Panodic, China - Receivers

www.TELE-audiovision.com/**TELE-satellite-1203**/panodic.pdf

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Founder
You Zhen Yu



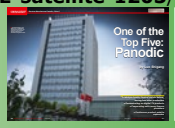
Founder
Huang Wei



CEO
Xu Hai Bin



Marketing Manager
Alan Yu



- Multiple quality control points before, during and after production
- Concentrating on digital TV products
- Cooperating with many license providers
- Continuous product palette expansion

Sortec, Slovakia - Distributors

www.TELE-audiovision.com/**TELE-satellite-1203**/sortec.pdf

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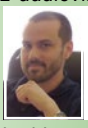
Founder
Ladislav Šmárik



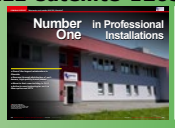
GM
Pavol Macko



Sales
Alexander Záhončík



Sales
Pavol Lukáč



- One of the largest wholesalers in Slovakia
- Success through distribution of well-known, high-quality brand names
- Move to their own building in 2012
- Active in new technologies such as fiber optics and IPTV

Turbosat, UK - Receivers

www.TELE-audiovision.com/**TELE-satellite-1203**/turbosat-icecrypt.pdf

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Sales
Chris Ward



Technical Director
Ray Gargiulo



- own receiver line ICECRYPT
- 50% of sales outside Great Britain
- Focus on receivers, CAM, SmartCards and LNBs
- 80,000 receivers a year
- produces Dolly Buster TV programming via HOTBIRD

BSD, Brazil - Internet Forum

www.TELE-audiovision.com/**TELE-satellite-1201**/bsd.pdf

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TELE audiovision Recommended



Owner
Marcus Bernardini



- 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

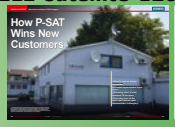
P-Sat, Hungary - Distributor

www.TELE-audiovision.com/**TELE-satellite-1201**/p-sat.pdf

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Owner
Tibor Posta



- Has its own customer magazine
- Created supermarket style store
- Planning start of own branded TV services
- Operates one of the most well-known web communities in Hungary

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Mini Optical Power Meter



- Pocket size
- Cost-effective
- Power efficient: Up to 50 hours working time with 2 Ni-MH 5AA batteries
- Optical-detector: 3000μm Ge
- Wavelengths: 780nm~1700nm
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- Basic Accuracy: ±1% and ±0.05dB
- Full Range Accuracy: ±5% and ±0.21dB
- Optical Connector: FC/SC

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Http://www.devisertek.com ▪ E-mail: overseasbiz@deviser.com.cn

DEVISER

TBS

MOI



Sat TV Streaming Box

Watch satellite TV on PC,Tablet PC,Smartphone,iPhone,iPad,iPod and Sony Playstation 3



Stream Live TV to anywhere there is home network



Enjoy and share a large quantity of Movies, News, Live sports···



Two CI slots support premium/ encrypted channels



Dual Tuner supports streaming two whole Transponder Stream simultaneously



DLNA supported



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

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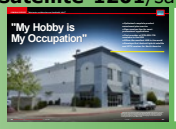
SatalliteAV, USA - Wholesaler

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President
Brian Gohl



- Optimized complete product assortment plus service
- Own receiver line for semi-professional applications
- First provider of OTA-SSU FTA receivers in the USA
- Offers the smallest LNB in the world
- Develops first Android hybrid satellite and IPTV receiver for North America

AB-COM, Slovakia - Receivers

www.TELE-audiovision.com/**TELE-satellite-1111**/abcom.pdf

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Founder
Juraj Masaryk



Marketing Manager
Michal Grezo



Sales
Pavol Blaho



- Particularly successful in Central Europe
- Products for different applications such as 3D and pay TV
- Focus on cost-efficient product range
- Products optimised for individual applications

Applied Instruments, USA - Signal Analyzers

www.TELE-audiovision.com/**TELE-satellite-1111**/appliedinstruments.pdf

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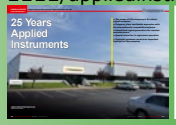
GM
Tom Haywood



Engineering
Jeff Haas



Sales
Scott Haywood

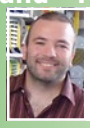


- The power of this company is its robust signal analyzers
- Company plans worldwide expansion with its internationally compatible analyzers
- Special test signal generators for receiver manufacturers
- Special attention to ergonomic operation
- Technical customer service an important highlight of the company

Huber+Suhner, Switzerland - Fibre Optics

www.TELE-audiovision.com/**TELE-satellite-1111**/huber+suhner.pdf

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Product Manager
Patrick Zaina



Marketing Manager
Othmar Fuchs



- One of the leading fiber optic companies in the world
- New CLIK! System for easy installation
- New market segment that will make coaxial cable distribution systems obsolete
- Now available: economical alternative with distribution systems starting with eight users

iPONT, Hungary - 3DTV

www.TELE-audiovision.com/**TELE-satellite-1109**/ipont.pdf

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CEO
Zoltan Korcsok



CTO
Andor Pasztor



- iPONT's softwarevsolution converts 3D for use with auto-stereoscopic monitors
- 3D enjoyment without annoying glasses
- Potential for receiver manufacturers to expand their STB's to include 3D
- Compatible with the variety of manufacturer auto-stereoscopic monitor solutions

Megasat, Germany - Receiver and Wholesaler

www.TELE-audiovision.com/**TELE-satellite-1109**/megasat.pdf

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GM
Sven Melzer



- 80% of distributed products come from in-house MEGASAT brand
- full range of satellite components
- special focus on self-aligning camping antennas
- distribution to the whole of Europe

Sapro, Czech - Receiver and Wholesaler

www.TELE-audiovision.com/**TELE-satellite-1109**/sapro.pdf

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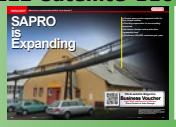
Owner
Lubomír Proboszcz



Sales
Petr Zwrtek



Sales
Jana Proboszczová



- Covers every price segment with its four brand names
- Starting expansion to surrounding countries
- In-house design and production (assembly line)
- Produces 100,000 receivers per year

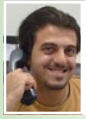
WSInternational, USA - Receiver and Wholesaler

www.TELE-audiovision.com/**TELE-satellite-1109**/wsinternational.pdf

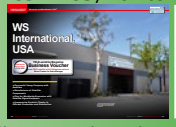
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Owner
Robby Dosetareh



Sales
Joseph Bassala



- Successful Young Company with Ambition
- Manufacturer of Satellite Components
- Plan for Worldwide Expansion with Satellite Signal Analyzers
- Inexpensive Products Thanks to Efficient Production and Distribution

BYA, Algeria - Dishes and Receiver

www.TELE-audiovision.com/**TELE-satellite-1107**/bya.pdf

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GM
Slimane Ait Yala



DishPointer AR

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

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

See the Video

See DishPointer AR in action on YouTube!

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



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

References

CANAL DIGITAAL SATELLIET

TV VLAANDEREN DIGITAAL

ASTRA

INNOVATION TELE SATELLITE AWARD & BROADBAND 02.07/2011
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Software Solution that, with the help of Google Maps and its real images as well as SatcoDX and its up-to-date channel data, provides highly accurate satellite reception information.

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info@dishpointer.com

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NEW

VSB Twin Modulator

VAM 420 NG PAL

- Easy to create analog tv signals
- Adjacent channel capable
- Simple and fast programming
- Cascading allows for multiple TV analogue channels
- TV standard: B/G/D/K/I/L
- Frequency range: 110 … 862 MHz
- Output level: max 90 dBµV
- C/N ratio: ≥ 50 dB

TELE satellite AWARD 09-10/2012
SPAUN VAM 420 NG PAL
Easy way to create analog tv channels
www.TELE-satellite.com/TELE-satellite-1209/eng/spaun-VAM.pdf



NEW

VAM 420 NG DVB-T
- Modulator with COFDM (DVB-T) output signal

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Tel.: +49 (0)7731-8673-0 · Fax: +49 (0)7731-8673-17
Email: contact@spaun.com · www.spaun.com

Boiingsat, China - LNB

www.TELE-audiovision.com/**TELE-satellite-1105**/boiingsat.pdf

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GM
Haowen Chiang


Co-Owner
Yunnjye Qin


Sales
Jason Chiang



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

Bomare, Algeria - Receiver

www.TELE-audiovision.com/**TELE-satellite-1105**/bomare.pdf

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Technical Manager
Tewfik Lamrani



Prevail, China - Fibre Optics and CATV

www.TELE-audiovision.com/**TELE-satellite-1105**/prevail.pdf

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Sales
Necy-xu


Sales
Helen


Production Manager
Ren Guorui



- Substantially Increased Sales for 2011 Thanks to Rising Exports
- Additional Factory Soon to be in Operation
- Increased Number of Employees
- Four New SMT Machines in Operation
- Very Active R&D Team

Jiuzhou, China - IPTV Boxes

www.TELE-audiovision.com/**TELE-satellite-1103**/jiuzhou.pdf

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Sales
Huang Wei


Vice Marketing
Jimmy Zhang



- IPTV box production may reach 1 million units in 2011
- Jiuzhou starts HbbTV boxes for Europe
- Big retailers about to launch into IPTV box sales
- Jiuzhou to attend all major exhibitions in 2011, 10 in all

Sowell, China - Receivers

www.TELE-audiovision.com/**TELE-satellite-1103**/sowell.pdf

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GM
Eagle Chain


Software
Sun Guanghua


Software
Peng Yi



- Founded by 5 Partners
- ISDB-T and DVB-T2 Receiver in 2011
- Overseas Offices in the Plan
- User Friendliness is Company Philosophy

Tenow, China - PC Cards

www.TELE-audiovision.com/**TELE-satellite-1103**/tenow.pdf

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Founder
Richard Zhang


Founder
Bob Liu


Founder
Eric Deng


Founder
James Liu



NetUP, Russia - IPTV

www.TELE-audiovision.com/**TELE-satellite-1101**/netup.pdf

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Co-Founder
Abylay Ospan


Co-Founder
Evgeniy Makeev


Sales
Konstantin Emelyanov



Tevii, Taiwan - PC Cards and Receiver

www.TELE-audiovision.com/**TELE-satellite-1101**/tevii.pdf

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Founder
Matthias Liu



Satbeams, Belgium - Software

www.TELE-audiovision.com/**TELE-satellite-1011**/satbeams.pdf

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Founder
Alexander Derjugin



SmartWi, Denmark - Wireless Card Reader

www.TELE-audiovision.com/**TELE-satellite-1011**/smartwi.pdf

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Founder
Kurt Olesen


Technical Manager
Jens Glad



Spaun, Germany - Power Supplies

www.TELE-audiovision.com/**TELE-satellite-1011**/spaun.pdf

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Kevin Spaun



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www.ASIATVRO.com

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Boxsam, China - Receivers

www.TELE-audiovision.com/**TELE-satellite-1009**/boxsam.pdf

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GM
Xiaofeng Huang



VP
Jeffrey Zhao



Atlanta, Dubai - Wholesaler

www.TELE-audiovision.com/**TELE-satellite-1007**/atlanta.pdf

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Founder
Rajmal Jain



Director
Sanjeev Jain



Yinhe, China - Receiver

www.TELE-audiovision.com/**TELE-satellite-1007**/yinhe.pdf

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Marketing Manager
Jianbiao Zhu



GlobalInvacom, UK - Fibre Optics

www.TELE-audiovision.com/**TELE-satellite-1005**/globalinvacom.pdf

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QM Qualified



Sales
Ivan Horrocks



Sales
David Fugeman



Changhong, China - Receiver

www.TELE-audiovision.com/**TELE-satellite-1003**/changhong.pdf

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TELE audiovision Recommended

QM Qualified



Sales
Richard Cheng Li



Kaifa, China - Receivers

www.TELE-audiovision.com/**TELE-satellite-1003**/kaifa.pdf

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Marketing Manager
Jackie Yan



Skyworth, China - Receivers

www.TELE-audiovision.com/**TELE-satellite-1003**/skyworth.pdf

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Vice GM
David Ken



Technical Manager
Jack Zhang



Promax, Spain - Signal Analyzers

www.TELE-audiovision.com/**TELE-satellite-0909**/promax.pdf

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Founder
José Clotet



GM
José-Maria Clotet



Infosat, Thailand - Dishes

www.TELE-audiovision.com/**TELE-satellite-0907**/infosat.pdf

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Founder
Niran Tangpiroontham



Aluosat, China - Wholesaler

www.TELE-audiovision.com/**TELE-satellite-0905**/aluosat.pdf

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TELE audiovision Recommended



Founder
Luo Shigang



Sales
Luo Jun



MFC, USA - Filters

www.TELE-audiovision.com/**TELE-satellite-0903**/mfc.pdf

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TELE audiovision Recommended

QM Qualified



CEO
Carl Fahrenkrug



Sales
Scott Parsell



Marketing Manager
Sandy Nelepovitz



Nanoxx, Germany - Wholesaler and Receivers

www.TELE-audiovision.com/**TELE-satellite-0901**/nanoxx.pdf

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Founder
Marcel Hofbauer



Sales
Daniel Sam



BluBox 8/16

SPAUN™
www.spaun.com Quality made in Germany



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

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

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Open Embedded Software Foundation

The Rising Market Revolution of Android Embedded Systems



Open Embedded Software Foundation

OESF

▶ Open Embedded Software Foundation (OESF) is an organization focused on standardization, co-development and expanding market reach of Android platform for embedded devices.

