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audiovision

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INTERNATIONAL **01-02**2015



Test Report

SPAUN LTE FILTERS

Kevin Spaun Very Effectively
Stops 4G/LTE Transmitter
Interference



Test Report

DEVISER S7000

Jason Wu Provides an IPTV Update
to Deviser's Flagship
S7000 Analyzer



Company Report

SUMAVISION

Haitao Zheng Conquers the
Broadcast Market with an
Ideal Platform System



Company Report

CHINASATCOM

Yang Tao Expands to
Global Markets

Museum Report

**FORMER
EAST
GERMANY**

This Vacuum Tube
AM Transmitter was
Designed to Block
Reception



Test Report

**MKTech
S1-44HD 3D**



Amazing:
Linux & Android
in One Box



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Over a decade of experience in digital set top boxes

we have models for worldwide market



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-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



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



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



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



IV5010

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**TELE-audiovision
International**
The World's Leading
Digital TV Industry Publication

since 1981

Alexander Wiese
Publisher

alex@tavmag.com
HQ in Munich, Germany

Dear Readers,

We've known for a long time now that there really isn't a perfect receiver. They all have certain functions that can be handled with ease while other functions are not so optimally incorporated. But it all has to do with your point of view: for one user the features in a receiver might be the perfect solution for his needs. On the other hand, those same features might do nothing for another user. If you are an extreme channel surfer, then fast channel switching times would be very important to you. But if you're always recording programs, then it wouldn't really matter to you how fast a receiver switches from one channel to another; you'd want a fully-featured PVR function.

For every different application, there's an operating system that's been optimized for that application and if you know your way around, you'll have acquired a receiver with an operating system that perfectly suits your needs. But wait! It doesn't have to be like that!

In this issue of TELE-audiovision we are introducing a receiver that simply works using two different operating systems. Instead of having two receivers with two different operating systems so that you're prepared for every possible scenario, you can have just one receiver

with two built-in operating systems; you'd simply start the appropriate operating system based on what you want to use the receiver for. Since the Internet is steadily having more and more of an impact in our daily lives, the second system in this new receiver is the Android operating system. With it you can dive right in to everything the Internet has to offer.

The receiver is slowly becoming an all-around device. Unlike not too long ago when a receiver was only optimized for a single reception mode, this new generation of multi-operating system receivers is now compatible with all the different variations. One single box can now receive all the various TV modes.

And that's exactly how it should be. In the end, it's all about the software; it can be reprogrammed as often as is needed.

Alexander Wiese

Editor-in-Chief TELE-audiovision Magazine

TELE
audiovision

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Letter to The Editor www.TELE-audiovision.com/letter/

Published by TELE-audiovision Magazine GmbH, Aschheimer Weg 19, 85774 Munich-Ufg, GERMANY/EUROPE

Design Némethi Barna Attila

Advertising www.TELE-audiovision.com/ads/ or email to alex@tavmag.com

Hard Copies of TELE-audiovision Magazine are available to advertisers only

Printer TERC-PRESS Nyomdai és Kereskedelmi Ágazat, Pillangó park 9, 1149 Budapest, HUNGARY/EUROPE

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TELE-audiovision was established in 1981 and today is the oldest, largest and most-read digital tv trade magazine in the world.
TELE-audiovision is seen by more than 350,000 digital tv professionals around the world.

www.TELE-audiovision.com

Redaktion TELE-audiovision, Postfach 1234, D-85766 München-Ufg

Chefredakteur Alexander Wiese (verantwortlich) Anschrift wie Verlag

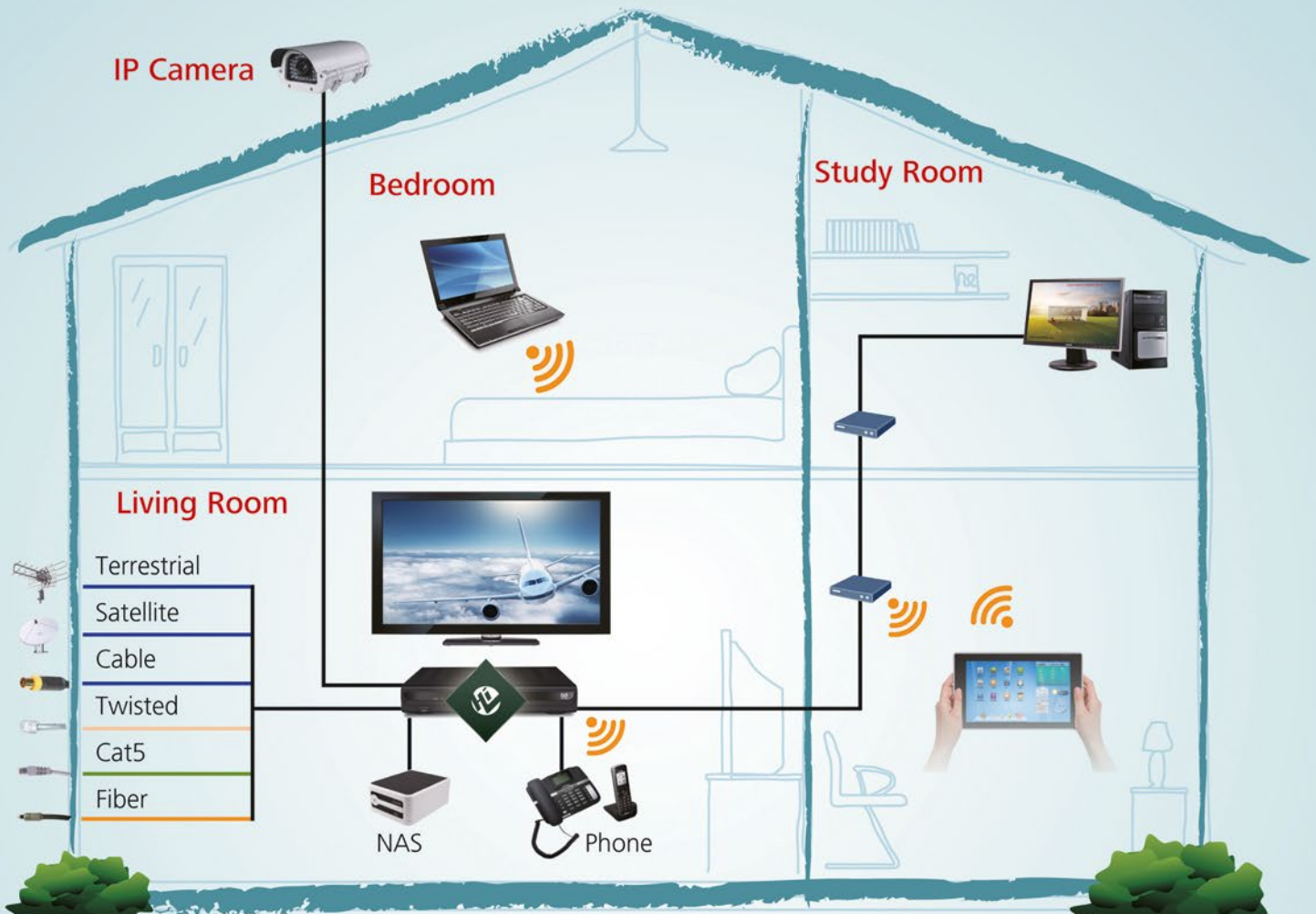
Verlag TELE-audiovision Magazine GmbH, Aschheimer Weg 19, D-85774 Unterföhring

Inhaber: Alexander Wiese, Verleger, Unterföhring

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Hisilicon

Home network SoCs and Solutions



Hisilicon STB SoC Key Features

- High performance ARM Cortex A9 CPU
- Integrated with DVB-C or DVB-S/S2 Demodulator
- Hardware decoder supporting Full HD H.264/MPEG2/MPEG4/AVS/Real/VC-1/FLV/VP6/VP8
- Hardware encoder supporting H.264 SVGA
- High performance 2D and 3D engine
- Advanced security features
- Dual Ethernet, Dual USB 2.0, HDMI 1.4

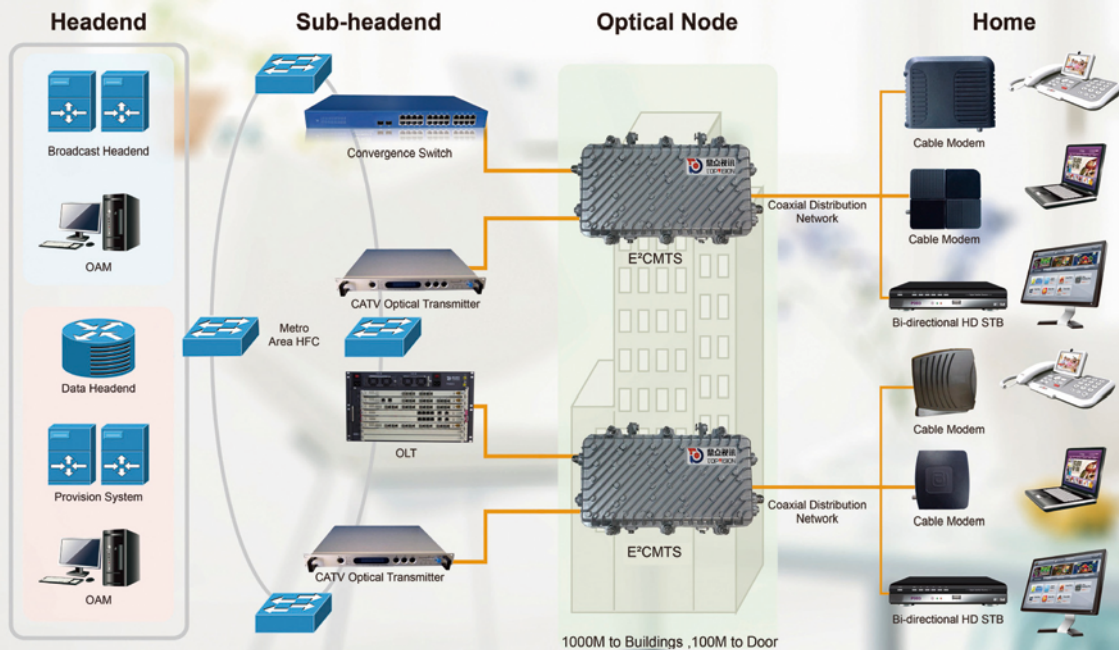
Solution Features

- Low cost HD-STB solution with 3DTV
- Quick Boot-up, Low Power Consumption
- 3D Games, 3D UI
- Linux/Android 4.0
- Full-service PVR
- Video phone, VOIP
- DVB, IPTV, OTT, Hybrid STB
- Cloud computing, Thin Client solutions

E²CMTS

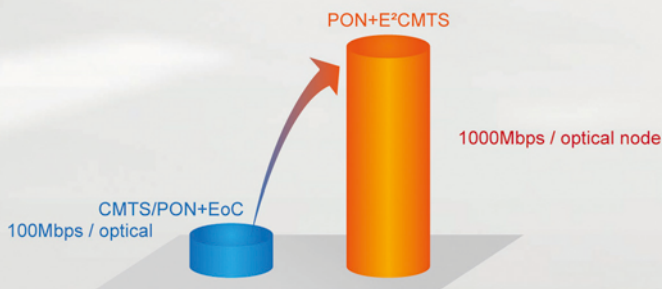
- Compatible with DOCSIS 3.0, DOCSIS2.0, Euro-DOCSIS, C-DOCSIS
- 16 downstream channels for 800Mbps, and 4 upstream channels for 160Mbps
- Support up to 500 CMs
- Outdoor and Indoor design
- Plug and Play, intelligent configuration
- IP67 environment protection is intended

AVOIDING THE COSTS OF A TRADITIONAL CMTS



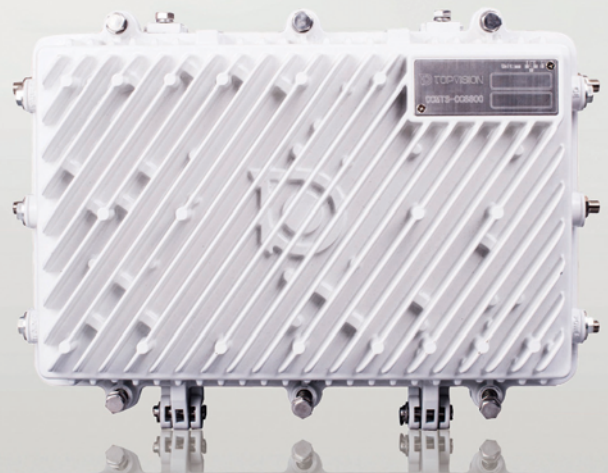
Compared with CMTS Solution, normally CAPEX can be reduced by **30%**, OPEX can be reduced by **20%**

ELIVERING HIGH-VALUE INTERNET SERVICES



Cases:

Pilot projects of Global market
 European: Poland, Hungary
 Asia: China, India, Taiwan (China)
 North America: Canada, US



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MKTECH S1-44HD 3D
Android & Linux
Combi Receiver..... 14



SPAUN SLTE 30, SLTE 60, SLTE 90
Low Pass
and Band Stop
Filters 28



TITANIUM SATELLITE C1W-PLL
C band LNBF 40



DEVISER S7000
Multi Norm
Digital TV Signal
Analyser 52

Global Readership of TELE-audiovision Magazine..... 10

Test Report:
DVR-Studio HD 3 - Update 36

AWARD Winning:
Digital Receivers of 21st Century 62

AWARD Winning:
Signal Analyzers of 21st Century 70

Feature:
Self-Made Broadband Receiver 76

Digital Technology:
New Developments 88

Company Report:
Broadcast Solutions from
Sumavision, China 94

Museum Report:
Antenna Amplifier Museum in
Burgstädt, Germany 114

Global Company Directory:
The Decision Makers in
Worldwide Digital TV Industry 124

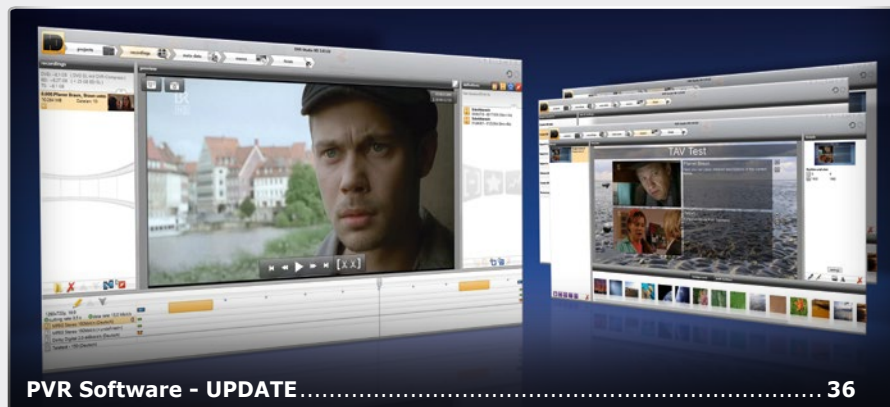
Company Report:
TV Satellite Operator,
Chinasatcom, China 136

Uplink Overview:
Best Satellite Uplink Earth Stations 148

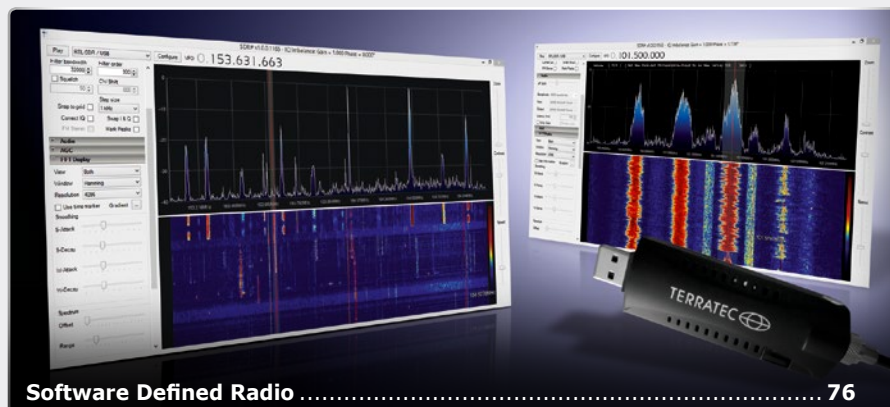
TELE-audiovision History:
TELE-audiovision in 1984 156

TELE-audiovision History:
TELE-audiovision in 1994 158

TELE-audiovision History:
TELE-audiovision in 2004 160



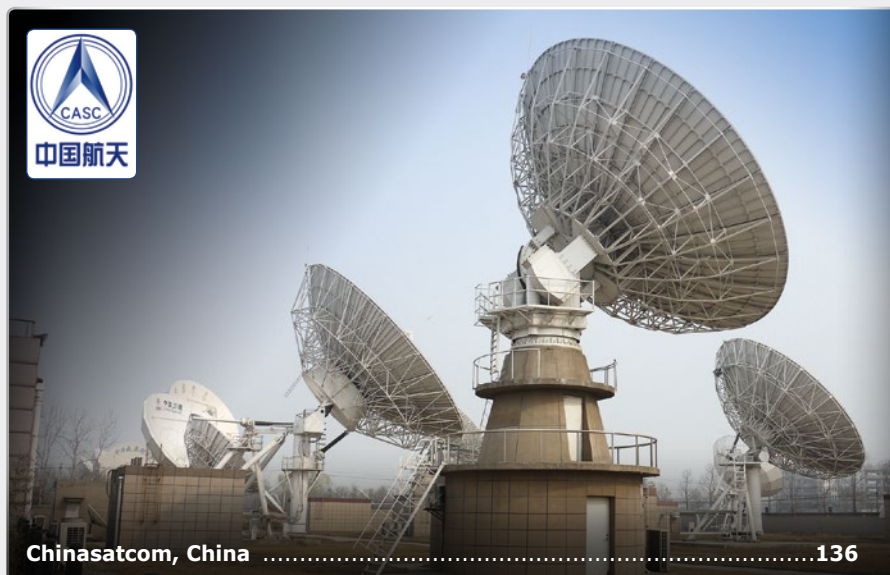
PVR Software - UPDATE..... 36



Software Defined Radio 76



Sumavision, China 94



Chinasatcom, China 136

CHANGHONG

Professional in STB

CREATING EASY LIFE



Smart Center Box

- OS: android 4.4
- HEVC 4Kx2K P60 HD decoding display
- Mainstream audio decoding including Dolby, AAC, WMA
- Integrate 2.4G/5G dual-band WIFI module, support AP function
- One HD TV live, meanwhile push at least two HD streams to other equipments (mobile, PAD, TV) via WIFI
- Various I/O ports



Products & Technologies

- DVB-C/T/S/C2/T2/S2, ISDB-T, IPTV
- 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...