Open Embedded Software Foundation
1F, Ein Paar GOTO Bldg
7-5, Nishishinjuku 5
Shinjuku-ku
Tokyo 160-0023
JAPAN

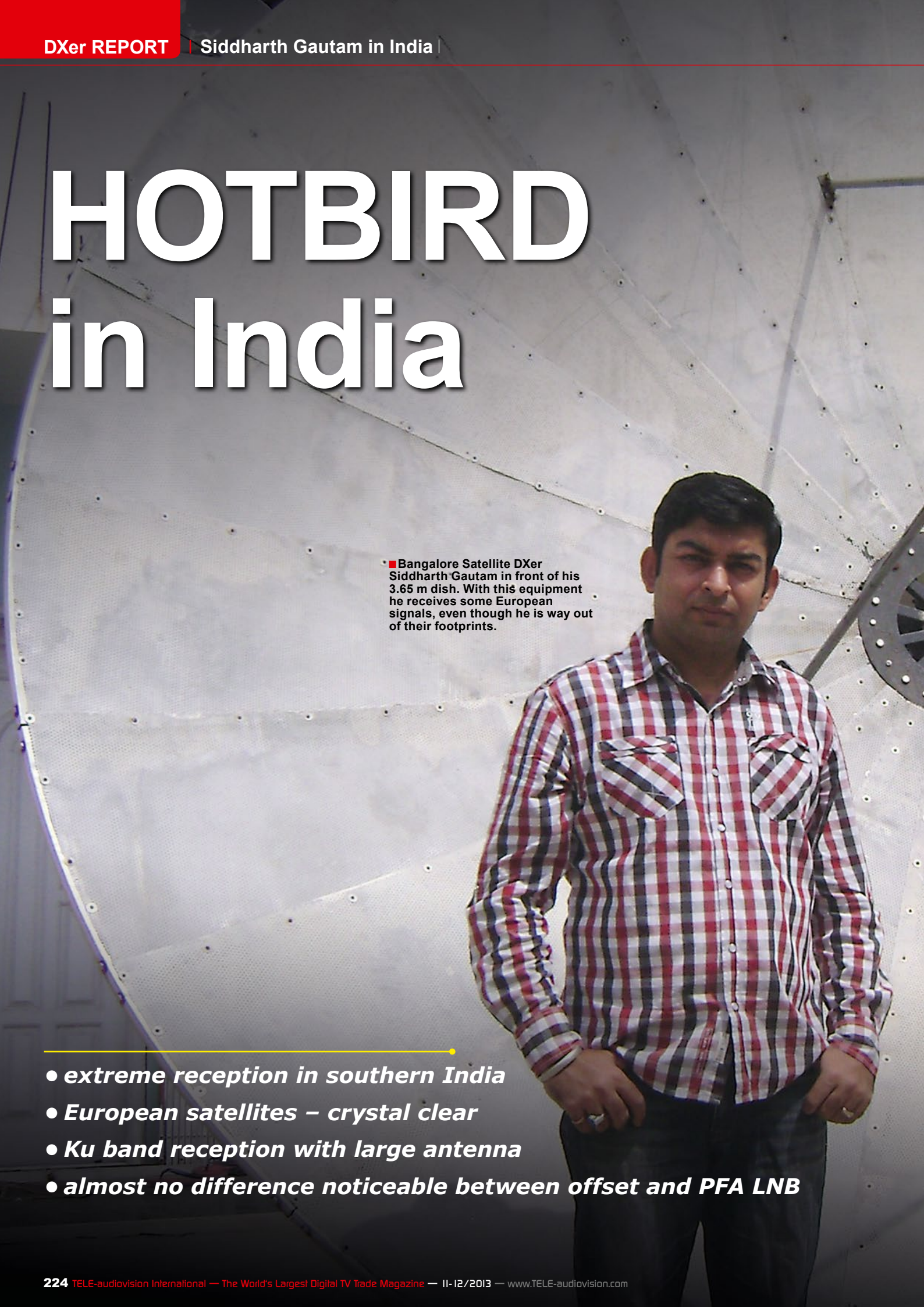
www.oesf.biz

▶ Target applications/devices

- ▸ STB market
- ▸ VoIP market
- ▸ Mobile market
- ▸ Consumer Market

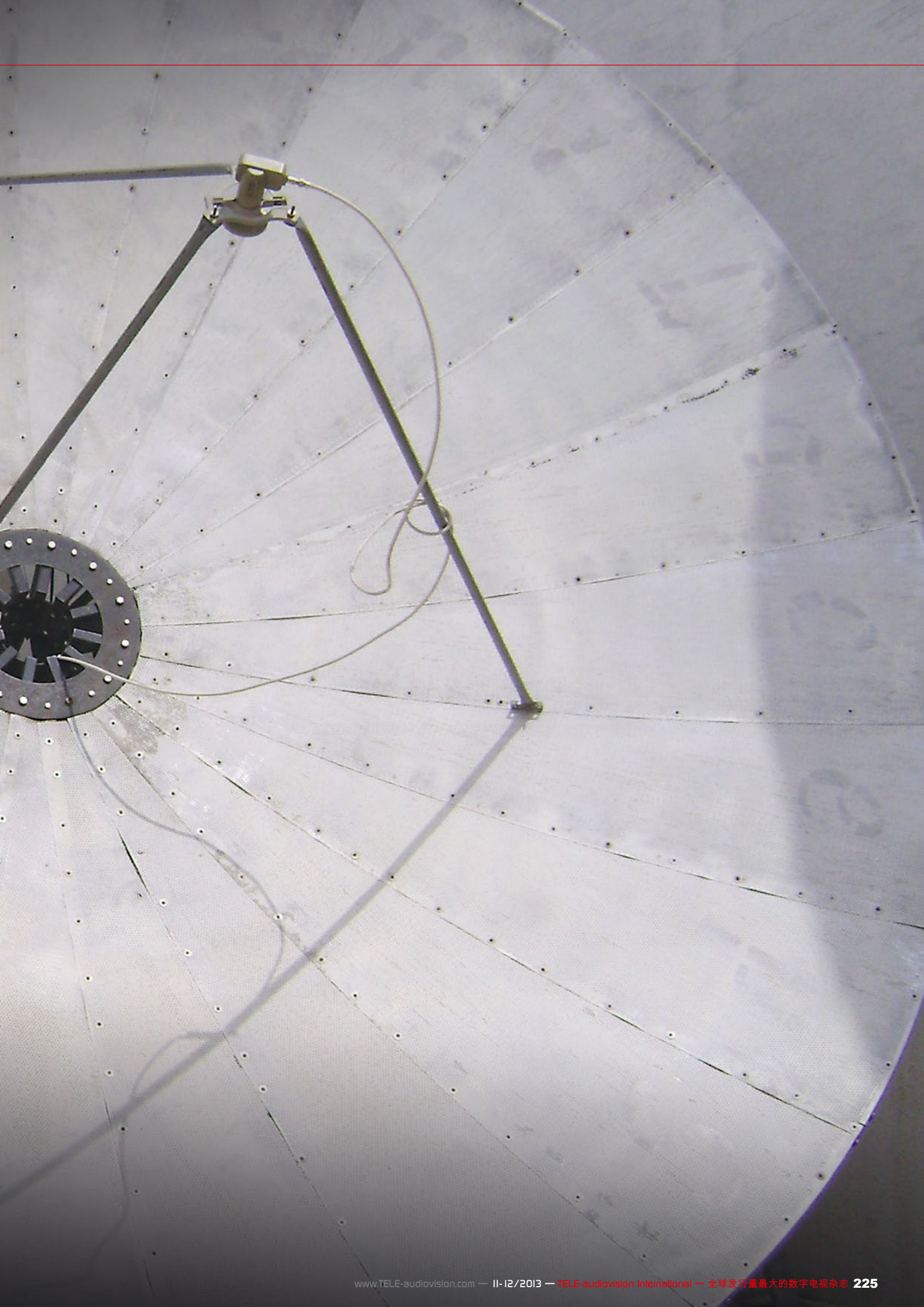


HOTBIRD in India



Bangalore Satellite DXer Siddharth Gautam in front of his 3.65 m dish. With this equipment he receives some European signals, even though he is way out of their footprints.

- *extreme reception in southern India*
- *European satellites – crystal clear*
- *Ku band reception with large antenna*
- *almost no difference noticeable between offset and PFA LNB*



Satelliten DXer Siddharth Gautam in Bangalore

How far does HOTBIRD's footprint actually go?



India and the European HOTBIRD position at 13°E are not exactly a perfect match. How's that? In a word, the HOTBIRD footprint does not extend as far as India. But then again, never say never: Satellite DXer Siddharth Gautam from Bangalore is a regular viewer of channels broadcast from the HOTBIRD orbital position. If you take a look at Bangalore on the map it's obvious that the capital of the province of Karnataka is definitely out of footprint, so how is Siddhart able to receive signals from HOTBIRD?

"I use a 12-foot (3.65 m) antenna," Siddhart reveals. "The entire installation set me back some 350 euros." But that's not the full story. If Siddhart moves the dish he can even receive EUROBIRD 9 and EUTELSAT 36B. "What I found out is that it hardly makes a difference whether I use an offset LNB or a PFA LNB," although prime focus antennas (PFA) usually work best with a PFA LNB. Siddhart has even set up his own Internet forum by the name of 'Dish Tuning' which he uses to publish his extreme reception experience:

http://dishtuning.com/Thread-Hotbird-In-South-India-13-East

Apart from keeping his Internet forum up to date, Siddhart also runs an installation business. This provides an excellent way of showing custom-



■ Siddharth Gautam's reception station

Look at India!