MHEG-5



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E-mail: stbinfo@changhong.com

ALUOSAT-YAGI	China	69	JEZETEK	China	164
AZURESHINE.....	Taiwan	25	JONSA	Taiwan	79
BSD	Brazil	135	MAXINGCO.....	China	103
BT.....	UK.....	153	MFC	USA.....	59
CABLEWORLD	Hungary	35	MICO	China	2
CABSAT2015	Dubai	121	MKTECH	China	9
CASTOR.....	Netherlands	155	NABSHOW2015	USA.....	117
CCBN2015	China	133	PANODIC.....	China	2
CES2015.....	USA.....	127	PERFECTVISION	USA.....	17
CHANGHONG.....	China	7	ROHDE&SCHWARZ	Germany	163
CHINASATCOM	China	151	SAT-LINK	China	83
CSTB2015.....	Russia.....	131	SES.....	Luxembourg	143
DEVISER	China	45, 141	SICHUANJIUZHOU.....	China	164
DEKTEC	Netherlands	113	SPAUN	Germany	135, 139, 141
DIGITALTELEMEDIA	China	164	SPAUN ELECTRONIC	Germany	101
FORMULER	Korea	51	SUMAVISION.....	China.....	5
GLOBALINVACOM.....	UK.....	33	TENOW	China	139
GOTECH.....	China	9	TIANDITONG.....	China	87
HISILICON	China	4	TITANIUM SATELLITE	USA.....	107
HORIZON	UK.....	21, 68	TSINGHWA.....	China	97
JIUZHOU	China	164	XSAT	China	55

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Leading Digital TV Equipment Manufacturers continuously choose **TELE-audiovision Magazine** to market their products most successfully on a global scale

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- End Consumers
- Content Providers
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SI-44HD **Android 4.2 OS OTT Box with DVB-S2 & 3D GPU**

- ARM Cortex-A9 CPU up to 1GHz frequency and 5000DMIPS
- Multi-screen function: DLNA, MiraCast multi-screen interaction in Android or iOS system
- App store available for downloading applications
- Ethernet support: Skype, Twitter, Youtube, Facebook, Web browser, XBMC, etc
- Video-On-Demand (VOD) and Over-The-Top (OTT) Services supported
- IP camera supported
- 3D Games supported
- 4xUSB 2.0 interface supporting USB WIFI, 3G WiFi Dongle, Mouse and Keyboard, USB PVR and software upgrade

Customerized HD Triple-Tuner Box: **DVB-S2 Twin Tuner plus one DVB-T2/DVB-C/ISDB-T Tuner**



- Fully compliant with DVB-S/S2 and DVB-T2/DVB-C/ISDB-T (MPEG-II/ MPEG-IV/ H.264)
- Supports Ethernet connection and GPRS data loading
- Removable hard drive frame (2.5" SATA)
- Multi-screen function: DLNA, MiraCast multi-screen interaction in Android or iOS system
- XBMC Entertainment Center is available
- IPTV and Video-On-Demand (VOD) services supported
- YouTube, Weather Forecast, Samba, Internet Photo Browser available
- Games available: Native Game / Native32 Game/ NES Game
- CE & FCC approval

TF8-16HD DVB-S2/T2/T/C2/C Combo Signal Meter

- High-resolution 5-inch TFT-LCD screen
- Fully compliant with DVB-S2/T2/T/C2/C modes
- Fast and accurate signal finding and locking
- Pre-/Post-BER & C/N & MER Measurement display
- Advanced spectrum analyzer
- Constellation analyzer
- User-friendly UI guide with multi-lingual OSD
- Software update via USB



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all Major World Languages



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العربية



Bahasa
Indonesia



German
deutsch



English



Spanish
español



French
française

Worldwide

Asia



Top 25 Countries > 3200 Readers

COUNTRY	Readers #
Brazil	38,048
Germany	26,685
United States	22,206
China	16,661
Italy	14,147
France	12,848
UK	11,674
Iran	10,881
Turkey	9,835
Indonesia	9,787
Algeria	9,613
Netherlands	8,646
Portugal	8,277
Romania	7,895
Spain	6,574
Russia	6,376
Belgium	5,994
Morocco	5,902
Bulgaria	5,496
Egypt	5,041
Poland	5,015
Hungary	4,731
India	4,612
Canada	3,921
Saudi Arabia	3,883
Greece	3,843
Czech Republic	3,680
Argentina	3,588
Ukraine	3,558

Readers' Breakdown

Manufacturers	7%
Distributors	12%
Wholesaler	17%
Dealers	24%
Installers	9%
Satellite Provider	2%
Cable Provider	10%
IPTV Provider	6%
Program Provider	11%
Private Enthusiasts	2%

Top 25 to 105 Countries > 130 - 3200 Readers

Chile	3,167
Switzerland	3,011
Tunisia	2,725
Slovakia	2,605
Pakistan	2,573
Austria	2,562
Croatia	2,548
Venezuela	2,401
Iraq	2,275
Sweden	2,196
Norway	2,183
Malaysia	2,176
Israel	2,067
Australia	2,041
Mexico	1,968
Serbia	1,900
Colombia	1,778
South Africa	1,629
UAE	1,508
Ireland	1,501
Denmark	1,339
Thailand	1,223
Libya	1,181
Finland	1,179
Peru	1,083
Slovenia	992
Sri Lanka	972
Philippines	942
Yemen	908
Jordan	856
Ecuador	842
Uruguay	775
Lebanon	752
Lithuania	748
Nigeria	717
South Korea	716
Macedonia	711
Syria	676
Japan	674
Bolivia	669
Kenya	656
Sudan	632
Bosnia and Herzegovina	629
Albania	601
Taiwan	594
Puerto Rico	580
Kuwait	534
Panama	519
Qatar	486
Hong Kong	472
Luxembourg	469
Paraguay	462
Latvia	459
Cyprus	457
Belarus	422
Kazakhstan	414
Senegal	414
New Zealand	407
Oman	398
Moldova	379
Vietnam	378
Georgia	358
Estonia	334
Singapore	318
Palestine	284
Mauritius	279
Bahrain	271
Dominican Republic	254
Costa Rica	249
Ghana	245
Iceland	211
Uganda	210
Ethiopia	205
Malta	188
Afghanistan	181
Cameroon	178
Suriname	174
Bangladesh	167
Uzbekistan	162
Azerbaijan	159
Zimbabwe	158
Trinidad and Tobago	157
Tanzania	149
Barbados	144
Brunei	134

Top 106 to 180 Countries < 130 Readers

Brunei	134
Mali	131
Montenegro	129
Malawi	115
Macau	111
Armenia	106
Botswana	103
Martinique	103
Mauritania	95
Maldives	93
Madagascar	90
Myanmar	90
Angola	87
New Caledonia	86
Aruba	85
Namibia	83
Rwanda	77
Guyana	76
Netherlands Antilles	75
Zambia	74
Guatemala	72
Congo	71
French Guiana	70
Mozambique	69
Niger	64
Kyrgyzstan	62
Burkina Faso	61
Cape Verde	59
Haiti	56
Togo	56
Kosovo	56
Reunion	53
Benin	52
Greenland	51
El Salvador	51
Cuba	50
Nicaragua	49
Jamaica	46
French Polynesia	46
Turkmenistan	45
Honduras	44
Djibouti	43
Gabon	43
Tajikistan	38
Guadeloupe	35
Cambodia	34
Seychelles	31
Mongolia	30
Comoros	28
Monaco	28
Nepal	27
Bermuda	26
Dominica	25
Palau	25
Curacao	24
Faroe Islands	21
Timor-Leste	19
Bahamas	18
Burundi	15
Fiji	15
Gambia	15
Guinea	15
Laos	15
St. Vincent & Grenadines	14
Somalia	13
Eritrea	12
Liechtenstein	12
Papua New Guinea	12
Sao Tome and Principe	12
Sint Maarten	12
Swaziland	11
Belize	10
Guernsey	10
Cayman Islands	9
British Virgin Islands	9
Anguilla	8
Equatorial Guinea	8
Jersey	8

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Google Analytics
as of 03-04/2014

INNOVATION PRODUCTS LEADING INTO



Giga Blue HD Quad Plus
First 4 tuner receiver with WebTV,
ideal for nonstop viewers

www.TELE-audiovision.com/14/05/gigablue



Tenow Matrix ARM mini PC
All technical possibilities of currently available
TV reception integrated into a single solution

www.TELE-audiovision.com/14/07/matrix



JIUZHOU DTP2100
Cutting-edge receiver thanks
to Android operating system

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

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reception and transmission system

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TBS Streaming Box MOI
Offers a double-shot of innovation
for the future of TV with its channel streaming
and separation of hardware and software

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



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AWARD 01-02/2015

MKTech S1-44HD 3D
Clever combination of Linux for perfect
signal reception and Android for
an endless supply of apps.

www.TELE-audiovision.com/15/01/mktech



MKTech S1-44HD 3D



- *uses Linux for satellite reception and Android for multimedia applications*
- *very capable hardware suitable for any type of apps*
- *extremely low-threshold tuner*
- *very fast blind scan*
- *huge range of multimedia connection options*



The best of two worlds

No matter which operating system a digital receiver uses, each one comes with its own highlights and drawbacks. The engineers at MK-Tech obviously knew that all too well, yet refused to accept that somewhat inconvenient truth. The result is called S1-44HD 3D, which we would like

to call the Swiss army knife of receivers. It takes the best from Android and Linux to become a top-notch digital receiver that provided us with no end of fun and enjoyment. But let's not be carried away at this stage and take one step at a time...

The case of the S1-44HD

3D has a no-nonsense appearance that nonetheless exudes an air of understated elegance. The front panel looks as if it came with some control buttons, which at closer inspection turn out to be mere design elements. In actual fact, the standby button and a status LED are all you are offered on the front, in addition to a VFD display that is very easy to read and a flap that hides the internal CONAX card reader as well as a USB connection. Turning the receiver around we find all required interfaces and sockets, such as the satellite IF input complete with loop-through output and four RCA jacks for stereo audio, CVBS video as well as digital audio. An optical audio output is not available. In addition

to the HDMI port there is also a LAN interface, RS232 socket as well as two more USB connections. The back panel array is completed with a mechanical power switch, a feature we're always happy to detect. The remote control that is shipped with the box sits rather nicely in our hand and has a durable and solid look and feel.

The initial set-up routine is almost completely taken over by the straightforward installation assistant, which means the S1-44HD 3D is up and running in next to no time at all. The assistant asks for customisation preferences such as desired OSD language, appropriate video resolution for the TV panel (with 576p, 720p, 1080i and 1080p as available options), as well as local time zone. Contrary to some other installation wizards we have seen so far, this particular variant does not automatically launch a channel search at the end of the process. With the S1-44HD 3D, users have to take care of that themselves.

The tiled design of the main menu of this latest MK-Tech receiver makes for very clear and streamlined navigation. It comes with a range of configuration options as well as access to all features and functions that might be useful for day-to-day operation. The STB Settings item opens



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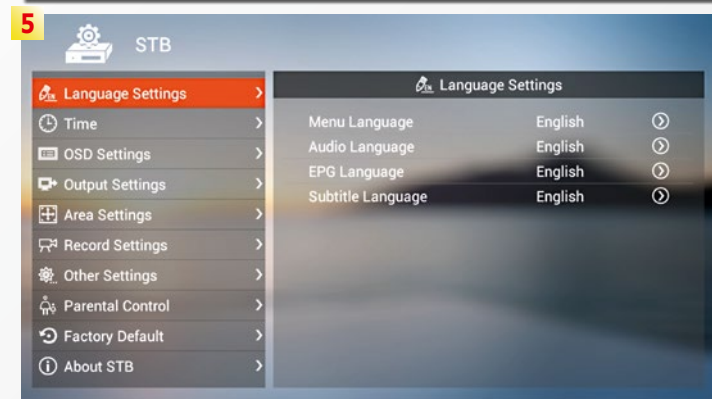
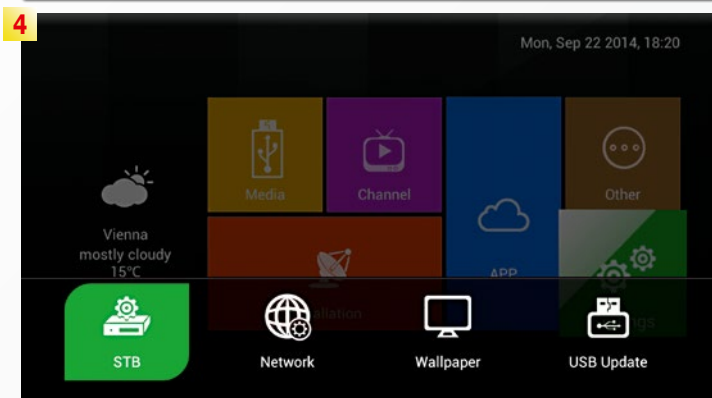
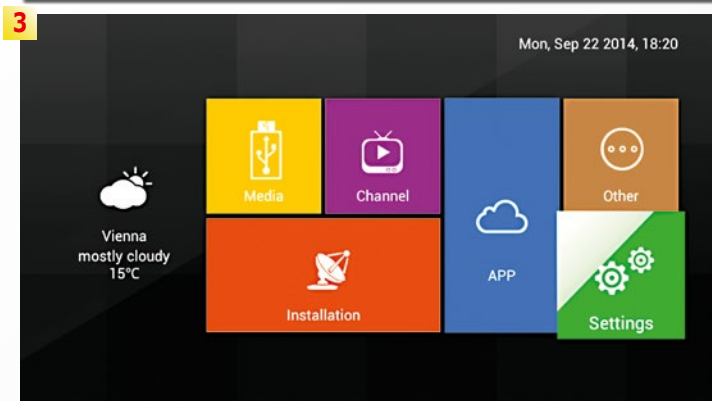
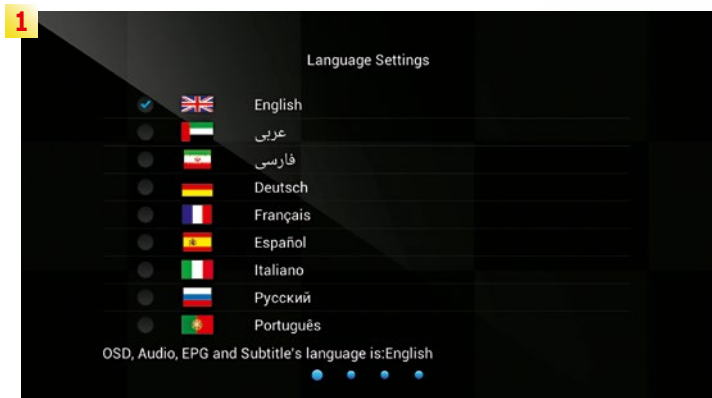


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up all settings that are also dealt with during the initial installation, plus a whole new world of additional adjustment options. If we had to highlight one particular drawback it would be the individual volume adjustment for each channel. We know all too well that some channels come with louder audio than others, and with the S1-44HD 3D you can make sure zapping from one channel to another does not send you flying up from the couch in horror simply because the new channel is so much louder than the preceding one. This might sound like a minor feature, but it's the little details that add up to a perfect whole.

We also liked that this receiver can be hooked up to a local network and the Internet not only through the LAN interface, but also via Wi-Fi and even 3G, provided you obtain one of the respective USB dongles which are available as optional accessories. If you're of the playful kind you'll also appreciate that you can freely select a background image for the main menu, or your favourite colour or even one of the available animated backgrounds like falling leaves, for example.

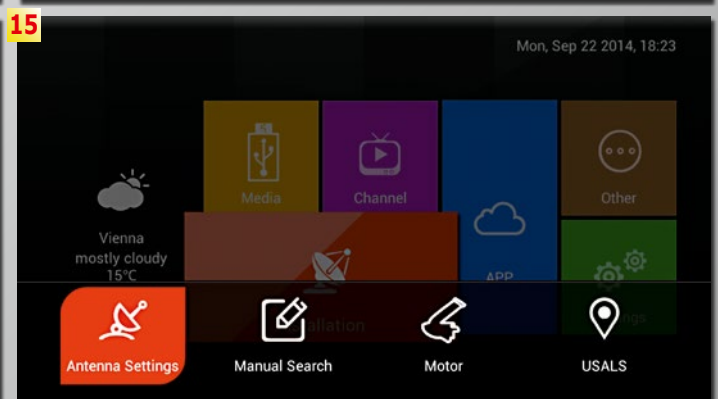
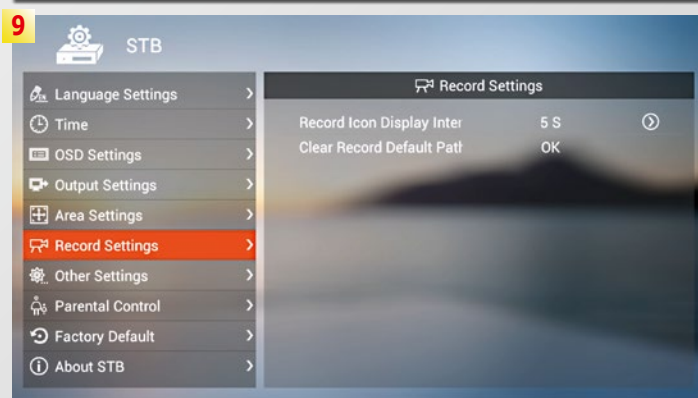
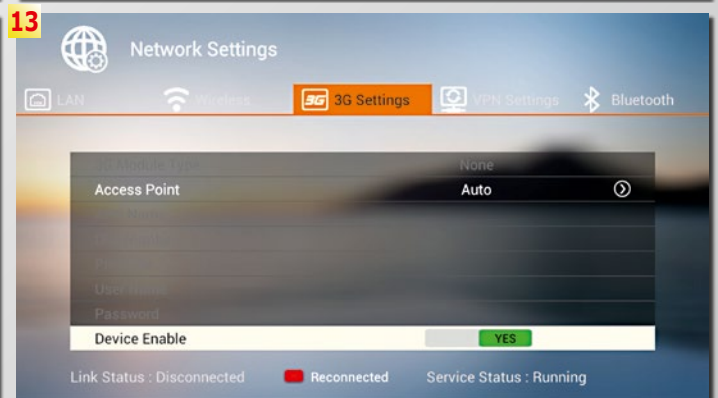
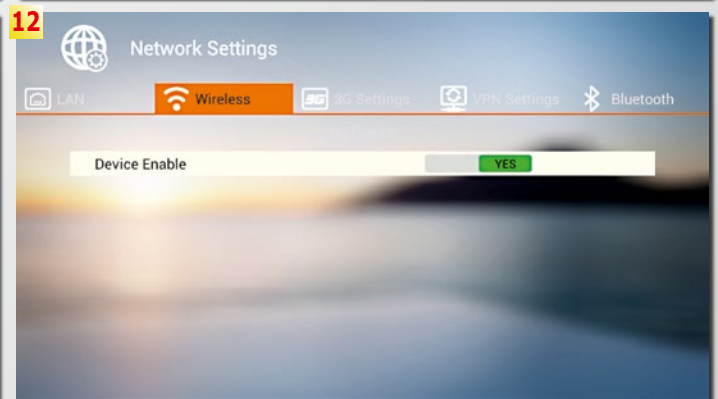
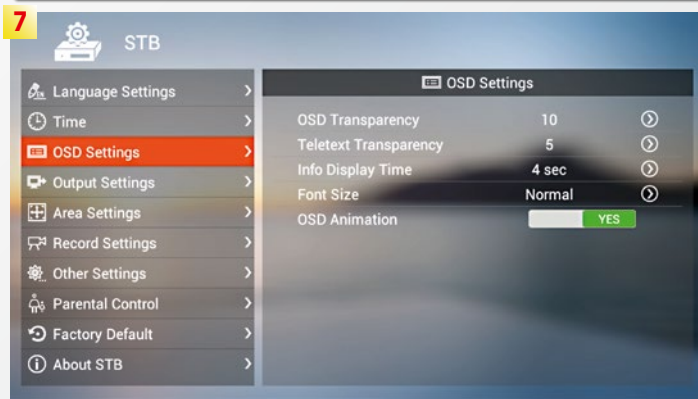
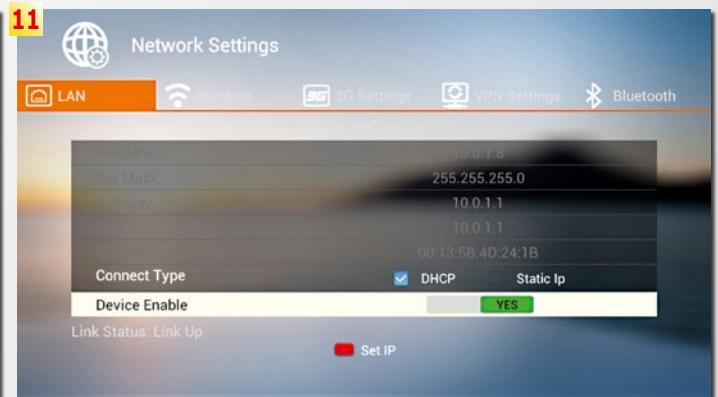
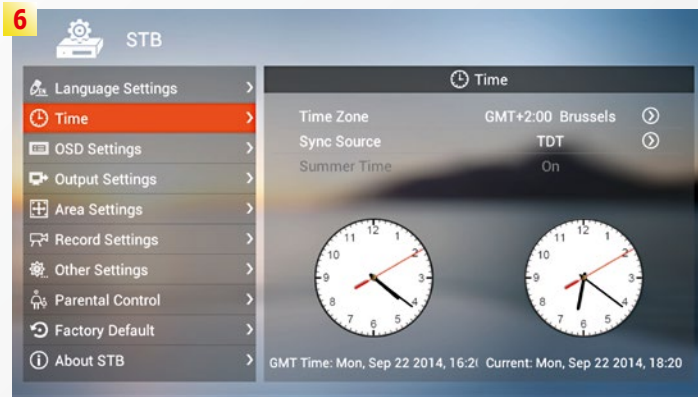
The Installation item of the main menu allows users

to perfectly match their new receiver to the existing reception equipment at home. To make things really easy, the S1-44HD 3D comes with satellite and transponder data for 84 orbital positions in Europe and Asia. What's more, the pre-stored parameters are fully up-to-date. It should go without saying that DiSEqC protocols 1.0, 1.1, 1.2 and 1.3 are implemented and that LOF values can either be chosen from a list of standard frequencies or can be entered manually, if required.

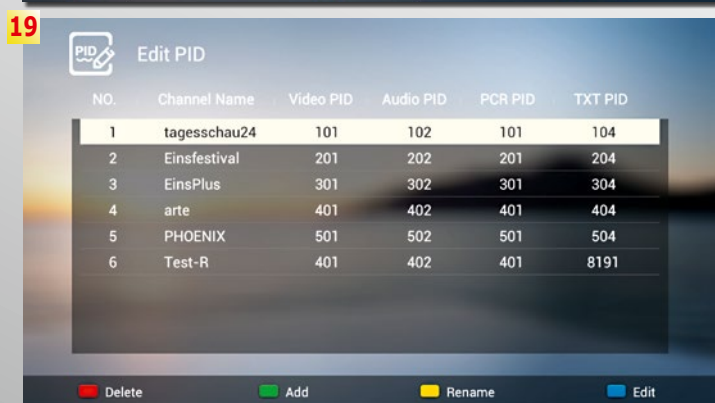
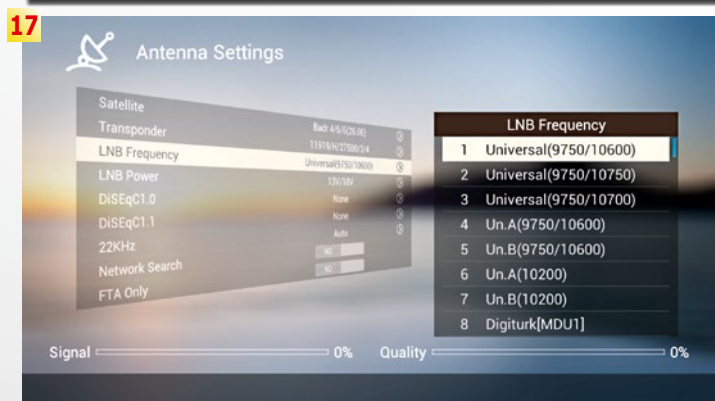
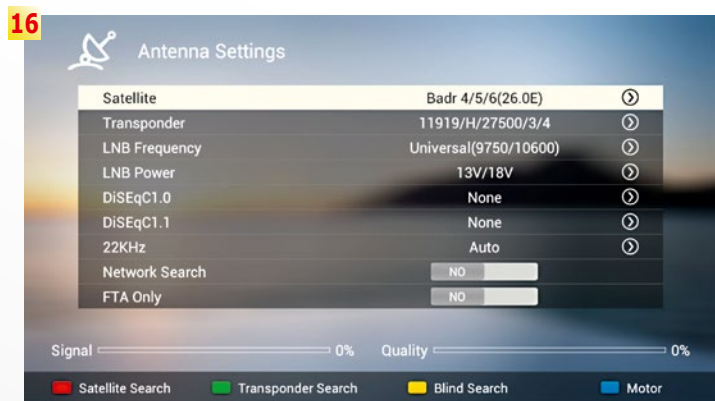
As far as search modes are concerned, users can opt for an entire satellite to be scanned, or can restrict the search to a single transponder. Blind scan is available as well and either of the three search modes can be restricted to free-to-air channels, which is a rather useful feature in view of the missing CI slot(s). Whenever a satellite receiver offers blind scan this is the feature we try and test like there is no tomorrow. A true favourite at our test center, so to speak. The way the S1-44HD 3D presents the blind scan progress and result is very pleasing to the eye: Newly identified transponders pop up in a dedicated window so that you're always in the know about what's going on. When we launched a blind scan search on a position with no less than 192 active transponders this new receiver had the job completed in less than ten minutes, which is a remarkable achievement by any standard. Professional DXers and feed hunters will be happy to find out that a manual transponder search allows individual PID input, so the S1-44HD 3D caters for those target groups too. One of the core features for amateurs and professionals alike is the receiver's excellent low-threshold tuner.

Now that the receiver has been set up and is filled with thousands of channels we first need to catch a breath and bring some order into the vast offering. Quantity is

1. Language selection
2. Choosing the local time zone
3. Main menu of the S1-44HD 3D
4. STB settings
5. Language settings
6. Time settings
7. OSD settings
8. TV output settings
9. Recording settings
10. An individual volume setting can be defined for each channel, if required
11. Network settings
12. Access to a Wi-Fi network is possible with an external USB dongle (available as accessory)
13. Access to a 3G network is possible with an external USB dongle (available as accessory)
14. Selection of background image for the main menu. Animated backgrounds are possible as well
15. Antenna settings and channel search



- 16. Antenna settings
- 17. LOF settings
- 18. Manual channel search
- 19. PID editor
- 20. Fast scan for pay TV providers
- 21. DiSEqC 1.2 settings
- 22. DiSEqC 1.3 settings



nice, but quality is what really counts. The built-in channel list editor of the S1-44HD 3D is a handy tool for transforming chaos into perfection. Individual channels can easily be deleted, restricted, renamed or moved, and a total of 32 favourites lists covering a whole lot of different categories and genres are already pre-set. Of course users are free to add their own customised favourites lists for an even smoother user experience. Bonus feature: The channel list can be saved onto an external storage medium, from where it can be restored whenever useful or necessary.

Thanks to the underlying Linux operating system the new MKTech receiver can be

operated in a very swift and effortless way. A touch of the OK button calls up the channel list, which can easily be restricted to FTA, CAS or HD channels only, if required. Entries can be edited right from this channel list view, so that you don't have to backtrack to the main menu to do some ad-hoc editing. Thanks to the built-in search function it's child's play to find the channel you're looking for, even if the overall list has grown into the thousands. And while we're at it, we believe such a smartly integrated search feature is a really worthwhile alternative to the standard favourites list.

Every time a new channel is selected an info bar pops up and shows the title of the



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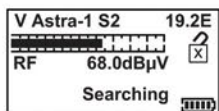
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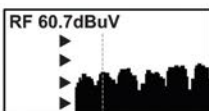
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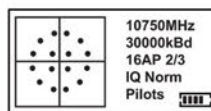
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current and next events, status information about the currently watched channel, and a concise weather report for a location that can be freely selected in Settings. Admittedly, this is a somewhat unconventional idea, but we found it's a really practical use of status bar space.

We did like the fact that whenever the receiver is recording an event, the channel list clearly indicates which of the other channels can still be received live. Unfortunately, however, the S1-44HD 3D can only take care of one recording at a time.

Let's now have a look at the electronic program guide, which sports an easy-to-use design and either displays a preview of six channels on a single screen, or the entire programming schedule of one channel. HBBtv may also turn out to be a convenient feature for many, as it can be used to call up extended EPG information or to access content libraries and online services that are offered by a number of TV providers.

A thing that struck us again and again during everyday use is the excellent video and audio quality delivered by this new satellite receiver. In addition, the remote control with its numerous dedicated buttons for specific functions has proven its worth on many occasions. Need to change the soundtrack language, activate subtitles, access an external storage medium, adjust the video resolution or call up a list of stored timer entries? Consider it done with the touch of a button, since you're never more than one button away from execution. We particularly appreciated the button that launched a virtual mouse cursor on the TV screen, which can then be moved with the remote control's arrow buttons. In Linux mode this virtual cursors is without function, but when we move to the Android side of the S1-44HD 3D now, this changes dramatically, as we are about to see.

The Android operating sys-

tem opens the door to millions of apps which can be downloaded conveniently to the receiver from Google Play Store. Facebook, e-mail, Twitter, calculator, calendar, web browser or games – you name it and Google Play Store will most certainly have it. Apart from the virtual mouse that can be launched with the remote control, it is also possible to connect an actual keyboard and mouse to the receiver so that typing and navigating become a much smoother affair. During our test we tried out a number of different apps, all of which were launched and executed flawlessly. At no time did we get the impression that we were pushing the receiver to its limits. We believe it would take special games that require an enormous amount of processing and graphics power to come even close.

The benefits offered by Android become particularly visible when it comes to multimedia features. The built-in media player of the S1-44HD 3D is compatible with all current video formats as well as with the popular MP3 and WMA audio formats. Photos can be presented in great style to friends and family with the help of an image viewer, no matter whether the pictures are stored on the

23. Channel list and favourites lists editor

24. Channel list editor

25. Favourites lists editor

26. The channel list can be saved onto an external storage medium and later be restored from there again, if necessary

27. App categories

28. List of currently installed apps

29. Log-in to Google Play Store using an existing Google account

30. Google Play Store

31. Apps are available for virtually all uses

32. Google Android settings

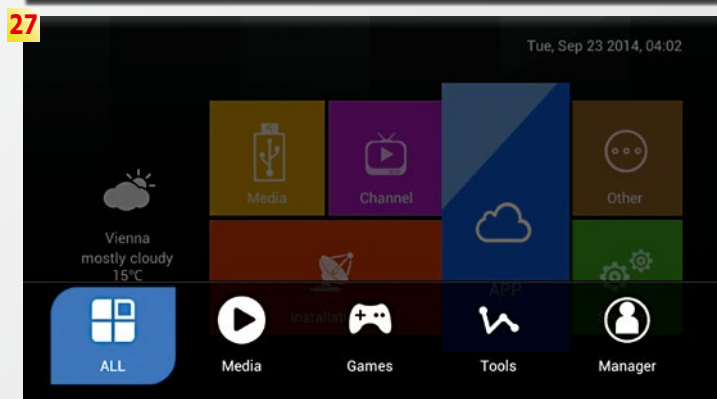
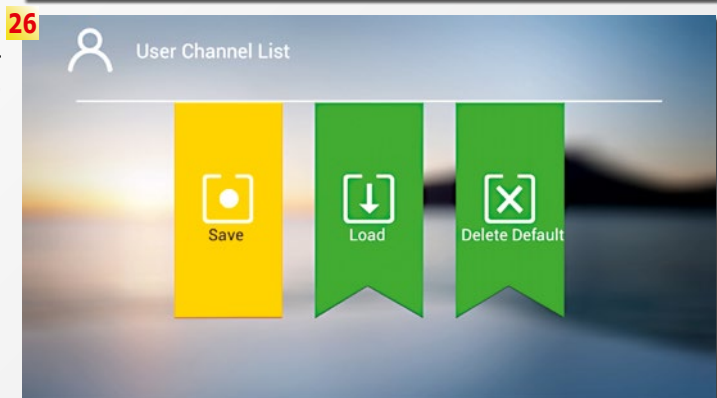
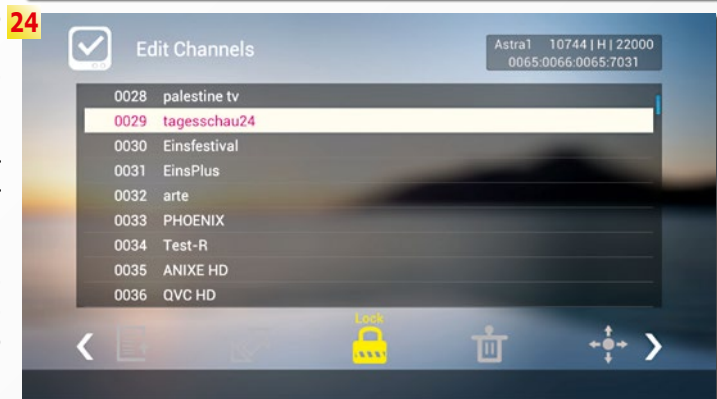
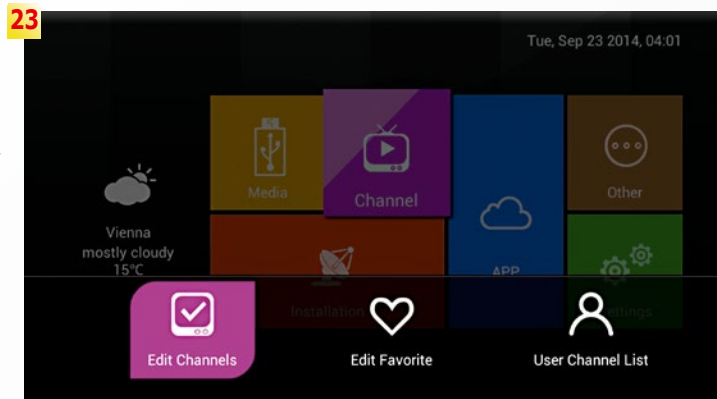
33. Weather forecast