Satellite Signal Reception Discussion Forum for Indian DTH Services, C Band and Ku Band Reception

Dish Tuning

www.dishtuning.com



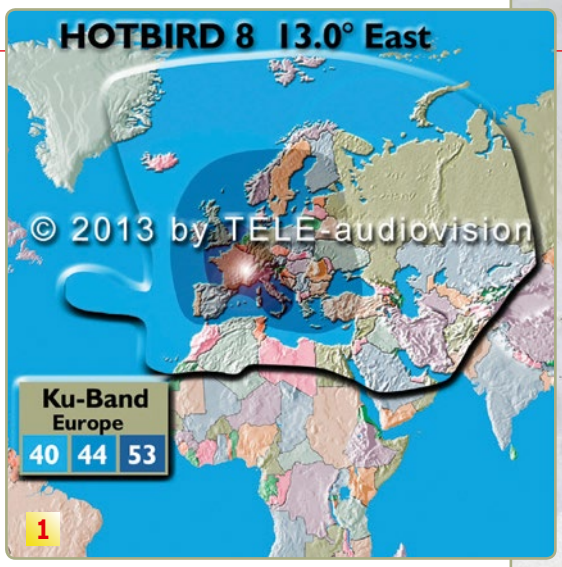
Ft@Tv

El foro de la TV libre

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

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

www.ftatv.com.ar



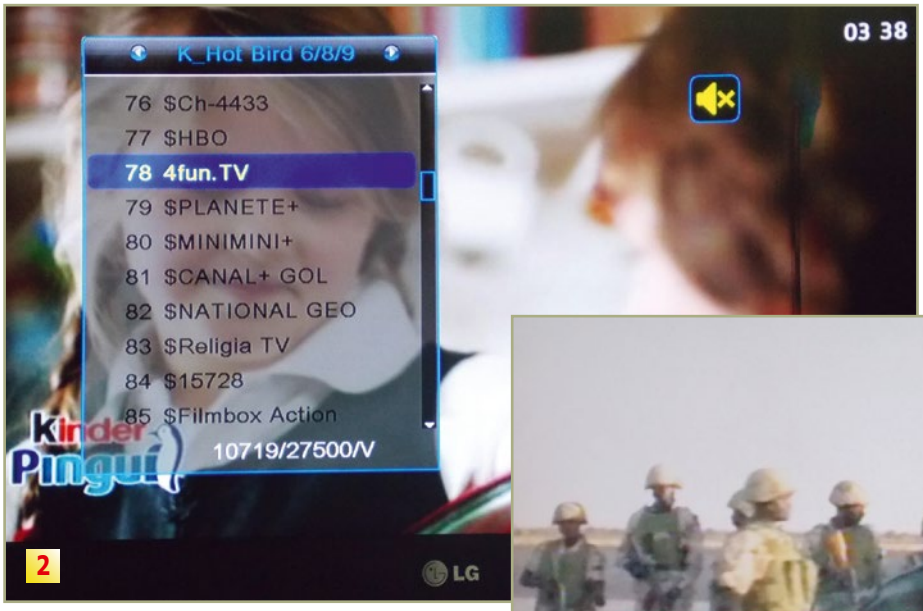


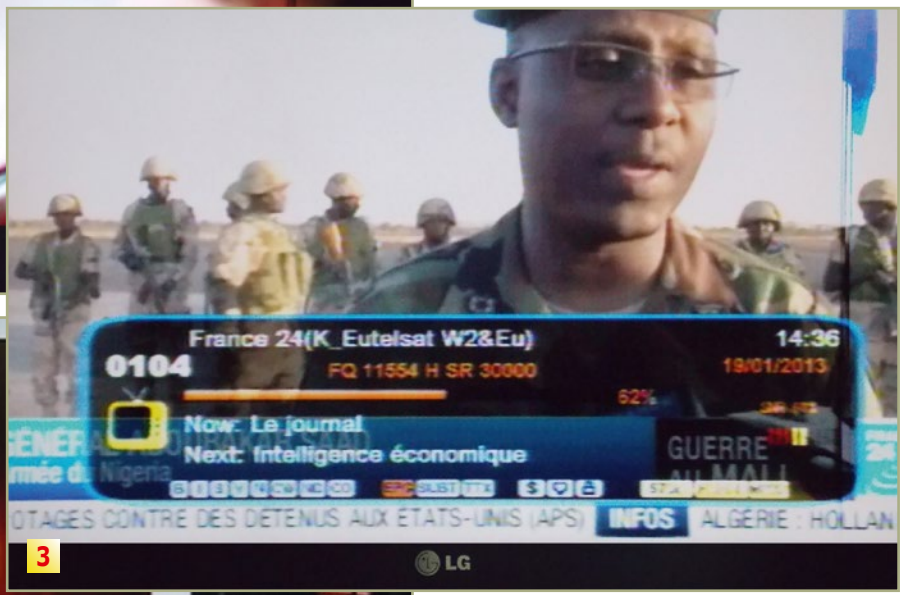
1. The HOTBIRD footprint does not reach India, but satellite DXer Siddharth Gautam is able to receive a number of European satellites nonetheless.

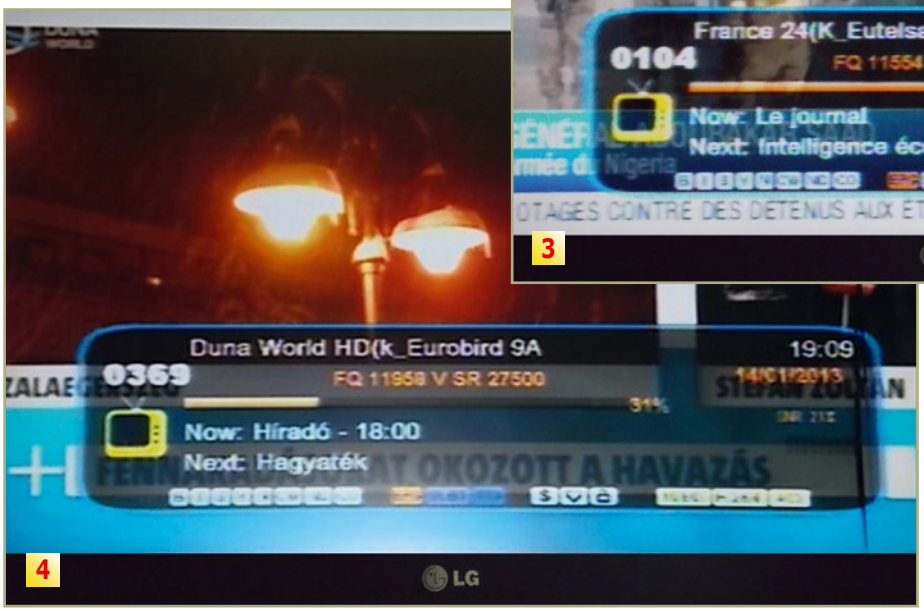
2. FunTV – sent from HOTBIRD, received in Bangalore

3. News channel France 24 – sent from EUTELSAT 36B, and also received in Bangalore

4. Hungarian HDTV channel Duna World HD from EUROBIRD 9A in Bangalore







ers what can be achieved with extreme satellite reception. "Nobody around here even knows that European satellites can be received in southern India when you use a large enough antenna." Now that he's found out how it works Siddhart even contemplates producing those large antennas himself. "If demand is high enough, I'll definitely grab that chance," he states with some optimism. Pre-orders can be made directly with Siddhart by contacting him using this e-mail address:

siddharth_pnb@hotmail.com

Siddhart lends prove once again to the fact that the proof of the pudding is in the eating. If you try hard enough you may well achieve something that – in theory – seems to be out of the question.



Hit or Miss ?

You need a guide - China Broadcasting Directory to hit the target !

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www.cnbroadcasting.com

A fresh look at the familiar

SATBEAMS

Everything you need to set your dish right

Check if you are within coverage

Scalable footprints with dish alignment tool

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WWW.SATBEAMS.COM

Interested to contribute your DX reports?
Send your updates to autoscan@satbeams.com

BEST SATELLITE UPLINK EARTH STATIONS IN THE WORLD



Speedcast Sao Paulo Brazil

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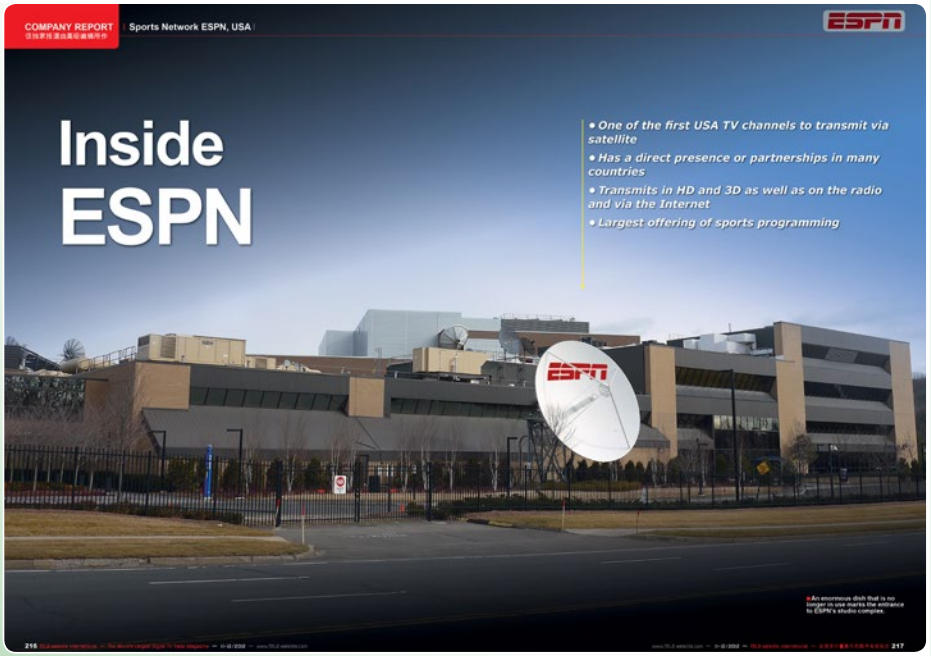
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ESPN Bristol USA

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www.tavmag.com /12/11/espn



Nivaldo da Silva São Paulo Brazil

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TV Bandeirantes São Paulo Brazil

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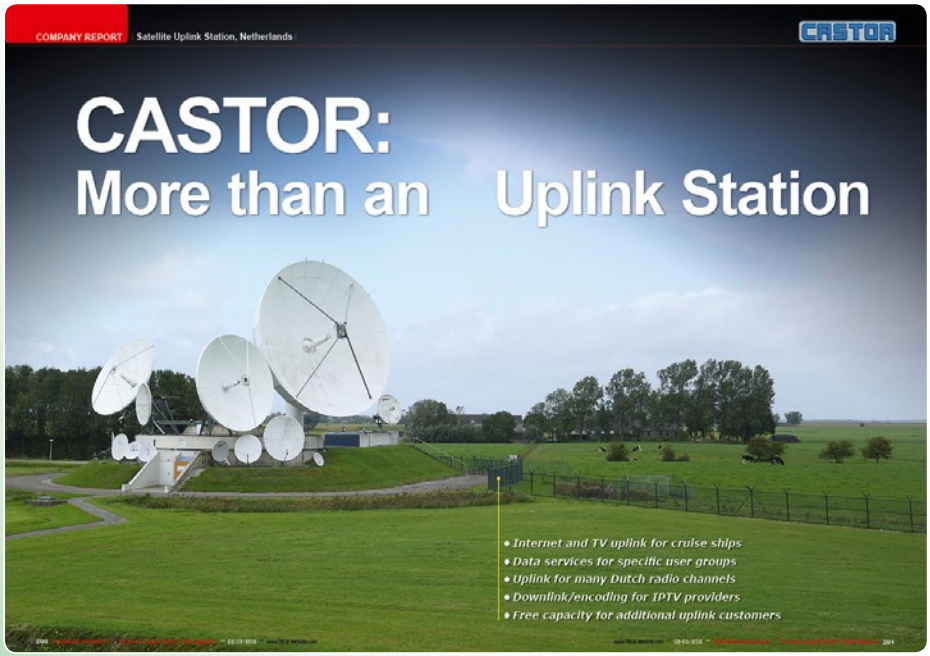
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CBC Cologne Germany