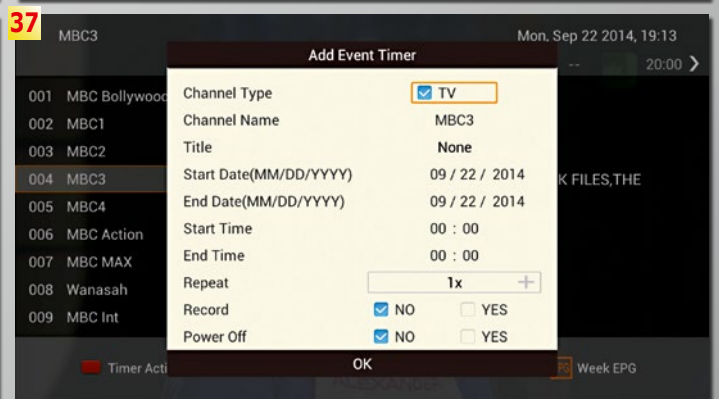
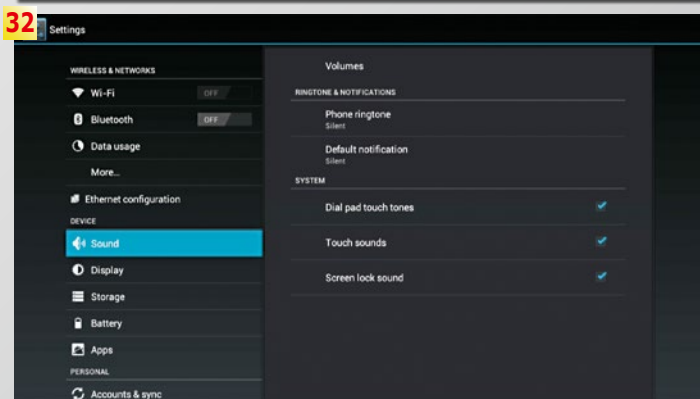
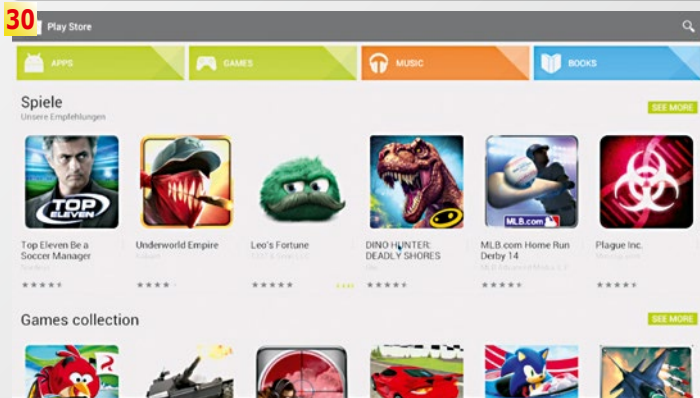
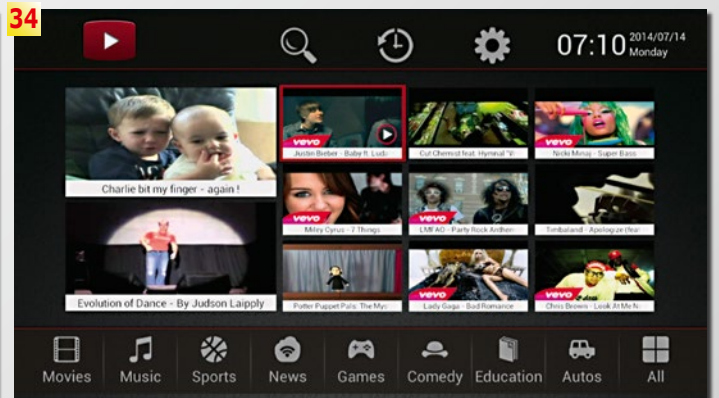
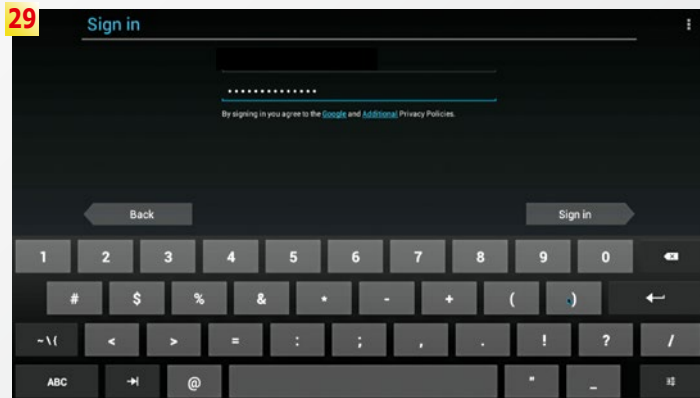
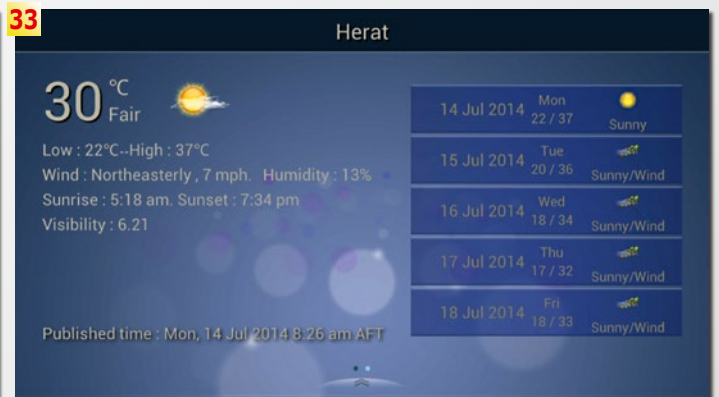
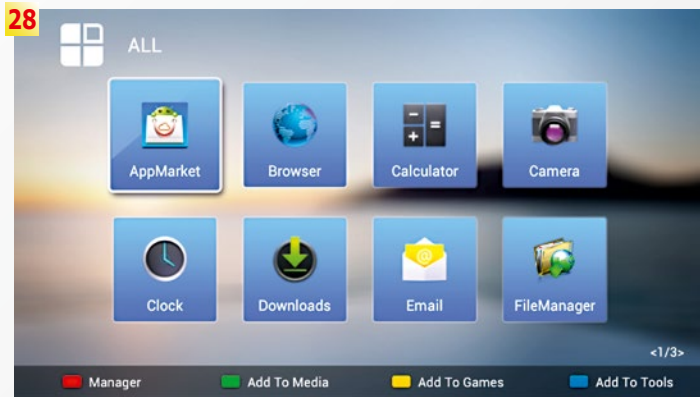
34. YouTube app

35. Recording a program

36. While a recording is taking place, the channel list only shows those channels that can actually be received

37. Adding a timer entry





Internet, an attached storage medium or on the local network.

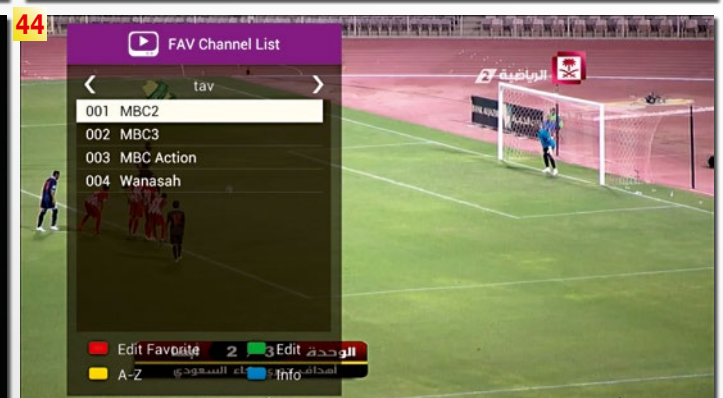
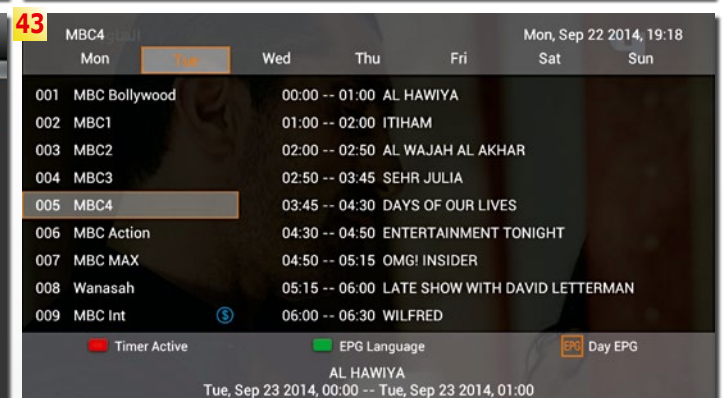
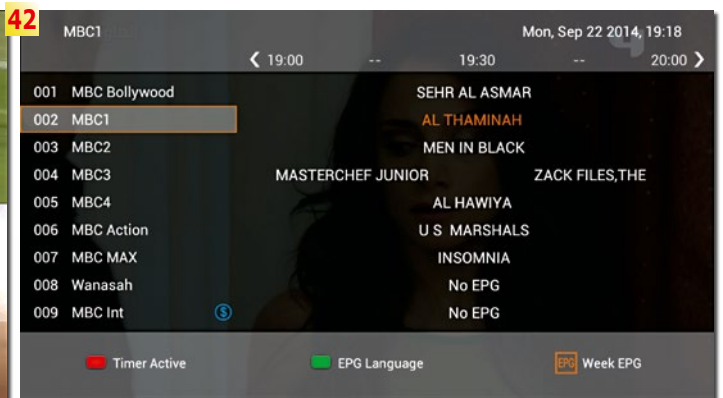
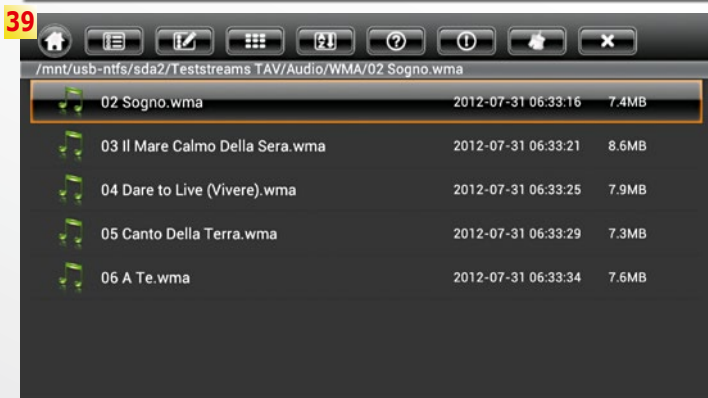
In a nutshell: Excellent job, MKTech! That's all we can say about the new S1-44HD 3D. Thanks to the very clever combination of Android and Linux MKTech is one of the first manufacturers to unite

the benefits of both systems in a single device. The most remarkable achievement is the fact that the final result has a surprisingly sophisticated and mature look and feel.

You would never get the impression that you're using totally different operating sys-

tems for different tasks. Still, MKTech is no manufacturer that rests on its laurels, but rather keeps improving and refining its software. Make sure you install the regular updates that are made available via the Internet to stay ahead of the pack in future as well.

- 38. Picture-in-picture
- 39. WMA audio playback
- 40. Image viewer
- 41. Video playback
- 42. EPG preview for six channels
- 43. Full EPG for a single channel
- 44. Favourites list
- 45. Satellite list



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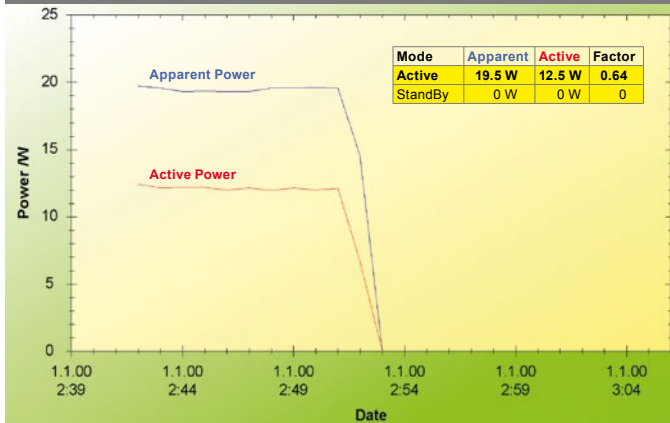
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- 46. The video output resolution can be changed quickly and easily with a dedicated button on the remote control
- 47. The screen aspect options can also be selected with a dedicated button on the remote control
- 48. Language selection
- 49. Channel list with search feature
- 50. Channel list of the S1-44HD 3D
- 51. Channel list with detailed channel information

EXPERT OPINION

MKTech S1-44HD 3D
Android & Linux Kombi-Receiver

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- +** • Rock-solid digital receiver based on a perfect combination of the Linux and Android operating systems. While Linux serves as the foundation for TV reception and PVR functions, Android adds a lot of shine with its multimedia features and downloadable apps.
- • Digital audio is only available through a coax output but not from an optical interface.
- Unfortunately, only one recording can be performed at a time.



SPAUN SLTE 30 SLTE 60 SLTE 90



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Easily Remove LTE Interference

As the 4G mobile communication is becoming more and more common today all over the world, LTE data transmission may sometimes interfere with normal digital terrestrial TV reception. LTE channels are located in the frequency spectrum just above terrestrial TV channels. You may encounter such interference in the form of a loss of sound, blocky or pixelated images or loss of some channels. These symptoms might be experienced occasionally or all of the time.

Of course, there might be more causes of such symptoms, for example: misaligned antenna or unreliable coax cable connections. However, if your antenna is

aimed correctly, cable installation also looks OK, and the problem exists first of all for higher frequency TV channels (higher channel number), LTE transmissions should be suspected.

Fortunately, there is a very simple solution that everybody can use: passive low pass filter inserted in a cable connection between an aerial and a DVB-T or DVB-T2 receiver. We have described one such filter: SPAUN SMF 790 LTE stop band filter in the 04-05/2012 issue of TELE-satellite. Since then, SPAUN have expanded their product line by adding three other models: SLTE 30, SLTE 60 and SLTE 90, and we decided to have a closer look at them.

As always with SPAUN products, they are perfectly finished off, have very clear markings and every product has a leaflet with technical advices and short form product specification. The products differ in connector types: F or IEC and female-female or female-male configuration. So, depending on your installation you may want to choose this or that model. They also differ in frequency response.

Let's first look at the SLTE 30: this filter does not have a very sharp roll-off, in other words, its signal attenuation increases with frequency at a moderate rate. However, it can reach more than 60 dB attenuation. It has a classical low pass filter characteristics. The filter has a female F connector on one end and male F connector on the other. So, it is possible to install it directly on your



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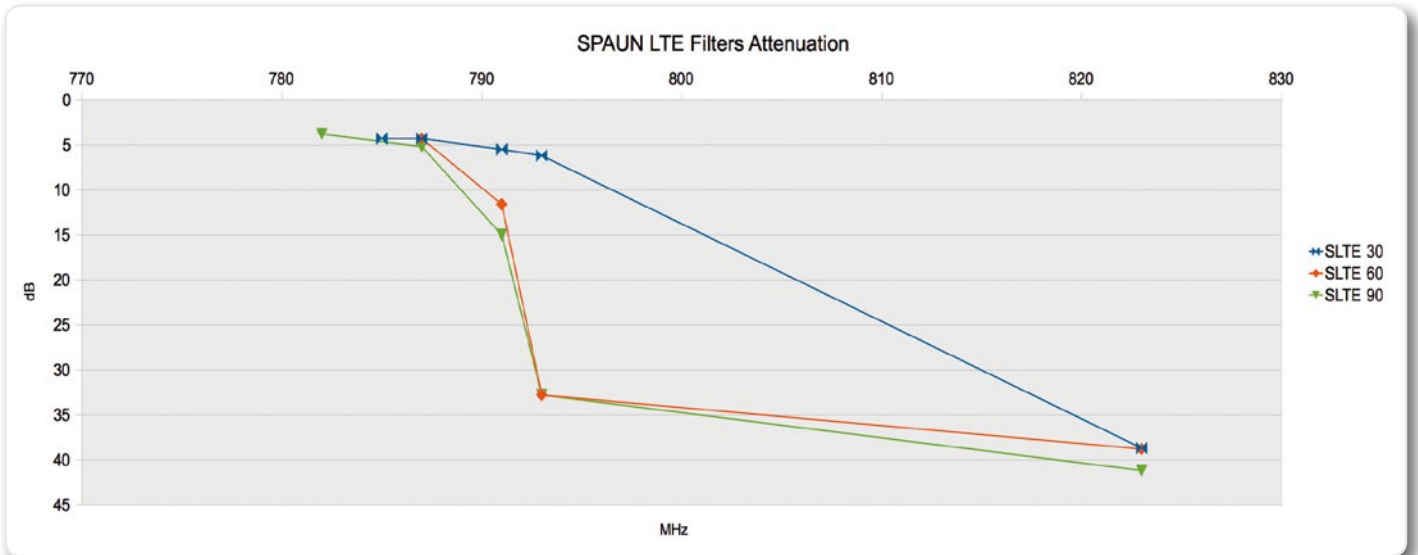
SPAUN SLTE 30, SLTE 60 and SLTE 90
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■ Testing the LTE Filters of Spaun. TELE-audiovision Test Editor Jacek Pawlowski checks the performance of the 3 new filter types introduced by SPAUN





terrestrial receiver antenna terminal without adding any additional coax cable.

Next is the SLTE 60: it offers very steep edge amplitude response right above 790 MHz. However, it is not a low pass filter but a band stop filter. So, above about 850 MHz its attenuation becomes small again. It has IEC connectors and due to that it is well prepared to be added to the TV receivers equipped with this type of antenna connector. Sometimes some of signal distribution components are equipped with this type of connector and then SLTE 60 is a very convenient choice.

Finally, the SLTE 90 is a low pass filter with extremely steep characteristics. According to SPAUN specification, SLTE 90 performance is really the best among these three models. It has female F connectors

on both ends, so in most applications you will have to add an additional short coax cable with male F connectors to hook it up.

In order to test the filters, we created a setup consisting of a wideband noise generator and a terrestrial TV spectrum analyzer. We took a number of screen shots. We maintained the same frequency span setting so that you could see the difference in the steepness of filter characteristics

among the filter models. As expected, both SLTE 60 and SLTE 90 had very sharp roll-off while the SLTE 30 filter had a moderate one (Figure 1 through 7).

Then, we measured all the filters at the frequencies for which their attenuation had been specified by SPAUN. We got results very close to the manufacturer's data. We must note here that in some measurement points filter attenuation was so deep that our TV analyzer was not able to measure it accurately. For example, our analyzer measured attenuation "> 41.2 dB" at the point where SPAUN specification read 45 dB. Simply our general purpose TV signal analyzer was not able to measure characteristics of high quality filter at points

of high attenuation. In this case, we left 41.2 dB as a measurement result but we had a good reason to believe that indeed those 45 dB were achieved for SLTE 90 at 823 MHz.

In the graph, we present the measurement results of all three filters at the frequencies in which we compared their performance with the specification. Also here you can easily see the difference among the filter models. Please note though that straight line interpolation between the measured values does not reflect actual filter characteristics. The purpose of those straight line segments is just to make it easier to identify which measurement point belongs to which filter model. The actual characteristics are presented in the analyzer screenshots.

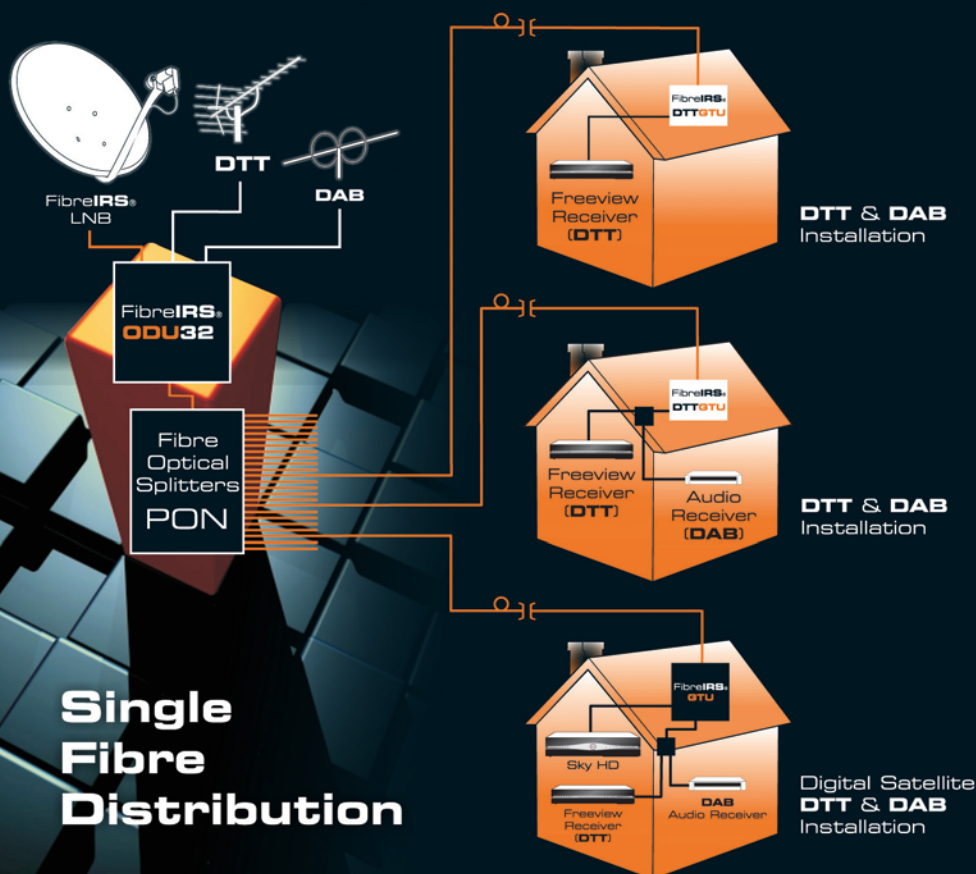
Finally, we took the analyzer screen shots showing all three filters response in the full analyzer bandwidth: up to 1 GHz. In these pictures, it is clearly visible that the SLTE 60 is a band rejecting filter while the other two are low pass filters. If you take a closer look, you will also notice that the SLTE 30 has smoother transition from pass band to stop band





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■ The SLTE 30 is easy to install: just plug it directly into the antenna input of your terrestrial receiver.