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BT Madley UK

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SES ASTRA Luxembourg

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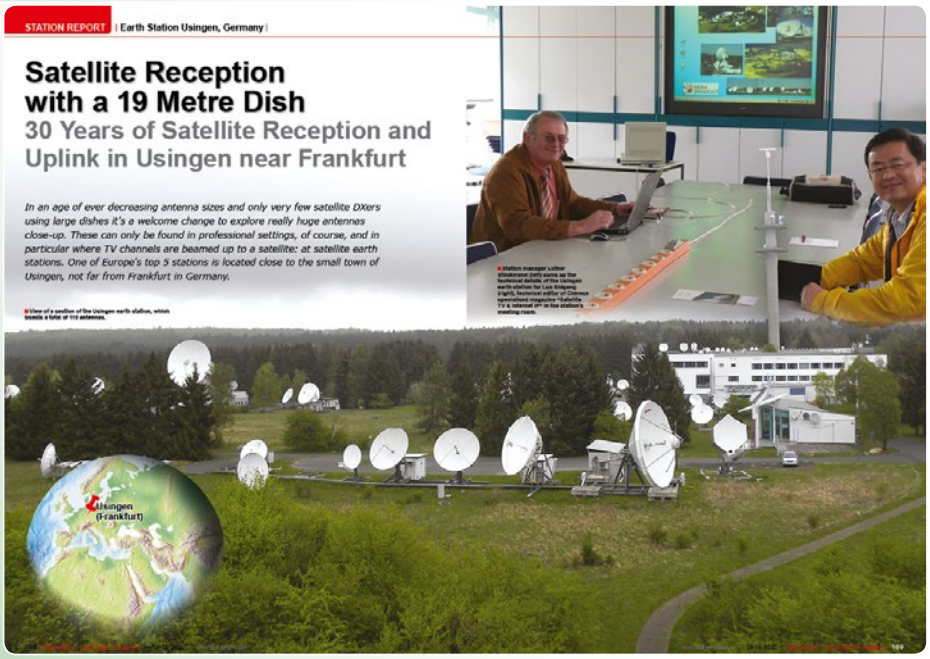
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Media Broadcast Usingen Germany

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www.tavmag.com /10/09/mediabroadcast


STATION REPORT | Earth Station Usingen, Germany |

Satellite Reception with a 19 Metre Dish

30 Years of Satellite Reception and Uplink in Usingen near Frankfurt

In an age of ever decreasing antenna sizes and only very few satellite DXers using large dishes it's a welcome change to explore really huge antennas close-up. These can only be found in professional settings, of course, and in particular where TV channels are beamed up to a satellite: at satellite earth stations. One of Europe's top 5 stations is located close to the small town of Usingen, not far from Frankfurt in Germany.

Usingen (Frankfurt)

Telemedia Johannesburg South Africa

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www.tavmag.com /07/09/telemedia


Company Report | TV Uplink

Telemedia, Johannesburg

HELLAS SAT 2 039.0° East

SIRIUS 4 005.0° East

PTS Taipei Taiwan

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www.tavmag.com /07/07/pts


STATION REPORT | PTS Taipei, Taiwan |

Satellite Channels for Taiwan - PTS's Control Center

公共電視 Public Television Service

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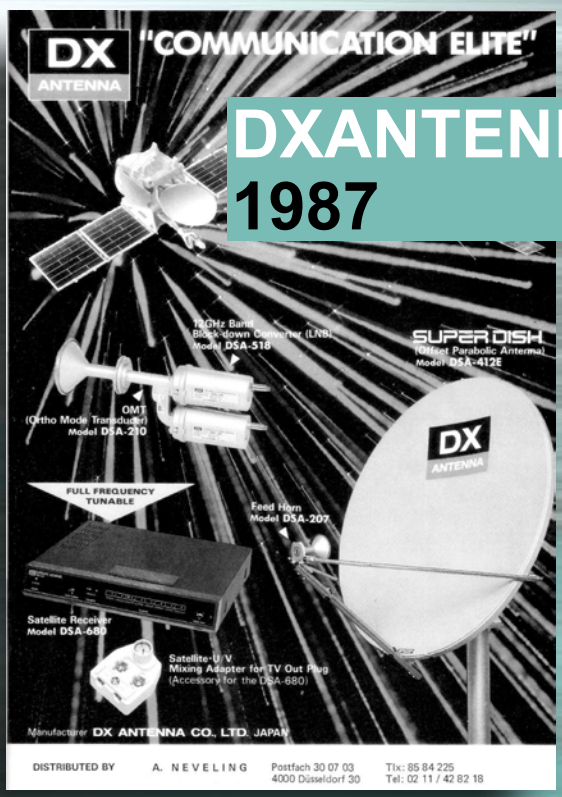


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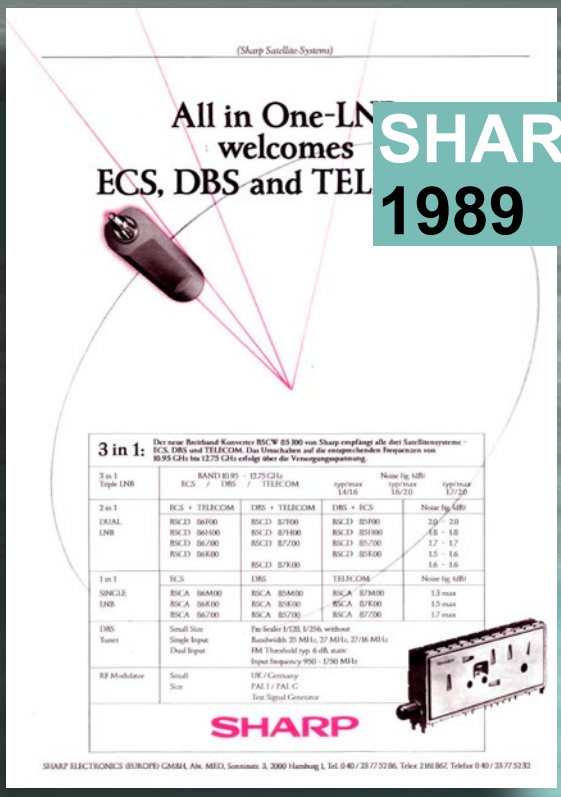
DXANTENNA
1987



ASTRA
1987



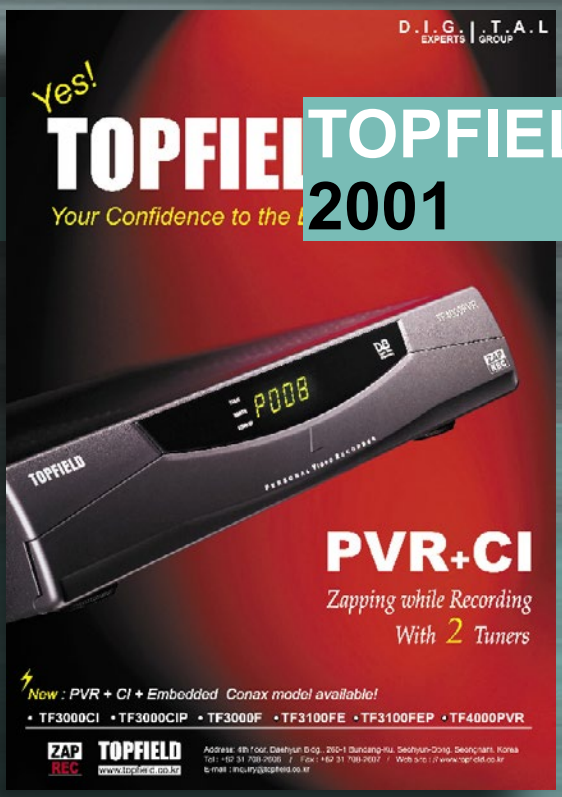
MASPRO
1988



SHARP
1989

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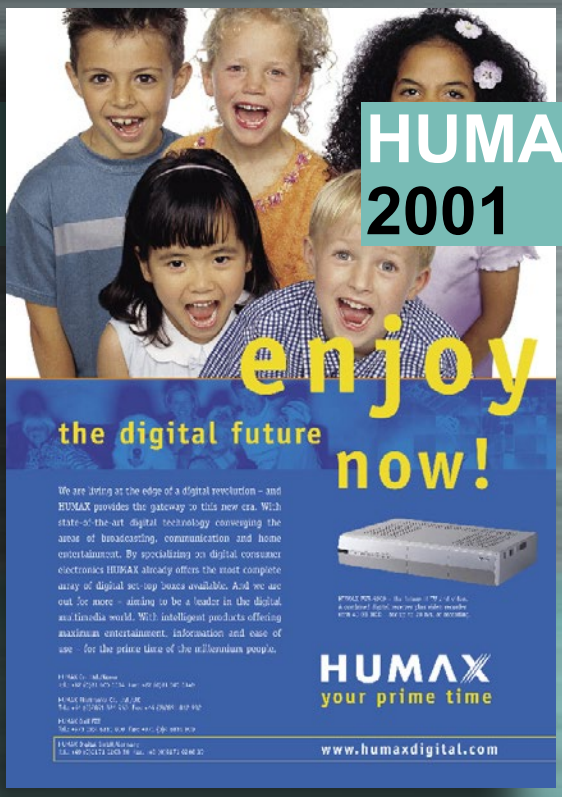
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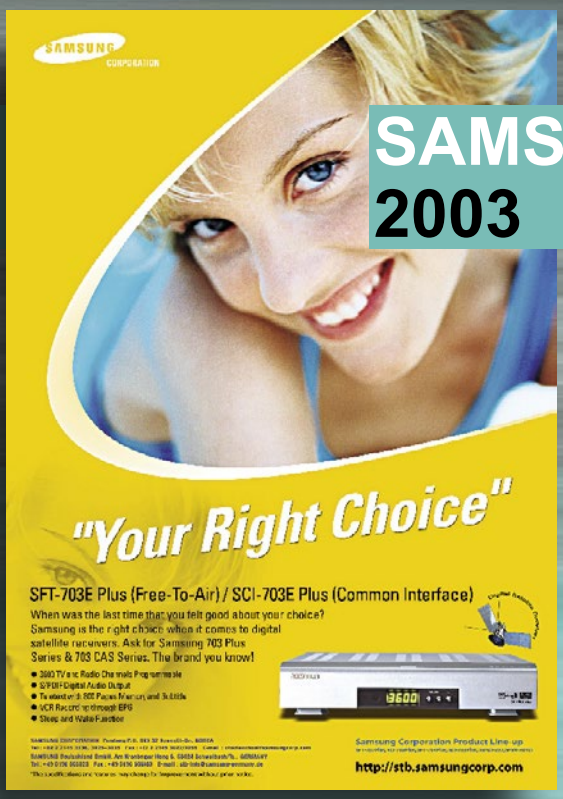
NDS 2002



DREAM 2002



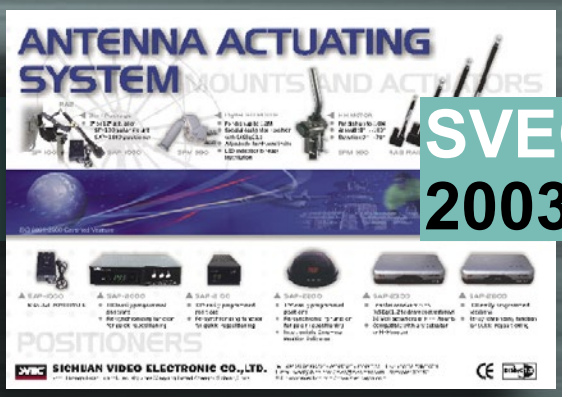
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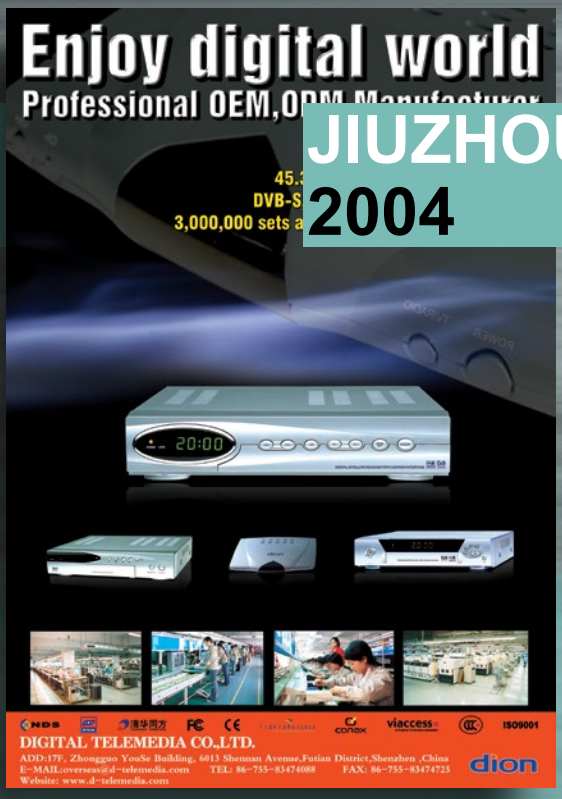
SVEC
2003



JONSA
2004



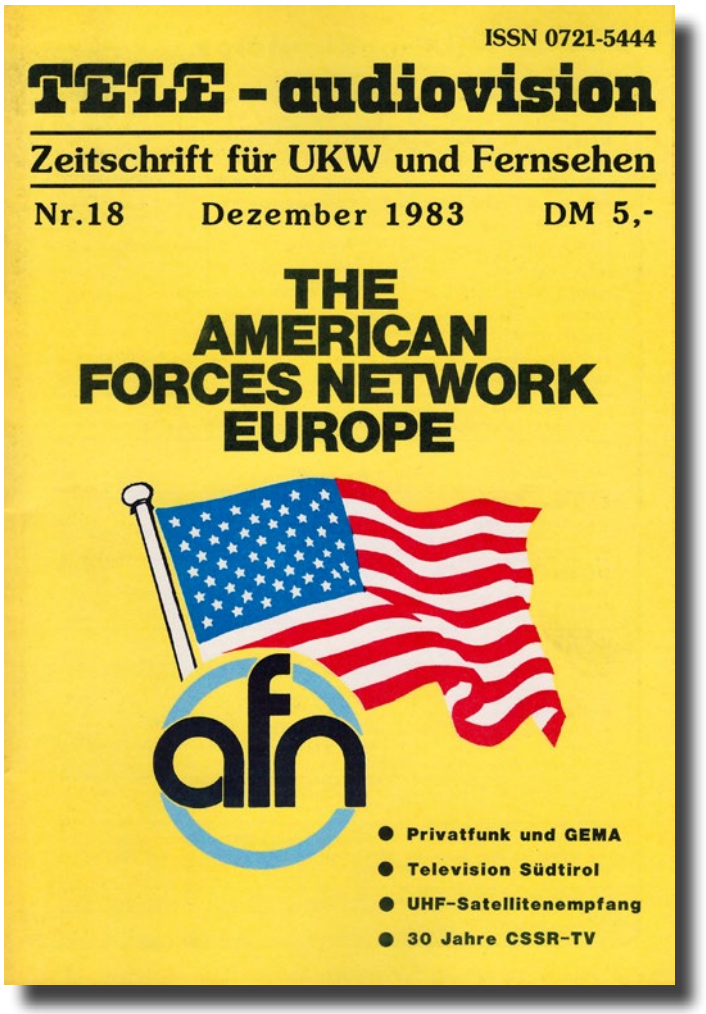
CABSAT
2004



JIUZHOU
2004



CHANGHONG
2006



30 Years Ago

British Company Sinclari presented its miniature tv

The small tv set with a 5cm flat screen includes a 6V battery, which will allow the set to operate for 15 hours. This set is especially interesting for tv enthusaists as it can detect 525 and 625 line transmissions and can decode audio at 4.75, 5.75, 5.5 and 6.0 MHz



40th Anniversary

DER VIERTE JULI 1943 FIEL ALLES ANdere als in die "Saure-Gurken"-Zeit. Alliierte Truppen waren gerade mit Säuberungsaktionen in Sizilien fertig und bereiteten sich darauf vor, in Italien einzufallen. Die britische Royal Air Force verlor 32 Bomber über Köln und die amerikanische Eigth Air Force verlor acht Flieger in Angriffen auf Le Mans und U-Boot Stellungen in Frankreich.

Das erste Batallon der für Großbritannien bestimmten Frauen-Einheit WAAC lag immer noch im Hafen, aber die Stimmung an Bord war hoch. Starke Kämpfe in Rußland und im Pazifik an diesem Tag - und alles das berichtete die amerikanische Armeezeitung "Stars & Stripes" in den vier Seiten, die sie damals umfaßte, an diesem 4.Juli 1943.

Aber trotz der vielen News, die die Stars & Stripes Redakteure in ihre wenigen Seiten packen mußten, opferten sie eine Spalte auf der Frontseite für den Start eines neuen Rundfunk-Dienstes für die in England eingesetzten amerikanischen Truppen.

Kein Zweifel, das war der Start, aber im Rückblick aus 40jähriger Perspektive, kann man darüber streiten, ob es ein wirklicher Rundfunkdienst war. Ganz sicher nicht in den ersten turbulenten Wochen, als der Programmtag lediglich aus knapp fünf Stunden aufgezeichneten Shows bestand, dazu Nachrichten, die von der BBC übernommen wurden und Sportberichte, die ein AFN-Sprecher vorlas und die von der Stars & Stripes Redaktion geschrieben worden waren.

Aber allein der Umstand, daß das Radiobaby AFN in der Luft war, ist geradezu ein Wunder, ein fast ebenso großes Wunder, daß es zu wachsen begann und größer wurde in den vierzig Jahren.

Um den Beginn zu verstehen, muß man

Bericht der "Stars & Stripes" vom 3.7.43 über das neue Programm

ETO Radio Network on Air Sunday

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1d THE STARS AND STRIPES 1d

Daily Newspaper of U.S. Armed Forces in the European Theater of Operations

Vol. 3 No. 207 New York, N.Y.—London, England Saturday, July 3, 1943



A F N - T V

Das 5th Signal Corps der amerikanischen Armee betreibt in der Bundesrepublik Deutschland ein Netz von 94 TV-Sendern, 55 Richtfunkstrecken, 24 Gemeinschaftsantennen und 177 Großgemeinschaftsantennenanlagen zum Empfang des AFN-Fernsehprogramms.

Der Sender in Bremerhaven, der Sender in West-Berlin sowie ein Sender in SHAPE und demnächst im holländischen Soesterberger übertragen ein eigenes Programm, alle anderen Sender strahlen simultan AFN-TV-Germany aus.

Empfang eines Satelliten im UHF-Fernsehband

Frage an Radio Eriwan:
Kann in Deutschland, Österreich oder Schweiz der russische Satellit **Stationer T** empfangen werden ?
Antwort:
Im Prinzip ja, aber ...

Da die Antwort von Radio Eriwan viele "aber" enthalten würde, hat sich der Schreiber aufgemacht, jedes einzelne zu zerpflücken. Zunächst einige Daten des Satelliten **Stationer T:**

Standort:	**40 000 km über Süd-Indien**
Elevation:	**ca 20° (Bundesrepublik Deutschland)**
Leistung:	**48 dbW**
Frequenz:	**714 MHz**
Video-Bandbreite	**18 MHz**
Modulation:	**FM negativ**
Linien:	**625**
Synchronisation:	**50 Hz**
Tonträger:	**+ 6,5 MHz**
Tonbandbreite:	**max. 50 kHz**
Farbe:	**SECAM**
Polarisation:	**zirkular**

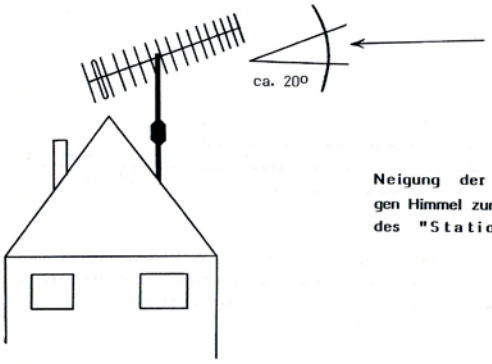
Bevor sich der zukünftige Satelliten-DXer in Unkosten stürzt, wären einige Fakten vorab zu klären:

Wie aus der obigen Checkliste zu ersehen ist, fallen einige Gebiete in Europa weg, da die erwünschten Funkbedingungen nicht gegeben sind. Ein Erfolg ist möglich, wenn
1. die Kanäle 49 bis 53 in der Umgebung nicht belegt sind
2. Richtung SO keine Häuser oder Berge den Einfallswinkel abschatten
3. ein FM-tauglicher Fernsehempfänger vorhanden ist.

Sind die Punkte 1 - 3 erfüllt, so empfielt sich die Montage der Antennenanlage. Es sollte schon eine Zwillingsantenne mit max. Gewinn beim Kanal 51 verwendet werden. Es sind zwar Versuche aus Skandinavien und Südafrika bekannt, die mit nur einer einzigen UHF-Langyagi getätigt wurden, aber ein besonders zuverlässiges Signal dürfte nicht auf dem Bildschirm zu sehen gewesen sein.

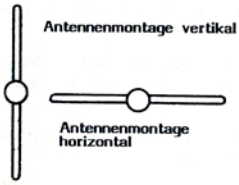
Wer über eine P7-UHF-Parabolantenne (siehe TAV 15) verfügt, hat bei dem Kanal 51 bereits 2,5 dB mehr Antennengewinn als eine UHF-Yagi.

Die Antenne sollte etwa 20° nach oben geneigt sein. Der Wert kann nur ungefähr angegeben werden, da der DXer im Norden einen kleineren Elevationswinkel berücksichtigen muß als der Kollege im Süden. Bei Stockung der Antennen sollte der Öffnungswinkel anfangs nicht zu klein gemacht werden, damit das Auffinden des Satelliten nicht zu schwer fällt.



Neigung der Antenne gen Himmel zum Empfang des "Stationer T"

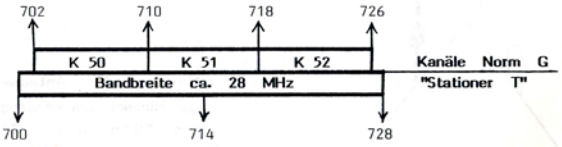
Da zirkulare Polarisation verwendet wird, ist es unerheblich, ob die Antenne horizontal oder vertikal montiert wird. In Gebieten mit besetzten Nachbarkanälen empfiehlt sich die vertikale Montage, um Störer auszublenden.



Die vertikale Montage der Antenne ermöglicht die weitgehende Ausblendung terrestrischer Fernsehsender

Ist nach erschöpfender Erprobung kein definiertes Signal vorhanden, so rentiert sich auch kein Kanalgruppen-Vorverstärker. Sollte das russische Fernsehen jedoch schwach erkennbar sein, so bieten sich mehrere Möglichkeiten an, das über 80 000 km gestreßte Bild wieder fit zu machen:

1. Bei Verwendung einer Einzelyagi kann in den Anschlußkasten der Antenne ein Dipolverstärker eingeschleift werden.
2. Bei Verwendung mehrerer Antennen bieten sich ein Kanalgruppen-Vorverstärker an, der die Kanäle 50, 51 und 53 verstärkt - z.B. Schwaiger STV 4K-K



Bandbreite des Satellitenkanals im Vergleich zu den üblichen UHF-Kanälen. Mit der Bandbreite von ca. 28 MHz muß der Kanalgruppenverstärker ausgelegt sein, wenn das Signal selektiv verstärkt werden soll.