EXPERT
OPINION

SPAUN SLTE 30, SLTE 60 & SLTE 90
LTE Filters

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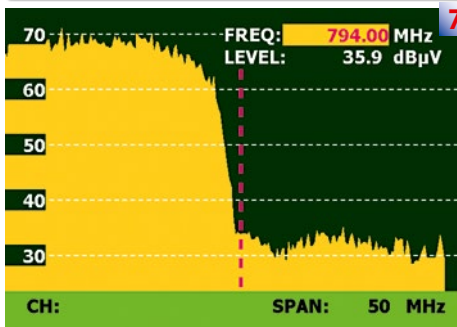
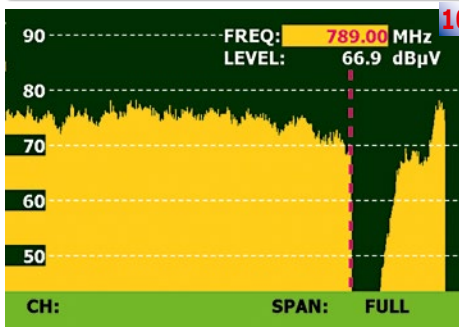
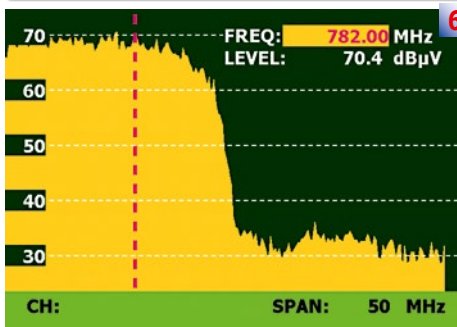
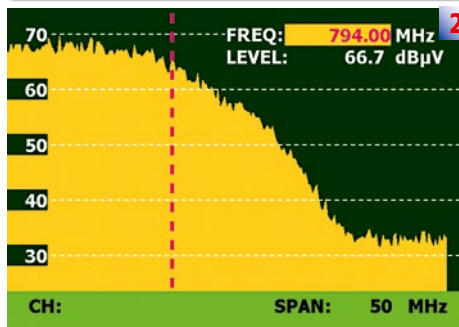
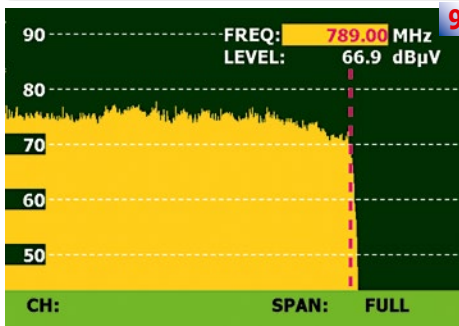
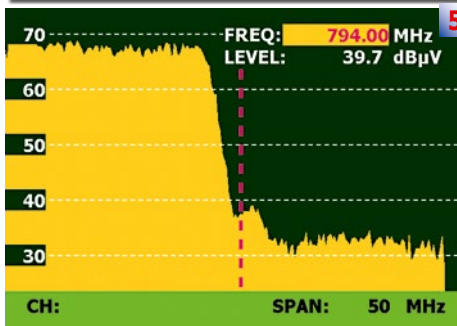
- Electrical parameters meet manufacturer's specifications
- Very high attenuation in stop band (LTE band)
- Very solid workmanship and attention to detail

-

- None

than the other two devices. All these facts are perfectly in line with SPAUN specifications.

We can conclude that these filters perfectly help to reduce any LTE interferences. With the three different models and their different connectors you can choose the perfect filter for your existing setup.



1. Frequency Response of SLTE 30 at 782 MHz
2. Frequency Response of SLTE 30 at 794 MHz
3. Frequency Response of SLTE 30 at 813 MHz
4. Frequency Response of SLTE 60 at 782 MHz
5. Frequency Response of SLTE 60 at 794 MHz
6. Frequency Response of SLTE 90 at 782 MHz
7. Frequency Response of SLTE 90 at 794 MHz
8. Full Bandwidth Spectrum with the STLE30
9. Full Bandwidth Spectrum with the STLE60
10. Full Bandwidth Spectrum with the STLE90

DVB-T-T2-C Receiver

Fields of application:

- ✓ feeding headends with DVB-T, DVB-T2 or DVB-C signals over ASI or IP
- ✓ as a measuring receiver for DVB-T and DVB-T2 transmitters or CATV headends using DVB-C modulation
- ✓ streaming IPTV signals



Professional receiver for DVB-T, DVB-T2 and DVB-C signals, equipped with Common Interface, with one ASI and four IP outputs per receiver which makes it equal to 6 receivers in one.

Features:

- ✓ 1, 2, 4 or 6 tuner in one frame
- ✓ receiving DVB-C, DVB-T and DVB-T2 signals
- ✓ with or without Common Interface
- ✓ separated web based management
- ✓ IP and ASI outputs
- ✓ SPTS (Single Program Transport Stream) or MPTS (Multi Program Transport Stream) outputs
- ✓ receptacle for SFP (Mini GBIC) module
- ✓ VLAN tagging
- ✓ FPGA circuitry
- ✓ available for 24 V and 48 V, too



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cableworld@cableworld.hu
www.cableworld.eu



DVR-Studio HD 3



**load & open recording through TechniPort**

Allows easy import of Technisat recordings of the following set devices:
TechniSat Digit ISIO S

**open local recordings**

Call the windows open-dialog to open recordings available at your PC.

**Open recordings via UPnP**

UPnP allows direct access to receiver recordings.

[Variant of imports explained ...](#)

UPDATE



- **New data transmission functions via UPnP**
- **Extremely fast network transmission**
- **The big plus: compatibility with all UPnP devices**
- **Special configuration files no longer necessary**

Recording TV Programs via UPnP

Thomas Haring

Recently, in the 11-12/2014 issue of TELE-audiovision, we introduced the DVR Studio HD 3 software package. This innovative program makes it possible for a user to create a DVD or Blu-Ray disk from a previously recorded program on a digital receiver with just a few mouse clicks. So the question is what's the easiest way to get these recorded programs from the receiver onto your PC?

There are three ways to do this. The first way would be to connect the receiver's storage device directly to the PC. But this only works with external storage devices and as long as the external device is connected to a PC, the receiver can't record any other programs.

Another way with most PVR receivers is to transfer the recording to the

PC through an Ethernet connection or via WiFi. For some manufacturers DVR Studio HD 3 offers this ability directly through the software.

The third method, namely the transfer of recordings via UPnP is not only a new feature in DVR Studio HD 3, it is also very easy and comfortable to use and, above all, works with all UPnP compatible receivers. It is also the fastest method.

We've already reported quite often on UPnP (Universal Plug and Play) in the course of a number of different TELE-audiovision receiver tests. This standard is used for backup control of devices within an IP based network and has proven itself very advantageous in the audio/video world. The days of proprietary transmission methods are long gone; through UPnP every compatible

receiver can communicate effortlessly with every available PC, media center and even other receivers within a network. We were thrilled to see that Haenlein Software recognized that more and more manufacturers were integrating UPnP in their receivers and immediately reacted by adding this standard to their latest version of DVR Studio HD 3.

In order to test the UPnP transfer capabilities we used the DVR Studio HD 3 software in combination with a Technisat Digit ISIO S satellite receiver and a Western Digital network hard drive. Both of these devices were hard-wired into our local network through a router onto which our test PC with Windows 8.1 was also connected.

First we tested the new function in conjunction with the satellite receiver and setup a new project with DVR Studio HD 3. In the dialogue field where the desired recordings are added you'll see a list of the local files as well as the selection UPnP. All you have to do is click on the UPnP selection and the software begins to scan the entire local network in just a few seconds for any usable UPnP sources.

In our case both the satellite receiver and the hard drive were recognized without any problems and the available multimedia data and recordings on both of these devices were now accessible. The user simply has to highlight one or more of the recordings or files and then click on the „Transfer Recordings to PC“ button to begin transferring the selected items to the PC. We liked that DVR Studio HD 3 showed the size of the selected files so that the user can get an idea of how much time would be needed for the transfer. Since we mentioned „time“, we were pleased to see that the transfer from satellite receiver to UPnP was much faster compared to the original software from the receiver manufacturer. We had to perform a comparison test; we simply couldn't resist. The exact same recording with a size of around 4 GB took about nine minutes via UPnP to load onto the PC whereas the original software needed 19 minutes for the same task; 10 minutes longer than via UPnP. To make sure that this speed advantage really existed we repeatedly performed this measurement with a number of differ-

DVR-Studio HD 3

- professionell gestaltete Menüs für die selbsterstellten Discs
- unterstützt sehr große Auswahl an Receivern
- integrierte Brennfunktion für Discs
- Pluspunkt ist die Vorabrechnung des benötigten Speicherplatzes
- kann außer Discs generieren

■ In TELE-audiovision 11-12/2014 we presented the DVR-Studio HD 3 Software
<http://www.tele-audiovision.com/TELE-audiovision-1411/eng/dvr-studio.pdf>

ent sized recordings and managed to achieve the same results every time. We also appreciated the fact that the transfer via UPnP was exceptionally stable and never crashed during our tests.

DVR Studio HD 3 also never complained at all while working with our network hard drive. We were able to transfer transponder stream files easily and effortlessly via UPnP to our PC for further processing. In this case though, there didn't seem to be any noticeable speed advantage during the transfer. A 4 GB recording needed about 2 min 30

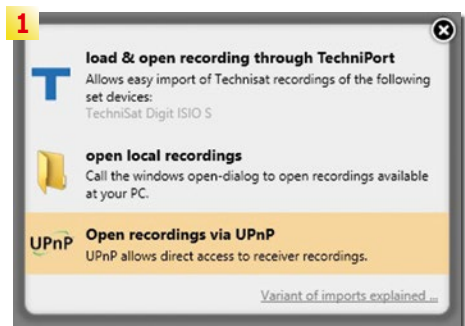
sec to transfer from the network hard drive to the PC and it didn't matter if it was through Windows Explorer or through DVR Studio HD 3.

In the course of our tests we discovered a little problem with the satellite receiver/DVR Studio HD 3 combination: if a FAT32 formatted storage device is used and if the desired recording is made up of multiple files (with FAT32 storage devices the files are divided into 1 GB partial files), DVR Studio HD 3 will transfer the first available file and then ignore all the rest. The cause can be found in the firmware of the receiver.

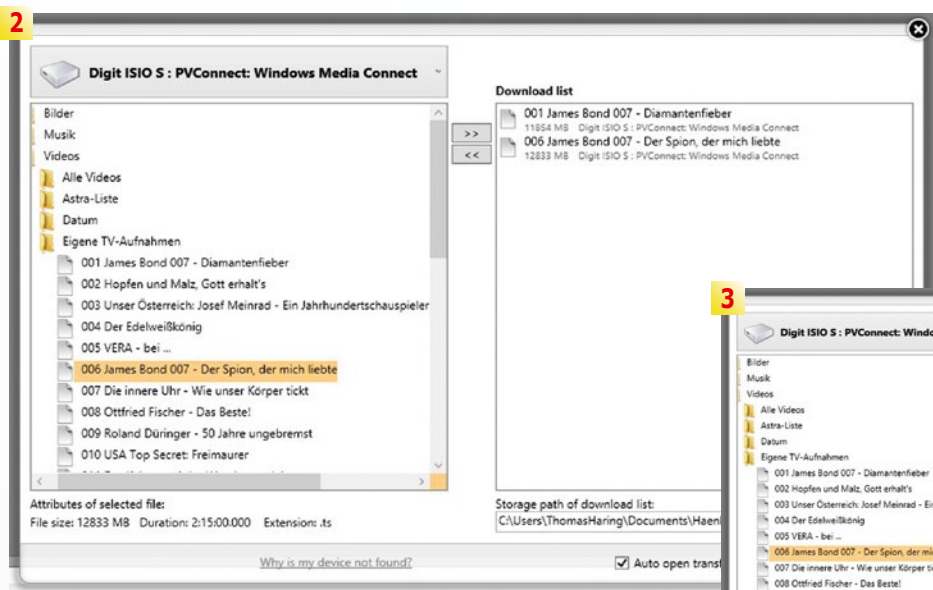
The solution is very simple: instead of using the old-style FAT32 file system on the hard drive, the NTFS file system should be used. In this case the files are not split up and all of the problems associated with the splitting up of files is now a thing of the past.

DVR Studio HD 3 shows us how you can transfer TV recordings from any network device very quickly and process it further using the software. This makes the creation of DVD and Blu-Ray disks all the more easier and enjoyable.

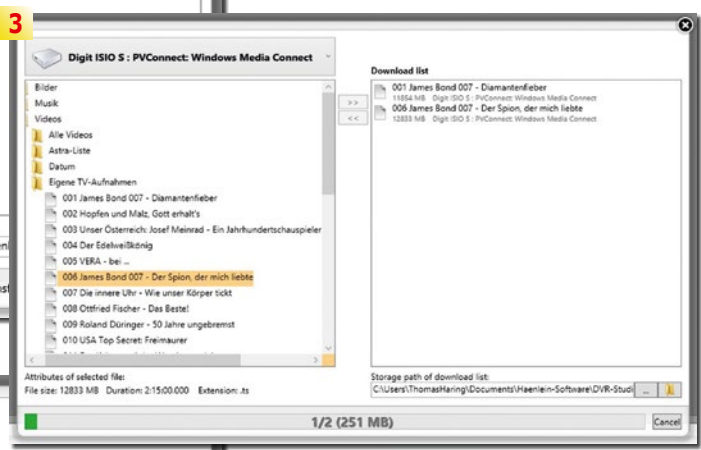
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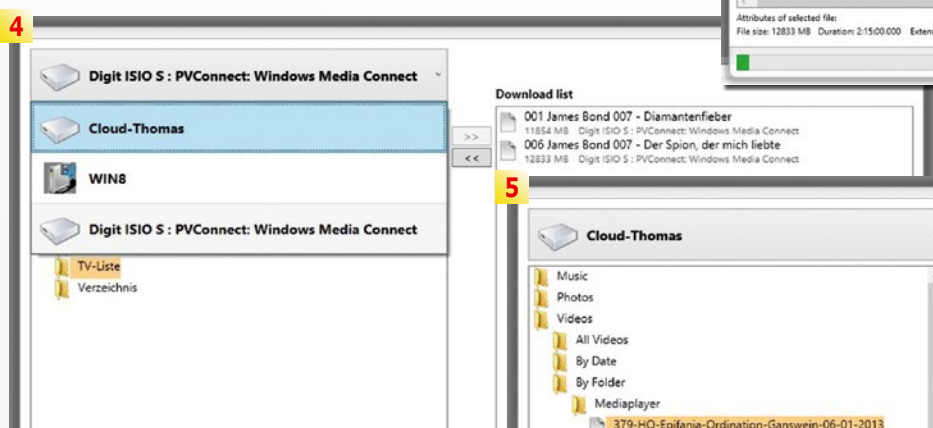
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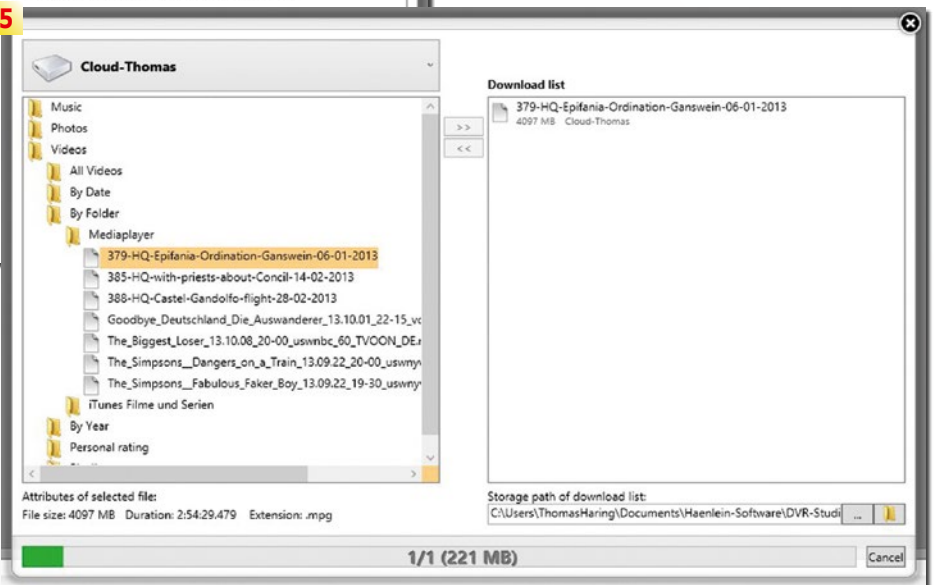
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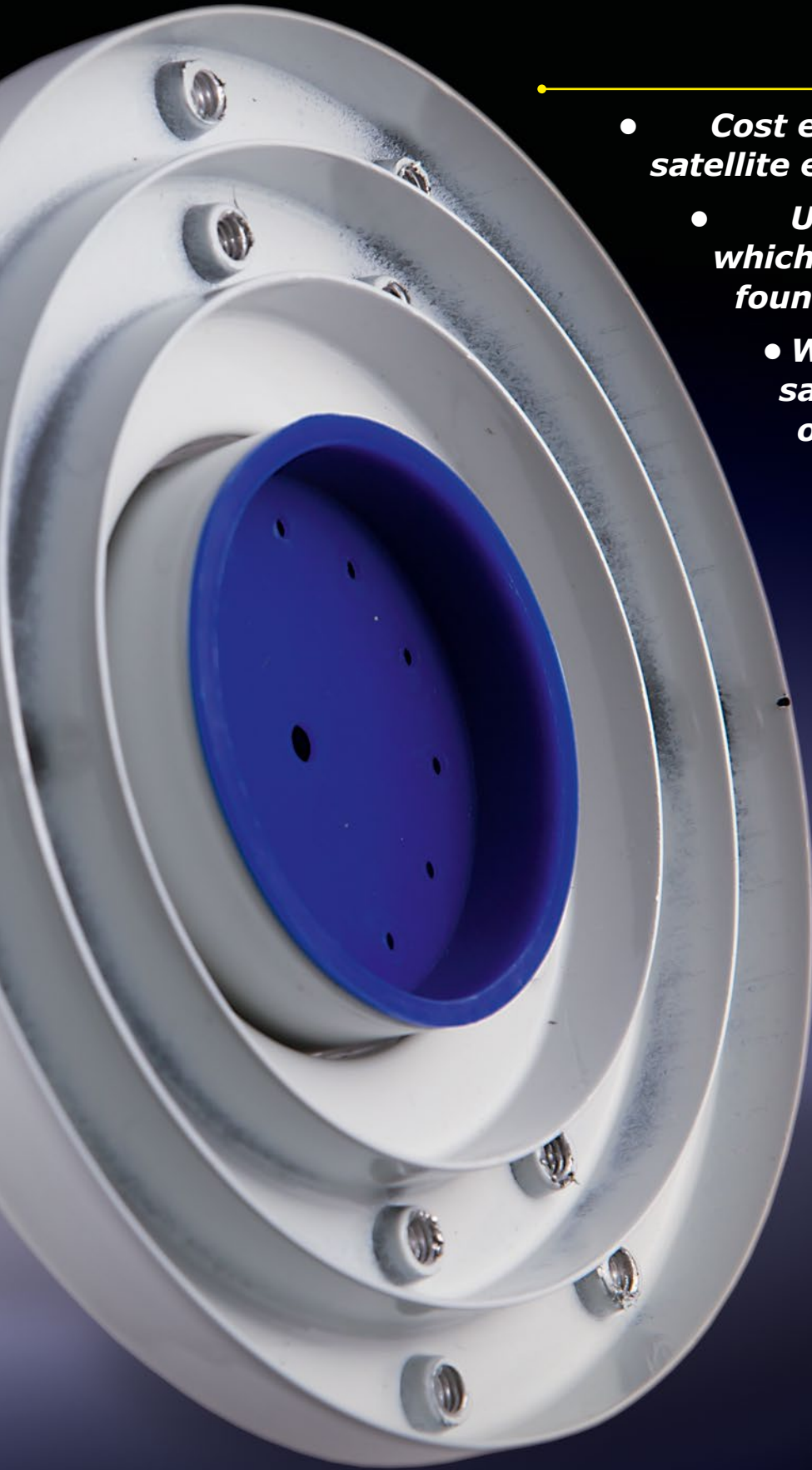
5



1. With the latest version 3 of DVR Studio HD you can now also transfer TV recordings via UPnP.
2. DVR Studio HD 3 recognizes all the available recordings without any problems.
3. Multiple recordings can easily be highlighted for transfer.
4. DVR Studio automatically recognizes all of the available UPnP servers in a network.
5. Recordings can be transferred not only from digital receivers but also, for example, from removable hard drives.