Das FM-modulierte Signal kann mit der Schaltung aus TAV 16 in unsere Bild-Norm umgewandelt werden. Zugunsten des Eingangssignales empfiehlt es sich, vorläufig auf Farbe zu verzichten.

Nach der Normwandlung liegt bei der ZF-Ablage von 6,5 MHz der Originalton an, der mit einem Mehrnormen-Ton-Adapter in Hörlage gebracht werden kann.

Das Programm läuft von 11.00 - 17.00 sibirischer Ortszeit unter der Voraussetzung, daß der Satellit nicht im Erdschatten steht.

Eines ist sicher: Satelliten-Bilder haben keineswegs die Qualität bisher gewohnter Sehgenüsse, denn die Signale haben einen 80 000 km langen Marsch hinter sich.

Für die ersten nachgewiesenen Empfänge des **Stationer T** verlost die TAV-Redaktion deshalb zwei Jahres-Abonnements.

RB

Sat-TV aktuell

Indien: Nachdem der in den USA gebaute Satellit **INSAT 1a** von seiner Bahn abgedriftet war, stellte die UdSSR ihren **Stationer 3** zur Verfügung. Da sich das Land keine teuren Füllsender leisten kann, übernimmt der Satellit nunmehr die Versorgung entlegener Gebiete mit Ton- und Fernsehprogrammen. Die Übertragungsqualität wird als gut bezeichnet.

USA: Etwa 10 neue Satelliten-Kabel-Kanäle (TV) wurden 1983 in den USA eingerichtet. Schätzungsweise fast 50 Programme flimmern nun über die angeschlossenen Geräte. Je nach Anzahl der Programme und Anbieter werden dafür gut 200,-- DM monatlich bezahlt.

Europa: Sat-TV-Anlagen zum Empfang des amerikanischen Soldatensenders AFTV werden neuerdings von der schweizer Firma Erivision in Rotkreuz angeboten. Der Sender versorgt die amerikanischen Besatzungssoldaten mit Nachrichten und Spielfilmen und wird auch in etliche Kabelnetze eingespeist.

BRD: Die Münchner Kabelgesellschaft möchte außer dem RTL-Programm auch das kommerzielle Programm von **Satellit-TV** aus England in die bajuwarischen Haushalte einspeisen. Neben einem lokalen Kirchenprogramm wollen auch die Sportkanonen Beckenbauer und Mittenmeier auf einem Kanal ihr Bestes geben.

Niederlande: Ein Zusammenschluß einheimischer Anbieter möchte ein Satelliten-Programm **Euro-TV** als Pay-Channel einspeisen. Dazu möchte man einen Transcoder des **ECS 1** benutzen.

Europa: Der im Juni gestartete **ECS 1** wurde im Oktober von seinem Übergangsplatz bei 10° O zu seinem endgültigen Standort bei 13° O geshiftet. Dort steht er unter der Verwaltung der EUTELSAT zu hochfrequenten Taten bereit.
Insgesamt sollen etwa 19 Transponder angemietet werden können, die sicherlich nicht alle zur gleichen Zeit senden werden, da die Energie dazu nicht ausreicht.

RB



20 Years Ago

Round Antenna

Teleste from Littoinen from Finland offers the Multisat aerial for reception of an arbitrary number of satellites. The 90cm sphere incorporates a special dielectric tat works much like a lense, focussing incoming signals to a point on its rear side. Equal gain is achieved for all direftions with an opneing angle of 2 degrees. The backside rod can carry up to twenty LNBs.



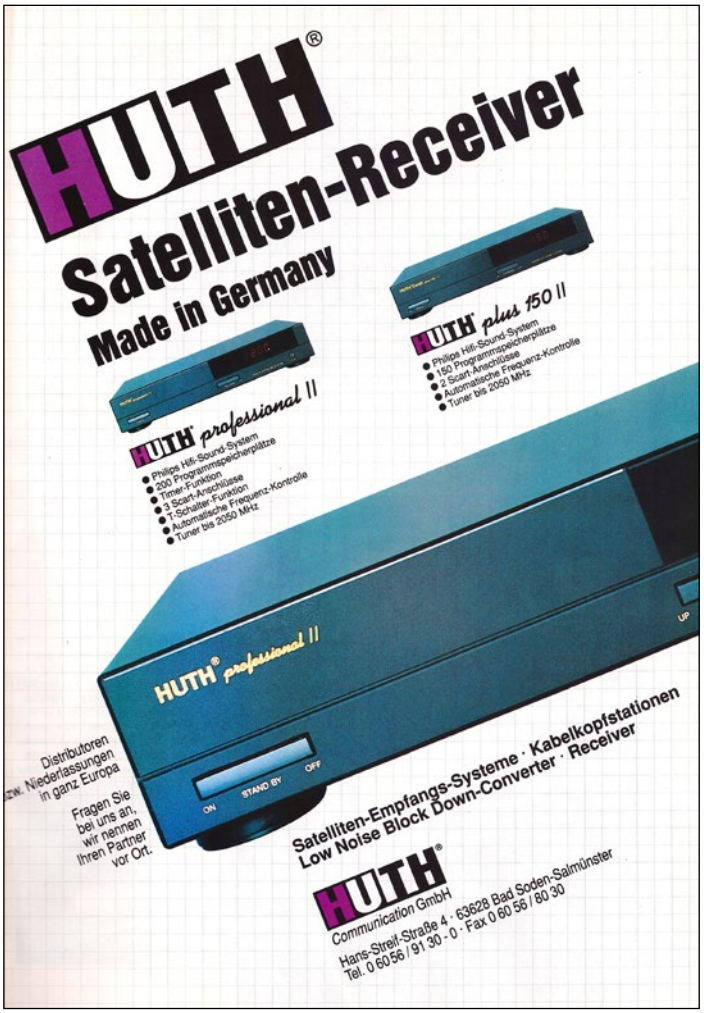





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10 Years Ago

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Marko Sommer's dishes. Marko's favorite programs can be found at 5°, 13° and 19° east.







Wavefrontier Toroidal-90

Antenna Tuning



Assembly of additional LNB's

The ability to receive 16 satellites with a fixed antenna is quite the sensation. After our exclusive report of the Wavefrontier Toroidal 90 antenna in the 10-11/2001 edition of TELE-satellite magazine, this true multifeed antenna became an overnight success. Yet even the best product is still for some people not the perfect one. Naturally this includes some hobbyists who, instead of doing what everyone else does, rely more heavily on their brain and of course their set of tools in order to tell the manufacturers that their products could still be made better.

TELE-satellite reader Chris Mitiul (www.satlex.de) had a vision: reception of 20 satellites between 24.2° East and 30° West with a fixed antenna. This of course would not be a problem with a motorized antenna but it would be for the neighbors so some kind of noiseless solution was necessary. The Toroidal 90 was not designed for such a wide range.

But for Chris Mitiul expanding an azimuth range was nothing new to him. The first successful attempts were made with a Triax Multifocus antenna. The feed mounting bar was simply extended to the left and right. And if this works for a Triax then it stands to reason that it should also work for a Wavefrontier, even though the reflector design is different.

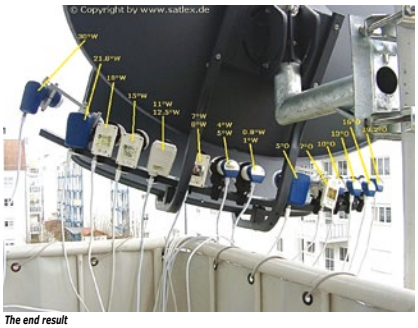
So the first thing was to fashion two multifeed holders that could each hold two LNB's. Such an aluminum holder was made out of four feed mount halves, one rail and seven screws. The rail is 15cm long and the LNB holders each have a width of 6cm. Normally the two LNB holders would be fastened to the rail with two screws. Mounting to the Wavefrontier antenna only required one screw. Because of this an LNB offset of about 25 cm was achieved. This provided plenty of room for any fine adjustments that may have been needed. If the desired satellites at the far eastern or western end prove to be difficult, a multifeed holder for three LNB's could also be used.

Before the actual work – the search for all the desired satellites – starts, the Wavefrontier with its original LNB setup should be aligned as best as possible. The additional LNB holders are quite flexible and can be turned in various directions. The screws should only be slightly tightened at first. This will help make it easier to move the assembly while looking for the desired satellites. To prevent possible errors from occurring with the necessary DiSEqC switches during the satellite search, it is a good idea to initially connect each LNB directly to the receiver or the antenna measurement unit. Only when all the satellites have been found and all the screws are securely tightened, should the DiSEqC switches be integrated with the LNB's.

You might soon be asking yourself why the manufacturer doesn't simply extend the original LNB rail of the Wavefrontier antenna. If the curve of the current rail were extended left and right, a 100% reflection of the signal would no longer be guaranteed.

More than likely, because of TELE-satellite reader Chris Mitiul, the engineers at Wavefrontier will start working on some kind of a solution. The "home made" construction discussed above still has a lot of room for improvement in terms of fine-tuning adjustments.

We tried the idea here ourselves in the TELE-satellite test department. The assembly and hardware for the additional LNB holders and rails we acquired second-hand from a normal multifeed antenna. The extra costs for the feed holder ended up between €10 (2 LNB's) and €15 (3 LNB's) per piece. We managed an azimuth range of 56°. This is 40% more than what the Wavefrontier can do in its standard configuration.



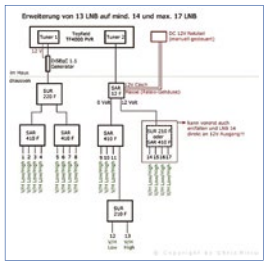
The end result

The vision to be able to receive 20 satellites did not come completely true. And with the DiSEqC switches we never managed to get more than 17 satellites (see diagram). But these 17 satellites could be selected from a significantly larger azimuth range than was possible before.

The bottom line: if the installation of a motorized antenna is not possible, then this would be the only viable alternative.



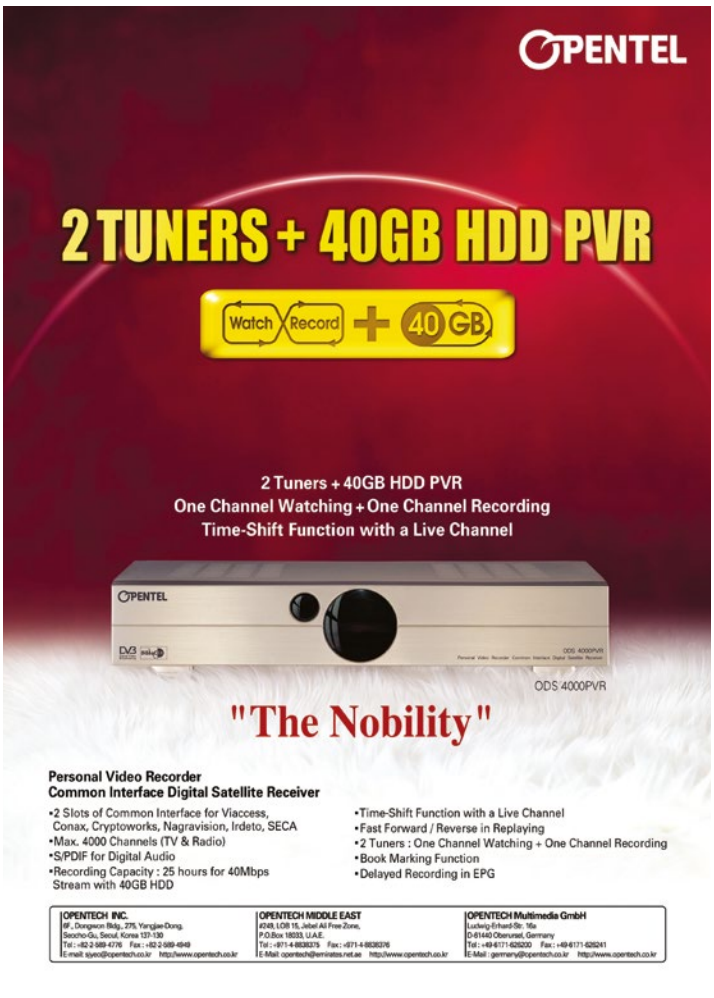
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This is how it is all switched