Titanium Satellite C1W-PLL





- ***Cost effective C-band LNB for satellite enthusiasts***
- ***Uses PLL technology, which normally could only be found in professional LNBs***
- ***Wideband support for satellite enthusiasts outside the USA***
- ***High gain and the ability to lock onto low symbol rates lets the enthusiast receive many of the more difficult-to-receive channels***

Receive C band like the professionals

TELE-audiovision recently introduced the Titanium Satellite ASC1, an excellent positioner for big satellite dishes. But Titanium Satellite, a newly established powerhouse for high quality products for the satellite enthusiast, has also developed a brand new PLL-powered LNBF, dedicated to C-Band satellite enthusiasts as well as professionals.

The abbreviation PLL stands for Phase Locked Loop, an electronic way to provide extremely solid signal locks, even if you're dealing with weak signals, low symbol rates or high FEC digital carriers. PLL based LNBFs are also immune to annoying drifts.

The first PLL Ku band LNBFs appeared on the market in 2011. Titanium Satellite reacted quickly and developed the first PLL LNBFs for the C-Band and brought its model C1PLL to the North American market in November of 2013. Today Titanium Satellite sells a wideband version covering 3.4GHz all the way up to 4.2GHz. There are two versions of the C-Band PLL LNBF: the C1W-PLL is for single cable applications while the C2W-PLL is a twin LNBF with two cable outputs. And as recently as May of 2014, Titanium Satellite introduced their low cost "lite" versions that are made using the same PCB and components but with a basic body and scalar ring; it is rated to provide a stability of 100 kHz or better compared to the 50 kHz of the regular model.

We decided to test the single cable version C1W-PLL LNBF since this is the most commonly used LNBF for the majority of those C-Band enthusiasts who have motorized dishes. Titanium Satellite has taken extra care and ships the C1W-PLL LNBF securely in a high quality package instead of the usual white box. Inside the package we found the LNBF surrounded by an extra layer of protective cardboard, the scalar ring designed for prime focus dishes and a set of screws to hold the scalar ring in place.

Because we were going to test the C1W-PLL on an offset dish, we were also supplied with the matching Titanium Satellite CS1 conical feedhorn scalar ring. This is sold separately and comes in a high quality package, as well. Actually, we were amazed at the sheer quality of this product considering its rather friendly price range.

The C1W-PLL looks similar to other economic LNBFs but it comes with an attached heat sink to help keep its internal electronics cool. What a clever idea!

In order to test how good the C1W-PLL really is we once again paid a visit to that well known satellite enthusiast 'Feedsat'. We had already tested the Titanium Satellite ASC1 positioner at his location in southern France (you can find out more about it in our test report: www.TELE-audiovision.com/eng/TELE-audiovision-1409/eng/



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TELE
audiovision
AWARD 01-02/2015

Titanium Satellite C1W-PLL
Excellent price/quality ratio
for the satellite enthusiast

www.TELE-audiovision.com/15/01/titanium

■ Our test dish, an offset dish with 1.8m diameter. The center is occupied by a Ku band LNB with our reference LNB on the right side and the new Titanium Satellite C1W-PLL LNB on the left side.



titanium.pdf). This time we wanted to evaluate the LNB on his 1.8-meter AS-1800 offset dish. This antenna was perfect for our test because it is a very popular C-Band dish with satellite enthusiasts throughout

Europe. Also, the antenna was already equipped with a multi-feed rail. This allowed us to perform the test where the LNB is not in the ideal central focus position, but at an angular offset of about 6 degrees.

To get a better understanding of the C1W-PLL's performance, we pointed our satellite dish to SES-6 at 40.5W and programmed three C-band transponders in a new satellite channel list created for the Deviser

S7000 signal analyzer. We selected three right circular transponders:

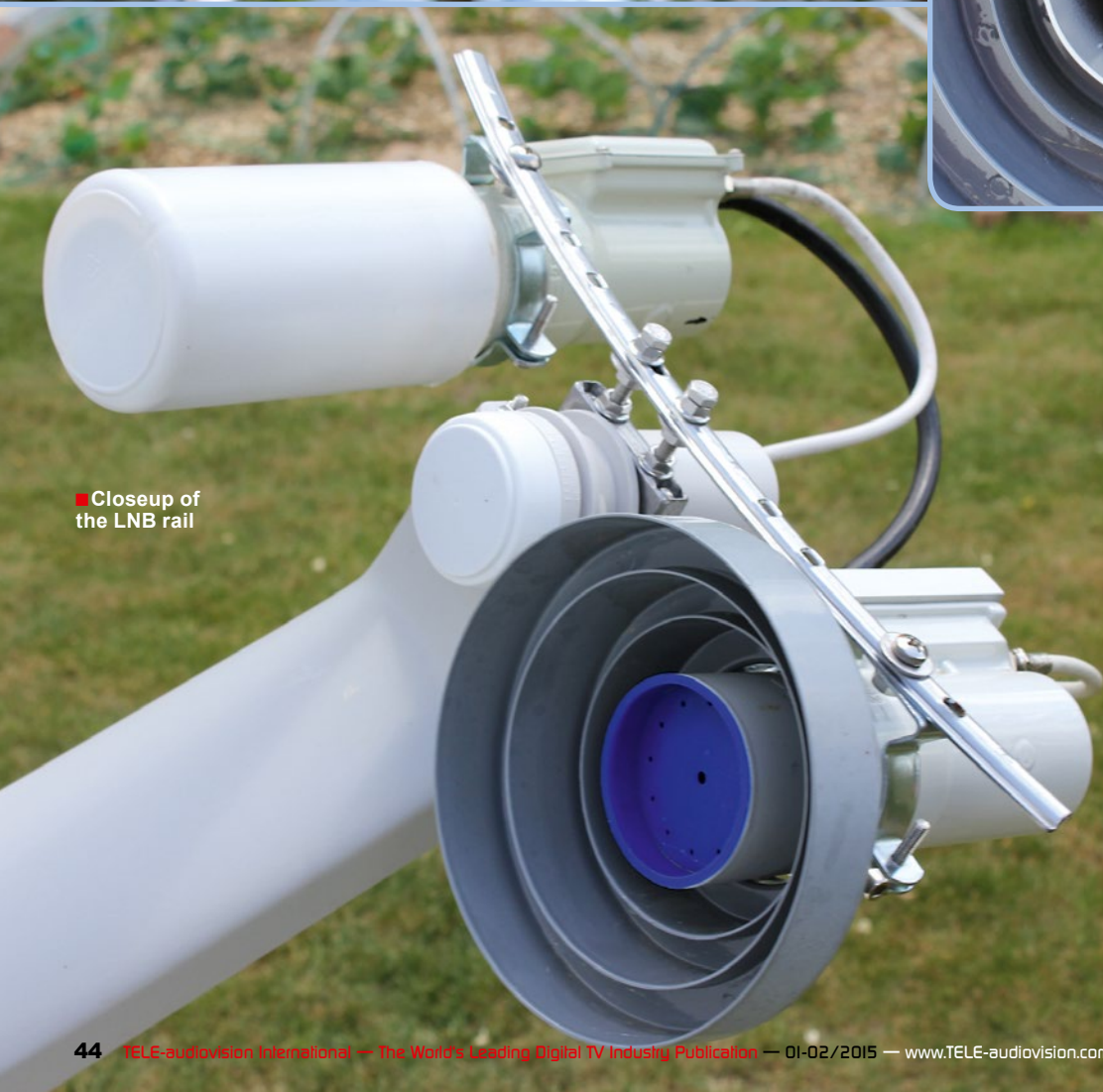
- 3803MHz, SR 26.680, FEC 7/8
- 3660MHz, SR 2.960, FEC 3/4



■ The Titanium Satellite C1W-PLL LNB in place



■ A look inside the feed reveals the polarization probe

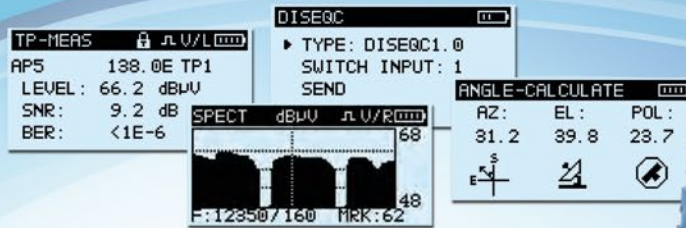


■ Closeup of the LNB rail

• 4100 MHz, SR 6.111, FEC 3/4

Initially, as can be seen on the pictures, we attached the C1W-PLL on the opposite side of the multi feed rail, so that we had a Ku-band LNB in the center and both C-band LNBs on each side. To use either one of the C-Band LNBs, the antenna had to be rotated about 12 degrees relative to the center position. However, we then decided to swap the LNBs for the comparison test, because we wanted to make absolutely sure that we were comparing the exact same signal, without the influence of any dish fine tuning.

We then performed the same measurements - picture analysis and spectrum



S30✓ Satellite Meter

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

S7000✓ TV Analyzer

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





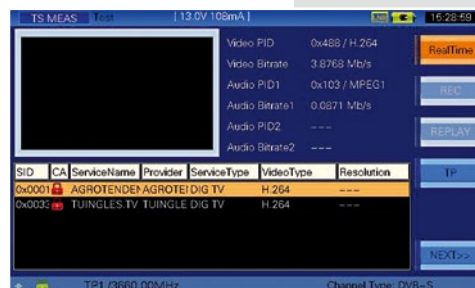
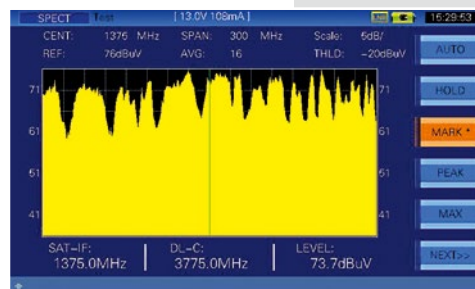
■ Ready for testing: the Deviser S7000 signal analyzer is plugged in and ready to take measurements.



A/B Test:

Reference LNBF

Titanium C1W-PLL





capture - twice, once for the reference LNBF and again for the C1W-PLL LNBF, both at the same position on the multi-feed rail and without any further movement of the dish.

The result was pretty amazing: we obtained a gain of up to 6.2 dBuV! We do

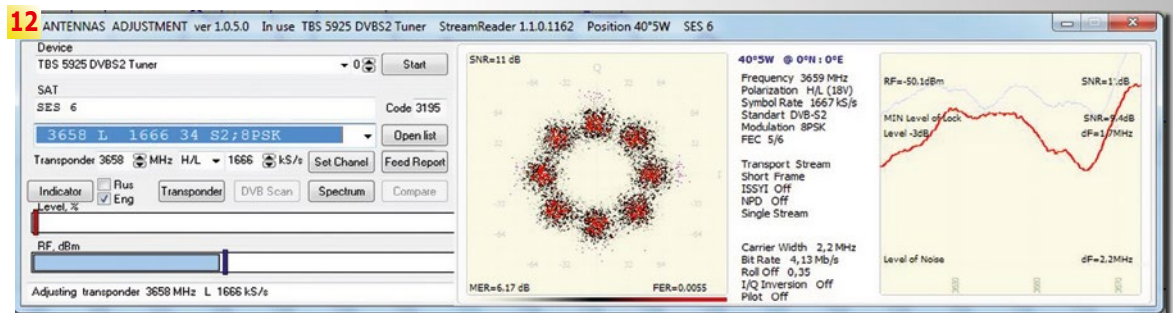
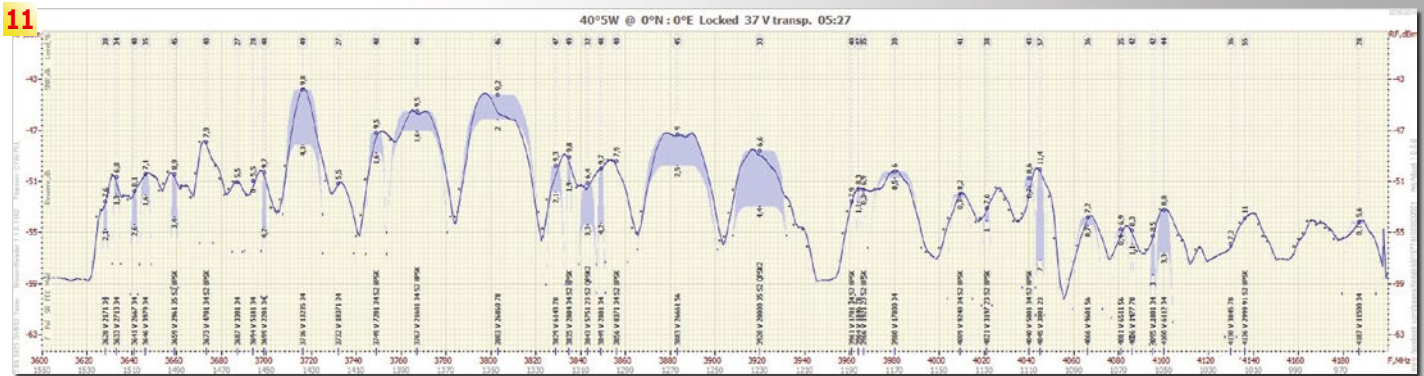
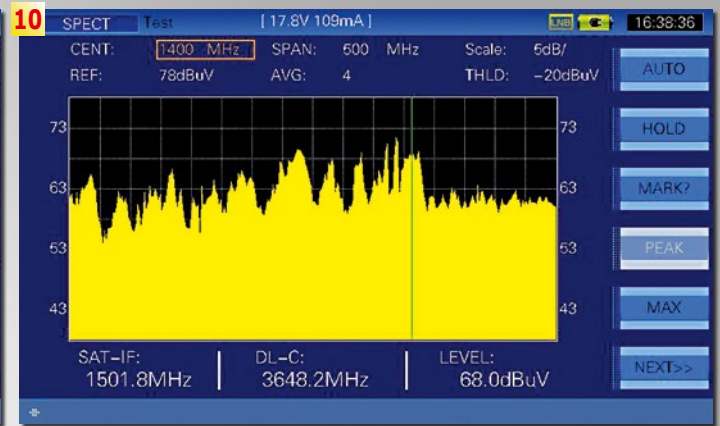
have to point out, though, that our reference LNBF only had a noise figure of 170K while the C1W-PLL has a lower noise figure of just 150K. But of course, it is not easy to find a reference LNBF with a noise figure that low; this just highlights what

A little bit of fun, testing the C1W-PLL LNBF in real life and receiving some rare channels in Europe

1, 2, 3, 4. Rascom-QAF1R at 2.9E

5, 6, 7. Arabsat-5C at 20.0E with a very low symbol rate

8, 9, 10. Eutelsat 10A at 10.0E in the C-band

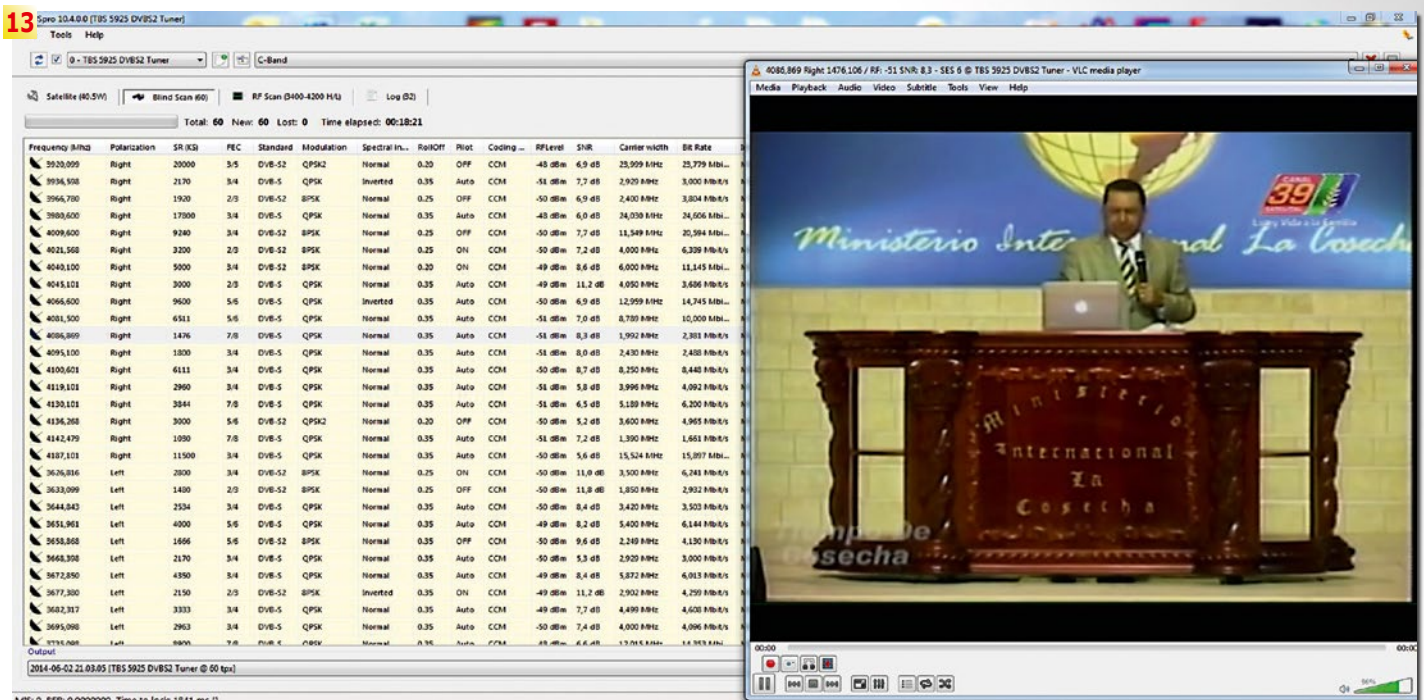


A little more fun: feedhunting like a professional satellite enthusiast

11. Feedhunting on SES6 (40.5W). First we used the SatSpectr software to do a spectrum-based blind scan of all active transponders.

12. We used the SatSpectr in combination with a TBS 5925 tuner and could determine the reception parameters for an interesting transponder: 3658 L SR 1666 FEC 5/6. Notice the very low Symbol Rate. The C1W-PLL is performing great with this DVB-S2 modulated signal.

13. Further tests were performed, this time with the EBSpro software (which uses the StreamReader DLL, too). One particular transponder at 4086 MHz caught our attention: for a C-Band transponder it features an unusually high FEC of 7/8 in combination with a rather low symbol rate of 1476. The C1W-PLL had no problem locking onto this transponder as can be seen in the demodulated picture.





a remarkable feature of the C1W-PLL this is.

Because the C1W-PLL LNB was quickly able to demonstrate how good it is, we spent the rest of the afternoon entertaining ourselves hunting for exotic transponders. The pictures show a selection of three such transponders that were captured in Feedsat's garden in the French countryside. The brand new Titanium Satellite C1W-PLL wideband LNB is hands down the best bargain any C-Band enthusiast can find for his money - and, of course, any professional as well. When it comes to the price/quality ratio, we were totally surprised by this unique PLL LNB and its re-

ception results. Granted, a hardcore enthusiast might still prefer to use a professional C-band LNB with skew control, but for most C-Band users, this LNB will provide exceptional reception results at a fraction of the cost.

Add to this a relatively low power consumption of just 108 mA, a heat sink for enhanced stability and an unusually low noise figure.

For our test in Europe we used the wideband range model (3.4GHz to 4.2GHz). Titanium Satellite also offers a model for the US market with the regular band of 3.7GHz to 4.2GHz. So be sure you know which band you can receive at your location.

EXPERT OPINION

Titanium C1W-PLL
C band LNB

RECOMMENDED
PRODUCT BY ▼



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- + • Great gain
- Great Noise Figure
- PLL Technology
- • None

What is PLL?

PLL stands for Phase-Locked Loop and represents a method to generate an output signal that is in phase with the input signal.

When a digital satellite signal is received by the antenna, the LNB is used to convert the input signal, in the case of the wideband C-band from 3.4 GHz to 4.2 GHz, to the IF range of 950 MHz to 1750 MHz, which is what is needed by the satellite receiver's tuner.

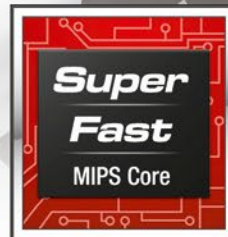
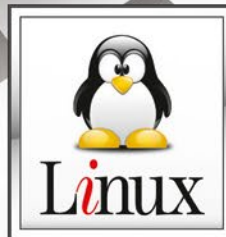
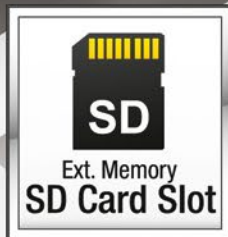
Because the signal represents a continuous flow of binary data, it is crucial to keep the signal synchronized, so that no piece of information is lost due to fluctuations in the timing. If there is such a delay, bits of information may be missed or interpreted twice, producing errors. The higher the information density, the more critical it becomes to have a correct phase of the signal. This is especially true for DVB-S2 signals with high FEC rates. With an FEC of 7/8, seven out of every 8 bits represent data, while just one bit is used for error correction. In order to get good reception, it is crucial to have a very stable output signal from the LNB.

To maintain the output signal in phase with the input signal, most LNBs rely on an oscillator. For C-band LNBs, the oscillator frequency would typically be 5.15 GHz. There is a small deviation of this theoretical frequency, due to imperfections in the crystal, temperature fluctuations, etc. This is why regular C-band LNBs struggle with signals that have low symbol rates or high FEC values.

To get greater stability, high-end LNBs for professional use often use an additional external 10 MHz reference signal, combined with a PLL oscillator.

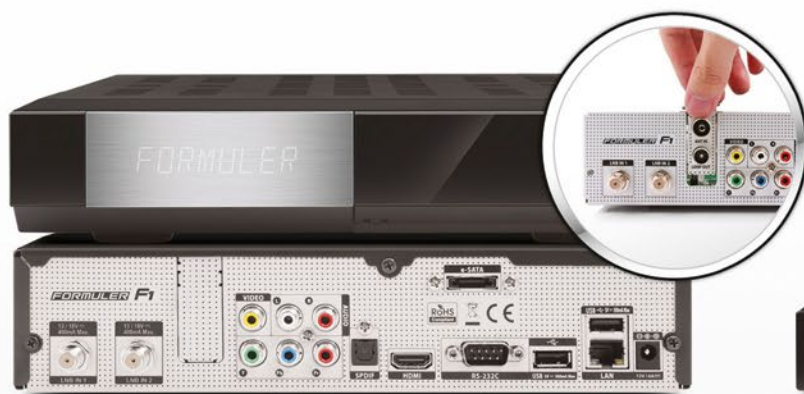
The PLL oscillator basically uses the input phase to synchronize the internal oscillator, thus compensating for the oscillator's deviations. The result is a perfectly timed output signal, which is in phase with the input signal.

This requires a rather complex circuit and hence the usually higher cost of PLL LNBs; though not so with Titanium's PLL series of LNBs.



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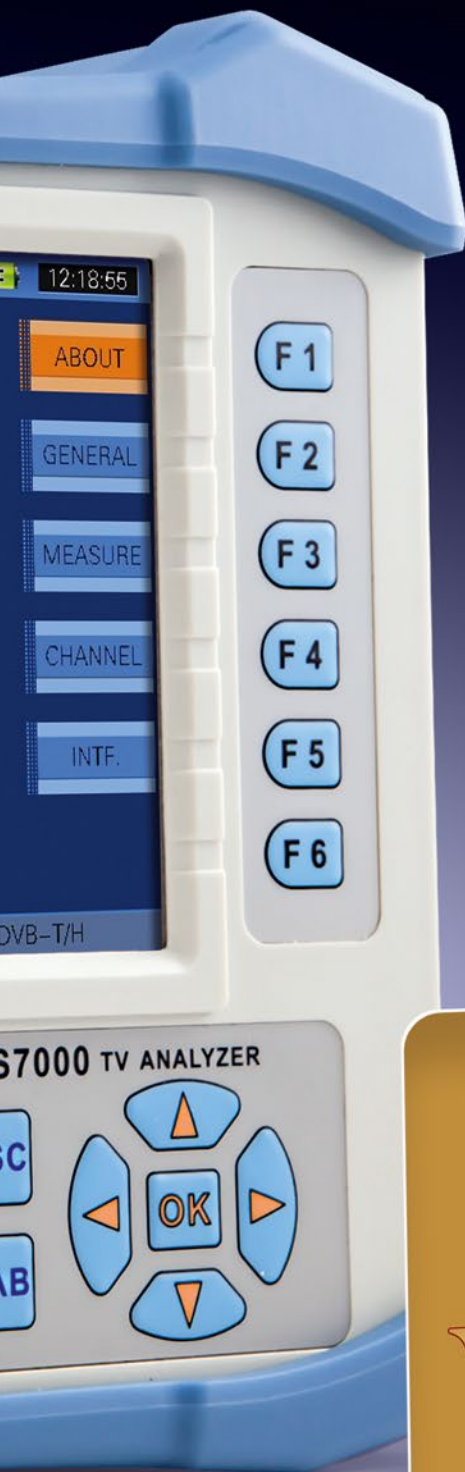
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New Firmware



for Deviser TV Analyser S7000



- ***new feature: IPTV measurements***
- ***automatic detection of transmitted streams***
- ***no IP configuration required***



It's more than just more – it's better too!

Deviser has released a firmware update for its S7000 signal analyser. Regular readers will recall that we introduced this meter in TELE-audiovision issues 09-10/2013 and 11-12/2013 and the excellent results it scored in our test back then still resonate loudly and clearly. The range of features and functions the S7000 offers is simply jaw-dropping. To be honest, we're probably talking about the most versatile meter currently available,

and one that will please professional installers, head-end technicians and broadcast engineers in equal measure.

The main feature the new firmware adds is IPTV compatibility: While an IPTV option was listed already in previous firmware versions, it has only been in beta mode up until now. A fully-fledged IPTV mode is now available starting with software version 1.01.42/1.01.43-6. We should mention that you have to pay

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 economical and practical operation



■ Read the complete test report:
www.TELE-audiovision.com/13/09/deviser

Deviser TV Analyser S7000 **Part 2: Praxis Test**

- As good as high-priced commercial analyzers
- Real-time spectrum analysis for locating transponders extremely fast
- Integrated remote control function through PC or mobile phone
- Ideal for motorized antenna alignment thanks to integrated waterfall diagram
- Echo measurements are possible



■ Read the complete test report:
www.TELE-audiovision.com/13/11/deviser

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Deviser S7000
Unique:
A single meter for measuring all digital TV standards

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■ Even our testcentre has many professional devices delivering IPTV content. It is important to have a meter to quickly verify what is happening in the network.

Tasting classics makes us calm and confident
Experiencing fashion makes us comfortable and related

X SQUARE TECHNOLOGY



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X SQUARE, a global technology company, designs and develops receiving solutions for the worldwide markets: household, education & training, infrastructure & utilities, defense & security, etc.

In these markets, X SQUARE offers user friendly receiving products that optimize productivity and business efficiency. Its autonomic hard & structural solutions integrate all aspects of communication technology, from signal receiving & processing to terminal image display and adjustment.

X SQUARE has its own facilities for Global Sales & Marketing, Customer Support, R&D and Manufacturing in China. The company is active in more than thirty countries and employs over 500 professional staff world-wide.

X SQUARE, one of the world's largest satellite product manufacturers of low noise blocks and digital satellite receivers, was established in 2003 in Chengdu, China. In 2010, we moved to Shenzhen. We have more than nine years' experience in the satellite field, with an experienced R&D team. Our products guarantee the best support to all partners.

Strong focus on innovation

In the course of its 12-year history, innovation and creativity have always been core values. X SQUARE reinvests 10% of its sales into R&D each year.

With the support of excellent staff and a broad sales network, we are fully confident that we can develop special products according to customers' requirements.

Adhering to the principle of "High quality products, High quality service", and depending on our highly experienced R&D team and advanced production equipment, we are planning to co-operate with more and more customers around the world by providing superior quality products consistently. In order to improve our products' competitiveness, we will try our best to fulfill customers' specifications in a more positive manner.



ADVANCED TECHNOLOGY
From X SQUARE

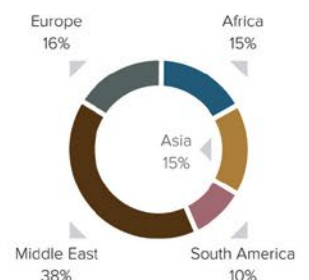
A supplier of choice for most DTH operators across Middle-east with the broadest product range in the industry covering C-band & Ku-band.

Since its introduction, each new X SQUARE model has been a showcase of our advanced technological know-how. Till today, this unflinching principle remains very much an integral part of our product development process. Every technological

aspect has been carefully thought out when integrating cutting-edge design with advanced technology - all with the sole purpose of creating a unique and fulfilling user experience for our valued customers.

Geographical breakdown of sales

Continents	Countries	2014
Asia	China, Kazakhstan, India, Pakistan,	
Middle East	Iraq, Turkey, Afghanistan, Iran, Jordan	
South America	Brazil, Chile, Venezuela, Uruguay & Paraguay	
Africa	Egypt, Nigeria, Angola, Ghana, Algeria	
Europe	Germany, United Kingdom, Russia, Ukraine	



to add the feature that is then activated with a code. If you decide to unlock IPTV mode you simply contact Deviser with the serial number of your meter to receive the required activation code.

But first you have to install the latest firmware release to get going. For the Deviser S7000 this update process

requires a little more effort and time than for most other meters we have tested so far. This is because this little meter is actually a full-scale computer running the Linux operating system. Users of the S7000 generally wouldn't know and notice, but for IT specialists the type of image files used for firmware up-

dates are a clear indication. In the end, this only proves the vast amount of technology hidden inside the S7000.

The total firmware package consists of files that update the following components:

- Bootloader v2.32.12
- Kernel v1.2
- Software v1.01.42/1.01.43-6
- File System v1.03.49/1.01.30/1.30.05
- CA Module v1.06.1/2.20

In general, meters and receivers use a so-called bootloader to start up. The actual firmware is stored in the flash memory and is usually compressed for reasons of

efficiency and to save valuable resources. By contrast, the boot loader is not compressed and sits right on top of everything else. This makes sure it is run automatically as soon as the device is turned on. The main task of a bootloader is to look up the firmware in the flash memory, unzip it and copy it into the RAM memory.

Apart from launching the firmware, the bootloader is also required for firmware updates. During launch, the bootloader checks whether a firmware file is available on an external medium such as a USB stick, for example. In

up the individually configured meters...

8. Leave the USB memory attached to the Deviser S7000 and it will directly boot into the firmware upgrade menu. This application will scan the USB memory for upgrade packages. It takes a few seconds to process the available upgrade packages.

9. Finally you will be given the choice to select which packages you want to install. You can select the packages individually or all at once, pressing the F1 key.

10. At the end of the upgrade process the Deviser S7000 will turn itself off. Don't forget to detach the USB memory before turning it on again.

11. After starting again go to the Setup menu of the Deviser S7000 to see the current installed firmware versions of the different components. Scroll down to the options page and you will find the new IPTV option. This may have been listed in previous firmware releases but was not active due to the beta status. This is the first software which allows activation by end users through a special pin code provided as a cost option.

12. And here you have it: my Deviser S7000 is now prepared for terrestrial TV, cable TV, satellite TV and IPTV. A truly complete measuring instrument for TV technicians and installers.

13. I selected the option right away, without any network cable attached, just to see the new menus and options.

14. As usual, I tested the firmware upgrade procedure exhaustively and I am pleased to report to our readers, that you can upgrade or downgrade the package versions at will, as sometimes you may need or prefer to use an older firmware. You can even select individual components to upgrade or downgrade and you can do so from the automatic upgrade menu or manually from the boot loader menu.

Deviser Firmware Upgrade

1. The starting point was the firmware with Software Version 1.01.36.

2. Upgrade menu of the Bootloader: connect the Deviser S7000 to the mains power supply and turn it on, while simultaneously pressing the key with the wrench symbol.

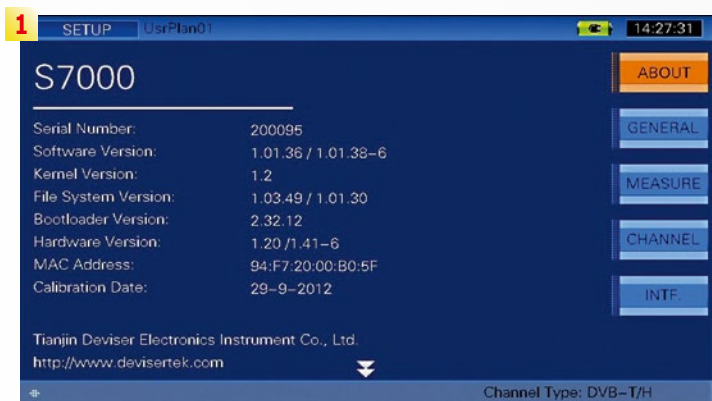
3. I attached the USB memory with the upgrade files into a root folder called "deviser_s7000". Then I selected the F2 key for "USB disk". This opens the upgrade options using a USB memory.