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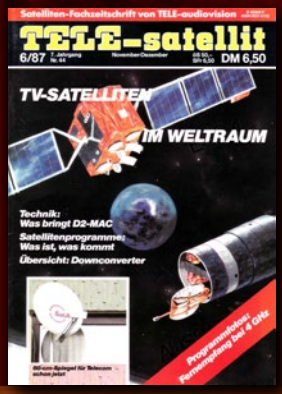
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1989



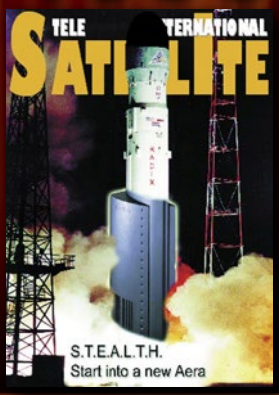
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1998



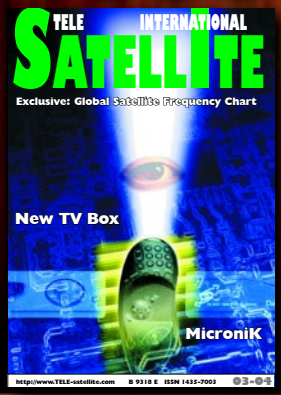
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Edited by
Branislav Pekic

EUROPE

EBU TESTS HIGHER FRAME RATES FOR UHDTV

The EBU is conducting a series of tests on the impact of higher frame-rates for UHDTV services. The tests are being conducted by the EBU's Broadcast Technology Futures group, make up of the heads of research labs of the BBC, IRT, Rai and NHK. The tests are designed to address questions including whether the current UHDTV standard, which includes only the 120Hz higher frame rate, needs to be revised to incorporate other rates.

BBC, SKY LAUNCH UK UHD FORUM

The UK industry association for digital TV, the Digital TV Group, has launched the UK UHD Forum, which will work closely with Forum for Advanced Media in Europe (FAME), an initiative led by the EBU and the Digital Interoperability Forum and supported by the European Commission. The group will co-ordinate national requirements to enable interoperability and examine whether there is a requirement for an Ultra HD profile for the UK.

HISPASAT PLANS 4K CHANNEL

Spanish satellite operator Hispasat plans to launch a 4K channel that will allow the industry to broadcast in the Ultra High Definition standard. It has already launched a trial demonstration of Ultra HD content delivery using the HEVC compression capabilities of the ViBE VS7000 multi-screen encoding platform powered by Thomson Video Networks, via the Hispasat 1E satellite platform. Hispasat has also partnered with RTVE, Abertis Telecom and Apuntolapospo for the production of a 50-minute documentary on the history of the Prado Museum in UHD/4K.

CZECH OPERATOR TO RUN UHDTV TESTS

Czech Radiokomunikace has received approval from the regulating body to continue DVB-T2 tests from a transmitter in Prague. The operator will use the license for testing pay-TV and Ultra HDTV, with Czech TV being the main content supplier.

BSKYB AIRS 4K FOR FIRST TIME IN UK

BSkyB has conducted the first ultra HD broadcast in the UK, by airing the football match Stoke City v West Ham on August 31. It has no plans to launch a commercial service for the moment.

EUTELSAT AND SAMSUNG AIR ULTRA HD AT IFA

On occasion of the IFA in Berlin, Eutelsat Communications and Samsung Electronics have partnered to demonstrate a consumer-ready Ultra HD satellite broadcast on a Samsung UHD TV. A DVB-S2 Ultra HD signal transmitted by the Eutelsat 10 A satellite was received on a commercially available UHD TV.

NORTH AMERICA

CEA PUBLISHES 4K ULTRA HD REPORT

The Consumer Electronics Association (CEA) has released a new report—"Ultra High-Definition: State of the Industry" that projects shipments of Ultra HD sets to reach 57,000 units, worth US$ 314 million, by the end of this year. It forecasts Ultra HD shipments to surpass the one million-unit mark in 2015. The CEA's study finds 4K production is increasing, thanks in part to the development of 4K-capable cameras and post-production tools.



■ **Learn more about UHDTV in our Feature article: www.TELE-audiovision.com/TELE-satellite-1309/eng/feature-uhdtv.pdf**

SONY SHOOTS ESPN X-GAMES IN 4K

Sony has been shooting ESPN's Summer X-Games in 4K, with a goal of creating entertainment content and drive demand for 4K "Ultra HD" TV sets. A 20-minutes story reel will be available for the Sony Media Player, created to deliver 4K movies and other content to owners of Sony's Ultra HD TVs.

LATIN AMERICA

NET SERVICOS TO SWITCH TO 4K

Brazilian cable TV operator Net Servicos plans to switch its HD broadcasts from 720p and 1080i directly to 4K, without going through 1080p. This is because transmission in 1080p would require a new decoder, as the current one only reads the 720p and 1080i formats.

ASIA

KCTA LAUNCHES 4K PILOT CHANNEL IN SOUTH KOREA

Korea Cable Television & Telecommunications Association (KCTA) has just launched its pilot 4K channel in South Korea, six months ahead of its original schedule. Only limited households are currently involved in the pilot run, but the plan is to launch commercial broadcasts as early as next year. Meanwhile, satellite broadcaster KT Skylife announced plans to offer pilot UHD contents starting next year.

CHUNGWHA TELECOM STARTS SALES OF 4K TV SETS

Taiwanese operator Chunghwa Telecom began selling UHD 4K television sets as part of an effort to drive up local demand for UHD content. Chunghwa Telecom aims to sell 40,000 50-inch branded Chimei TVs by the end of this year, including the 4K model, available on a three-year subscription to the multimedia-on-demand (MOD) service. The company aims for a total of 100,000 TV sales by year-end. Taiwan's 4K TV market is forecast to hit 30,000 units in 2013, with Chimei products expected to take an 18 per cent share.

WORLD

MIRANDA, SONY COOPERATE ON 4K/UHDTV LIVE SOLUTIONS

Miranda Technologies has teamed up with Sony to realize 4K/UHDTV live production solutions, specifically targeting high profile sports. A seamless 4K technology solution involving both companies will be used in UK outside broadcast company Telegenic's 4K-equipped OB truck expected to go into service later this year. Miranda and Sony held demonstrations of the integrated 4K/UHDTV production scenarios at the NAB 2013.

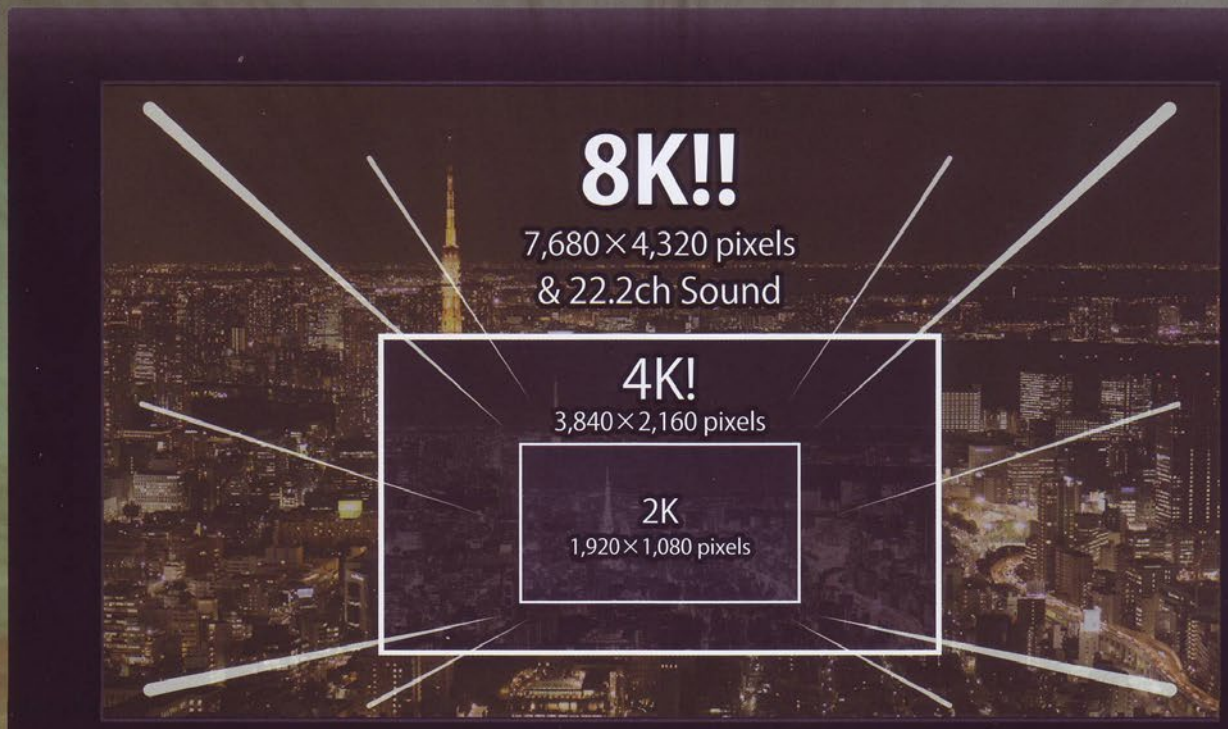
SONY TO LAUNCH 4K MOVIE DOWNLOADS

Sony will offer 4K movies for download via Video Unlimited 4K service from the autumn 2013, featuring movies from Sony Pictures and independent producers. It will allow 4K TV owners to view native 4K content from Sony's 4K media server.

SONY LEADS 4K TV SHIPMENTS

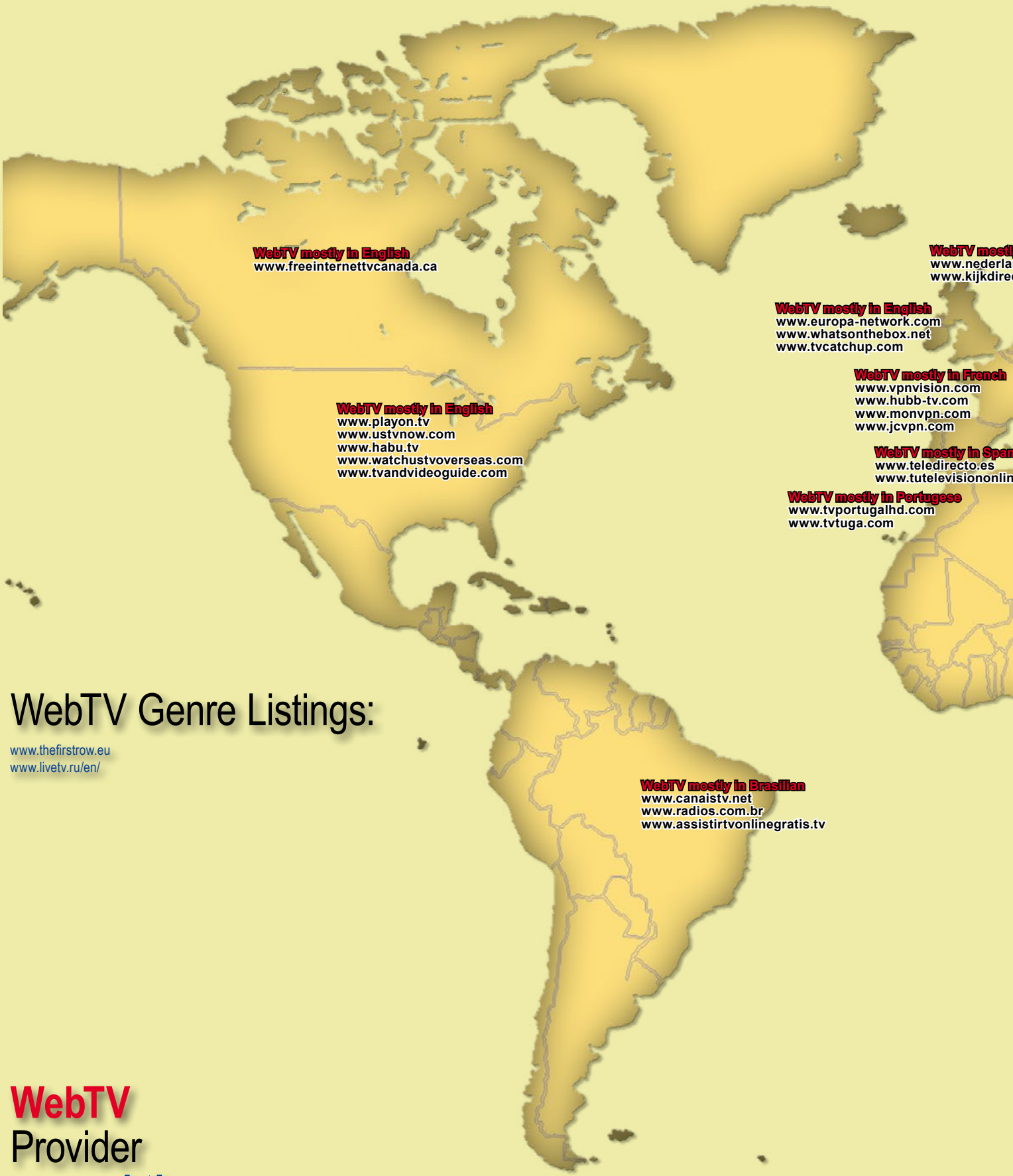
Sony emerges as the leader in 4K TV shipments, with a 37.8% share of the global market in the 1H 2013, according to NPD DisplaySearch. LG is in second place with 14.2%, followed by Samsung with 4%. NPD DisplaySearch says that the key reason for Sony's dominance is its sales of smaller 55-inch and 65-inch Bravia X9 models. Powered by these sales, Sony has achieved revenues of $185 million from its Ultra HD TVs out of an industry-wide total of $490 million.

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V: H.264
A: MPEG-4 AAC

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Indonesia
Kazakhstan
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Kyrgystan
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Swaziland
Tanzania
Thailand
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Uzbekistan
Vietnam
Zambia
Zimbabwe

DVB-T
V: H.264
A: MPEG-4 AAC

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Estonia
Guinea
Hungary
Iceland
Ireland
India
Iran
Israel
Latvia
Lithuania
Macedonia
Mauritius
New Zealand
Norway
Panama
Poland
Portugal
Rwanda
Slovenia
Spain
Uganda
Ukraine

ATSC
V: MPEG-2
A: AC-3

Canada
Dominican R.
Honduras
Mexico
South Korea
USA

DVB-T
V: MPEG-2
A: MPEG-1 Level 2

Algeria
Albania
Australia
France
French Guyana
Germany
Greece
Italy
Luxembourg
Morocco
Netherlands
Qatar
Sweden
Switzerland
Tunisia

ISDB-TB
V: H.264
A: MPEG-4 AAC

Argentina
Belize
Bolivia
Botswana
Brazil
Costa Rica
Chile
Ecuador
Guatemala
Paraguay
Peru
Philippines
Uruguay
Venezuela

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

Japan



Digital Terrestrial Television of the World

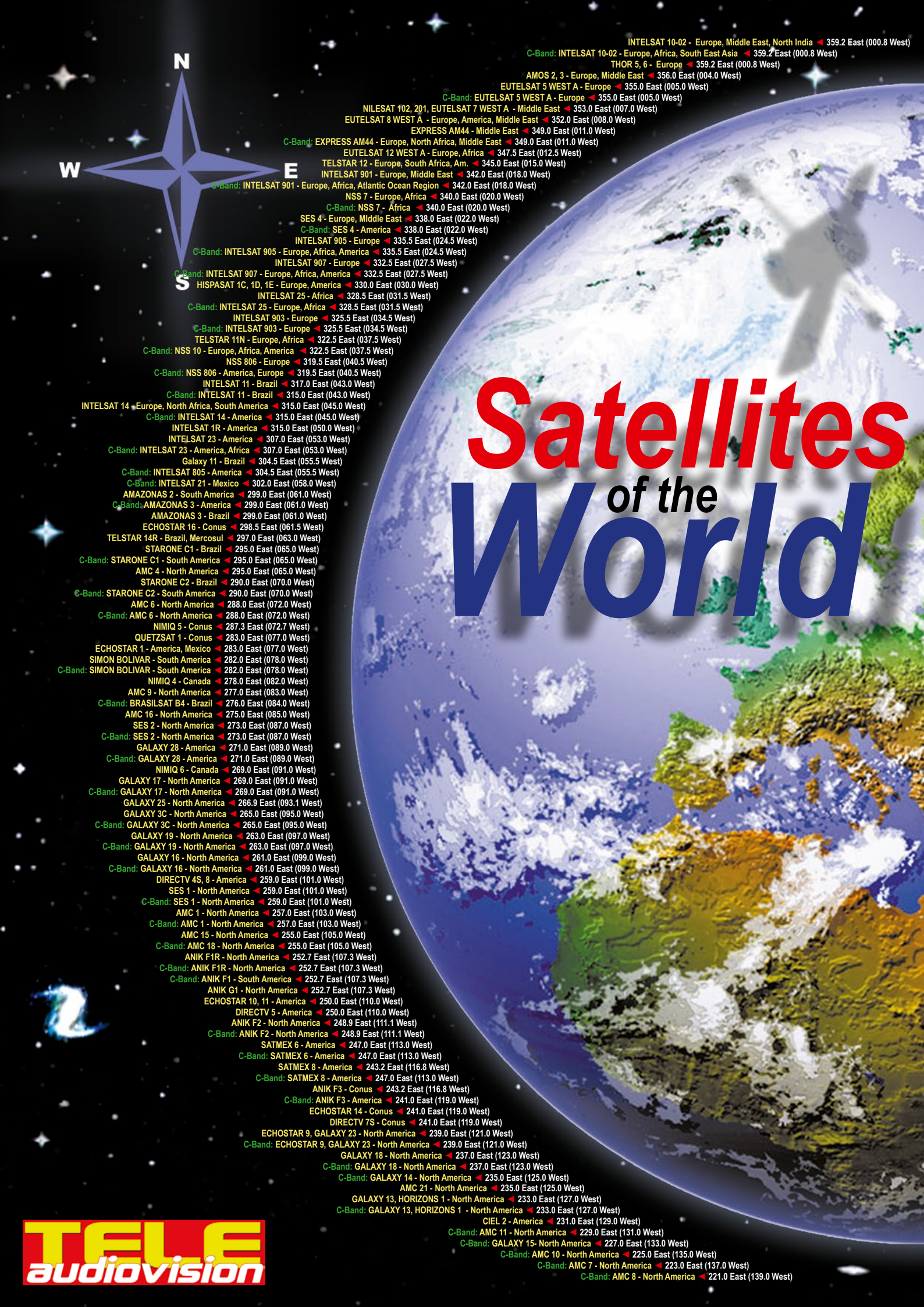
Dominant System per Country

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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 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 23 - America ◄ 307.0 East (053.0 West)
C-Band: INTELSAT 23 - America, Africa ◄ 307.0 East (053.0 West)
Galaxy 11 - Brazil ◄ 304.5 East (055.5 West)
C-Band: INTELSAT 805 - America ◄ 304.5 East (055.5 West)
C-Band: INTELSAT 21 - Mexico ◄ 302.0 East (058.0 West)
AMAZONAS 2 - South America ◄ 299.0 East (061.0 West)
C-Band: AMAZONAS 3 - America ◄ 299.0 East (061.0 West)
AMAZONAS 3 - Brazil ◄ 299.0 East (061.0 West)
ECHOSTAR 16 - 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)
AMC 4 - North 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 ◄ 287.3 East (072.7 West)
QUETZSAT 1 - Conus ◄ 283.0 East (077.0 West)
ECHOSTAR 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 6 - 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)
ANIK G1 - North 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 8 - America ◄ 243.2 East (116.8 West)
C-Band: SATMEX 8 - America ◄ 247.0 East (113.0 West)
ANIK F3 - Conus ◄ 243.2 East (116.8 West)
C-Band: ANIK F3 - America ◄ 241.0 East (119.0 West)
ECHOSTAR 14 - Conus ◄ 241.0 East (119.0 West)
DIRECTV 7S - Conus ◄ 241.0 East (119.0 West)
ECHOSTAR 9, GALAXY 23 - North America ◄ 239.0 East (121.0 West)
C-Band: ECHOSTAR 9, GALAXY 23 - North America ◄ 239.0 East (121.0 West)
GALAXY 18 - North America ◄ 237.0 East (123.0 West)
C-Band: GALAXY 18 - North America ◄ 237.0 East (123.0 West)
C-Band: GALAXY 14 - North America ◄ 235.0 East (125.0 West)
AMC 21 - North America ◄ 235.0 East (125.0 West)
GALAXY 13, HORIZONS 1 - North America ◄ 233.0 East (127.0 West)
C-Band: GALAXY 13, HORIZONS 1 - North America ◄ 233.0 East (127.0 West)
CIEL 2 - America ◄ 231.0 East (129.0 West)
C-Band: AMC 11 - North America ◄ 229.0 East (131.0 West)
C-Band: GALAXY 15- North America ◄ 227.0 East (133.0 West)
C-Band: AMC 10 - North America ◄ 225.0 East (135.0 West)
C-Band: AMC 7 - North America ◄ 223.0 East (137.0 West)
C-Band: AMC 8 - North America ◄ 221.0 East (139.0 West)

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#	1311	1401	1403	1405
Editorial Deadline	30 August 2013	1 November 2013	27 December 2013	28 February 2014
Advertisement Deadline 广告截止日期	**6 September**	**6 November 2013**	**3 January 2014**	**7 March 2014**
Hardcopies	18 October 2013	20 December 2013	14 February 2014	18 April 2014
Online	1 November 2013	3 January 2014	28 February 2014	2 May 2014

Digital TV Exhibitions

13 - 15 November 2013
InterBEE
International Broadcast Equipment Exhibition
Makuhari Messe, 2-1 Nakase, Mihama-ku, Chiba 261-0023, Japan
13 - 14 Nov.: 10:00am - 5:30pm
15 November: 10:00am - 5:00pm
www.inter-bee.com

19 - 22 November 2013
ITU Telecom World
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world2013.itu.int

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Saigon Exhibition and Convention Center, 799 Nguyen Van Linh Parkway, District 7, Ho Chi Minh City, Vietnam
www.vietnamelectronics.com

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mobility.vsatevent.com

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8 - 9 Jan.: 9:00am - 6:00pm
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www.cesweb.org

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25 - 27 February 2014
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11 - 13 March 2014
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Dubai International Convention and Exhibition Centre, Dubai, UAE
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13 March: 10:00am - 5:00pm
www.cabsat.com

18 - 20 March 2014
TV Connect
London, UK

21 - 23 March 2014
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China Content Broadcasting Network Exhibition - largest broadcasting technology and equipment expo in the Asia-Pacific region
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23 March: 9:00am - 4:30pm
www.ccbn.tv

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7 - 10 April 2014
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Las Vegas Convention Center, Las Vegas, Nevada, USA
Opening Hours:
7 - 9 April: 9:00am - 6:00pm
10 April: 9:00am - 2:00pm
www.nabshow.com

20 - 21 May 2014
SatCom Africa
Johannesburg, South Africa

20 - 22 May 2014
ANGACOM 2014
Cologne, Germany

17 - 20 June 2014
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