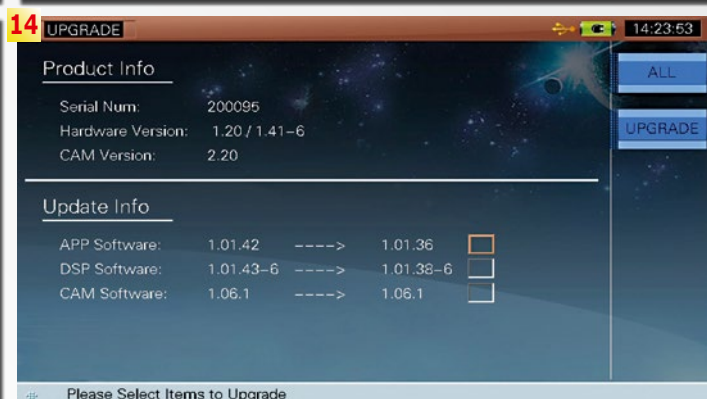
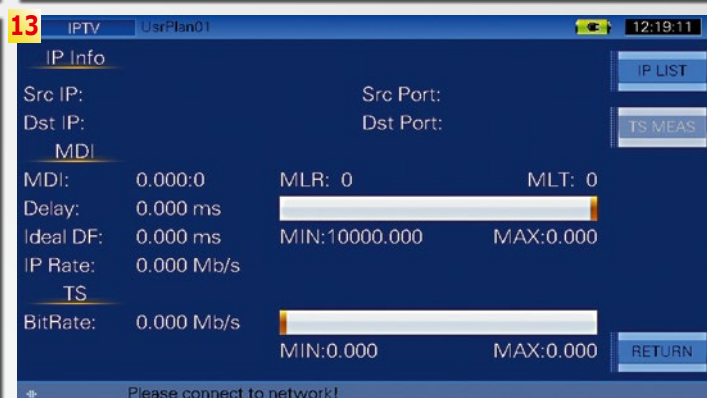
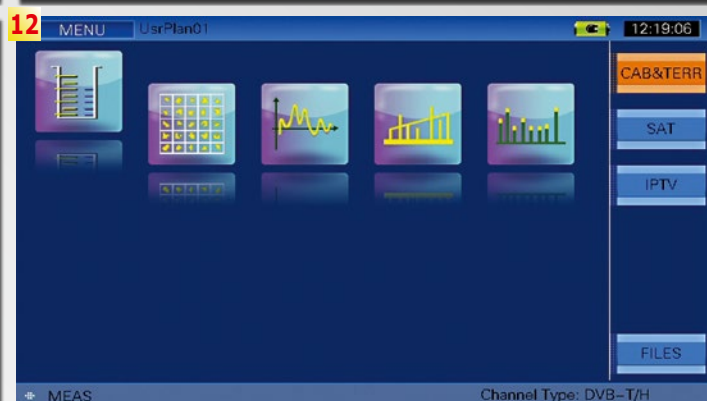
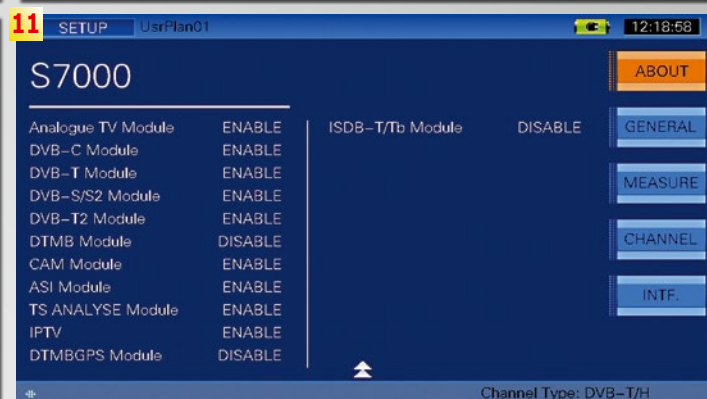
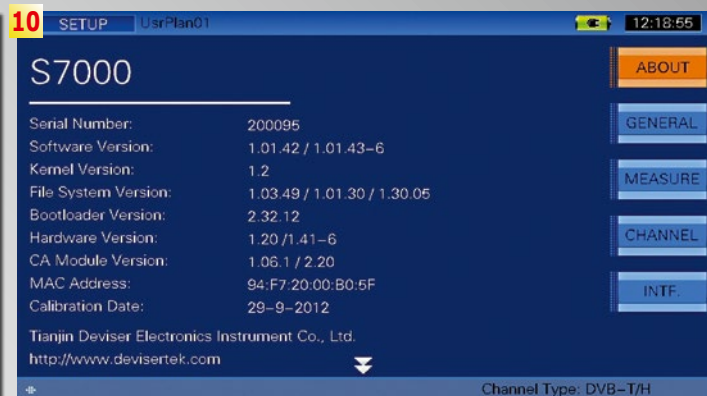
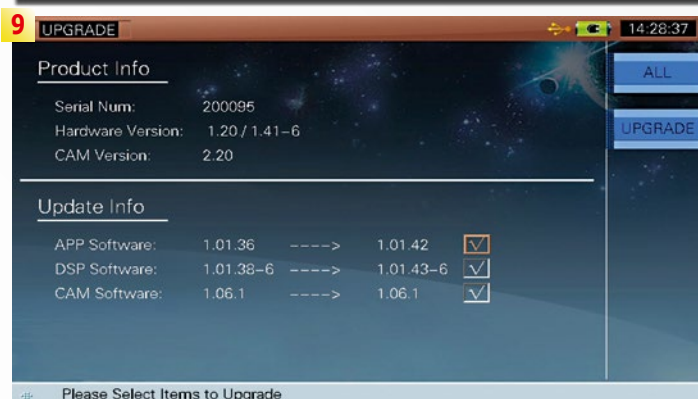
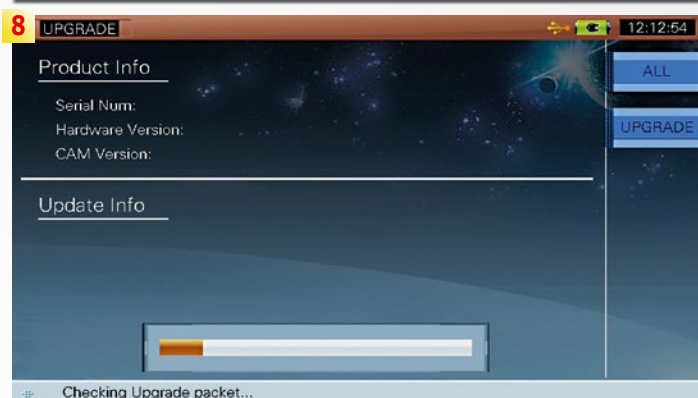
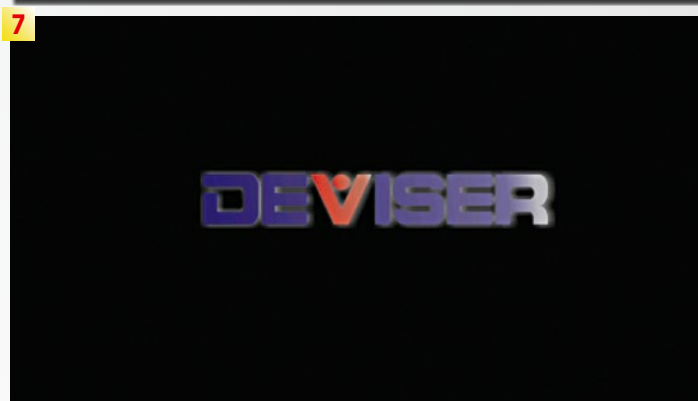
4. The first option "CFE Upgrade" will update the Bootloader. This is the only critical step when upgrading the Deviser S7000: never interrupt this! First the memory banks of the flash memory containing the Bootloader are deleted.

5. Then the new Bootloader is written into the flash memory. Once this process, which takes less than a minute, is completed the Deviser S7000 will automatically reboot.

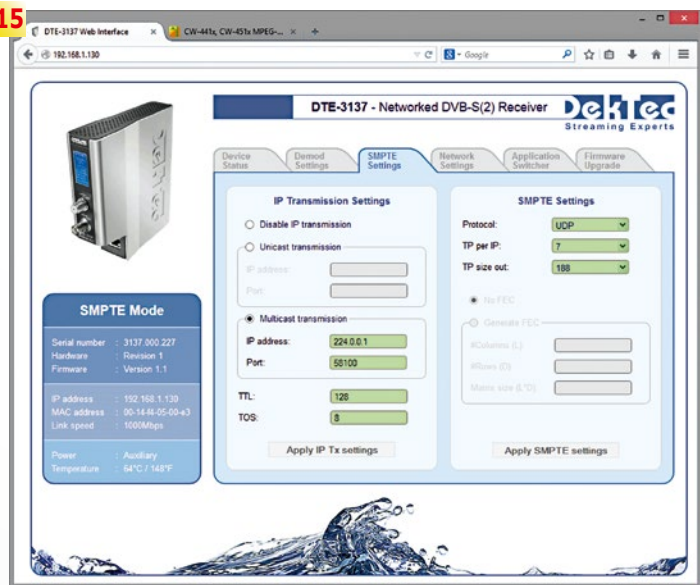
6. If you have no USB memory at hand you can do the upgrade through a network connection. For this to work, you need to setup a TFTP server and specify its IP address. The real benefit of this option is the possibility to remotely upgrade the firmware: just instruct the technician to connect the meter to the network and have him press the keys on the device. This allows safe firmware deployment without actually distributing it to end users.

7. If everything went OK you should see the boot logo of the Deviser S7000. If you look at the previous pictures, you will find an option that actually allows uploading a different picture: Splash Upgrade. This is nice to customize the meter. Imagine you want to put a name tag on each meters, so that different technicians don't mix

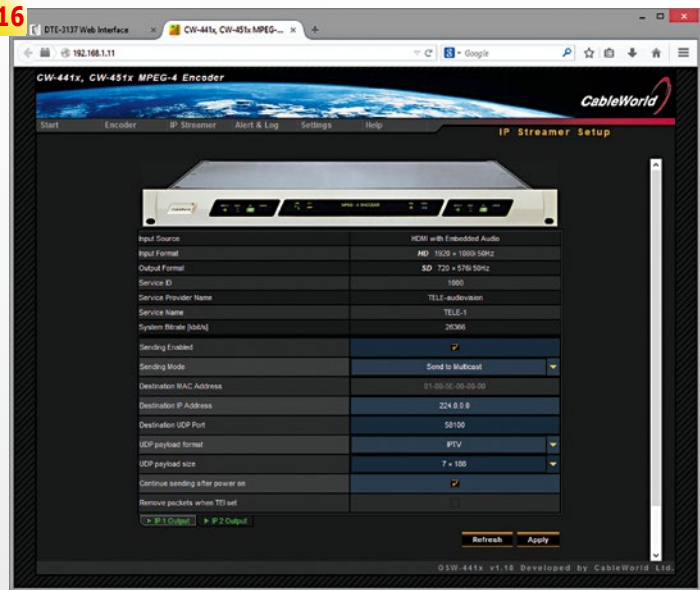




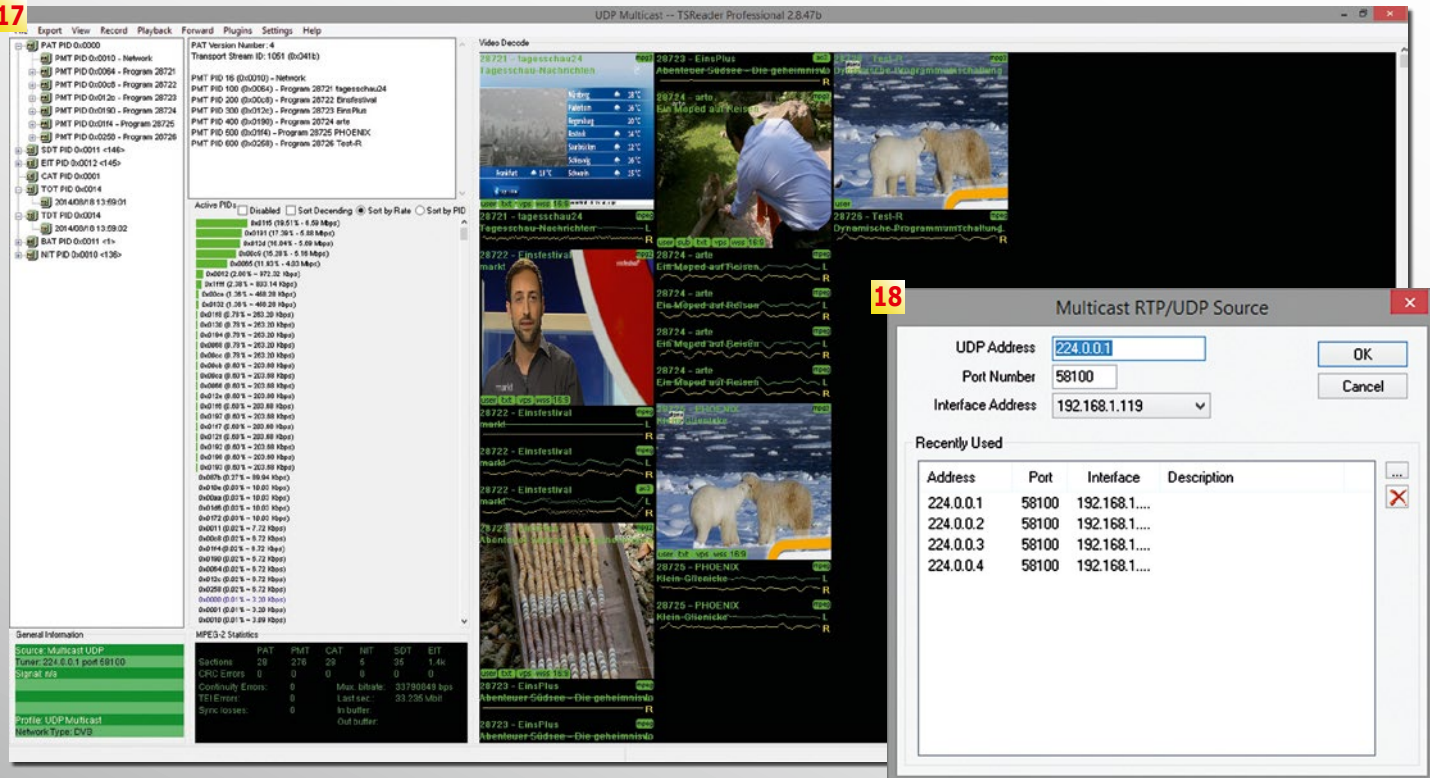
15



16



17



many cases, users have to press a certain button or key when turning on the receiver to change from launch mode to update mode.

The new firmware version for the DEVISER S7000 also requires a new bootloader, which means the bootloader needs to be updated before anything else. This is a very critical step, since any device must have a functioning bootloader. If the bootloader fails, the device invariably fails as well. This means you have to make absolutely sure nothing can interrupt the update process for the bootloader. If that happens, you have successfully destroyed the bootloader and will end up scratching your head in despair. If our word is anything

to go by, we'd fully charge the battery of the S7000 before even thinking about updating the bootloader. Apparently, Deviser follows a cautious approach too, since the menu item required can only be accessed when the power pack is attached to the meter.

The actual preparation for updating the bootloader is a very streamlined process: All we had to do was unzip the compressed archive onto a USB storage medium. This resulted in the creation of a new directory labelled "deviser_s7000", which includes all files required for the update sequence, including bootloader update.

This USB storage medium needs to be connected to the USB port of the S7000 before the meter is turned on – pressing the button with the screwdriver icon at the same time. This will activate a special update menu of the currently installed bootloader. We should note at this stage that you can initiate updates both via USB and over the local network using TFTP, an option that is quite extraordinary among signals meters.

Selecting the USB option as a next step will launch another menu indicating the various functional areas of the meter that can be updated:

- CFE Upgrade: Choose this option to update the boot-

Windows Screenshots

15. Configuring the IPTV options of a DekTec DTE-3137 Network DVB-S/S2 Receiver.

16. Configuring a professional MPEG Encoder with two modulators and IPTV server.

17. Of course you can analyse the IPTV with Windows based applications like TSReader Professional...

18. ...but for that you need to know the UDP Address and Port Number. What if, you don't know these? Then you have a problem, unless you have the Deviser S7000.



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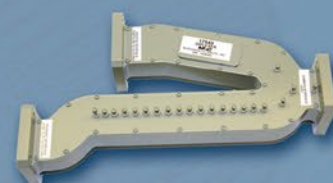
Transmit Reject

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Transmit Reject



Diplexer

K/Ka-Band (18-40 GHz)

Transmit Bandpass & Receive Bandpass

X-Band (7.25-8.4 GHz)

Transmit Reject & Receive Reject



Transmit Reject



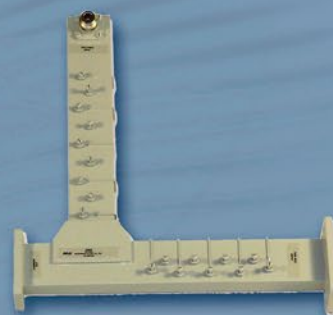
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DTV Transmit Mask



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loader. We started out with this right away, since the new firmware also requires the latest bootloader version.

- **Kernel Upgrade:** Choose this option to update the so-called kernel, which is the central unit of the operating system.

- **RootFS Upgrade:** The actual operating system with all its libraries and additional files is located in the root file system, which is installed as a separate entity outside the kernel.

- **Splash Upgrade:** This option is useful for commercial distributors of the Deviser S7000 or for large companies using many meters – it allows a customised image to be shown during the starting sequence.

As mentioned above, we began with the CFE Upgrade. After a few seconds, the De-

viser S7000 switches off automatically, and when it comes on again you normally would not notice any changes at all.

Firmware was next. Here, two means are available to reach the same end: Either you call up the update menu described above by switching on the Deviser S7000 while at the same time pressing the screwdriver button, or you go for the automatic firmware update. How does that work? Well, simply connect a USB storage medium with the new firmware files to the meter before switching it on. When the S7000 powers up it will automatically detect the new firmware version and take care of all the rest. Just make sure you disconnect the USB medium once the new firmware has been installed properly, otherwise the meter will always initiate the update

sequence whenever you turn it on. While this makes sense and is only logical, it took us a while to figure out, and we first were under the impression that the Deviser S7000 was stuck in an infinite boot loop...

We were rather surprised to find out that Deviser does not put many restrictions on the way you are allowed to use the update function, so that you are entirely free to downgrade to a lower firmware version again if you have any reason to do so. What's more, Deviser leaves it up to the user to decide which packages should or should not be installed. To give you a real-world example, you could perhaps choose to only update the firmware of the CA module and not touch the rest of the firmware in case you don't want to mess with a

perfectly running system.

Once all steps are completed it's time to re-start the Deviser S7000 and have a look at the configuration menu to check and verify the version numbers of all installed components. And here it finally is: the new IPTV option! If you're anything like us this will be the first feature to check out and the screen that appears shows the IPTV list right away. All IPTV servers that can be detected automatically are summarised in a neat chart, complete with source IP, source port, destination IP, destination port, data rate and packet number.

This initial screen alone is an immensely valuable tool, since all that is required is a connected network cable to find out instantly whether or not IPTV servers are available, and if so, which ones.

Deviser S7000 Screenshots

19. As soon as I activated the IPTV streaming on the DekTec DTE-3137, the Deviser S7000 listed the transmission.

20. Here I activated the transmission of both channels on the MPEG Encoder – within a second they were listed here as well.

21. This was an older configuration of the IPTV devices in my network. The Deviser S7000 shows why I couldn't use them all simultaneously: I had duplicated destination IPs configured.

22. After sorting out the IPs I now have a proper configuration and my Gigabit network was providing four different transponders simultaneously.

23. Different measurements on the IPTV streams fed into our network: ideal to monitor if everything is going as expected.

I found the indication of the Bit Rate extremely useful, as it is often difficult to manage this parameter in a satisfactory way. Technicians at the cable head end will benefit from the Media Delivery Index (MDI), which allows monitoring the jitter and delay at the network level. The Deviser S7000 does show the Delay Factor (DF), as well as the Media Loss Rate (MLR).

24. The TS-Analyser of the Deviser S7000 doesn't care where the TS stream comes from. In this case, it actually comes from the DekTec DTE3137 receiver transmitting the whole transponder over IPTV.

25. All the usual functionality of the TS-Analyser is available for the IPTV mode. The only exception I found is that one cannot record the stream to an attached USB memory.

26. Here is a different IPTV stream being analysed. This one only contains one single channel.

19 IPTV ASTRA 1H 14:30:02

Src IP	Src Port	Dst IP	Dst Port	Rate(Kb/s)	Packet
192.168.1.130	1	224.0.0.1	58100	34513.9200	3210

INFO TS MEAS RETURN

21 IPTV ASTRA 1H 14:39:27

Src IP	Src Port	Dst IP	Dst Port	Rate(Kb/s)	Packet
192.168.1.210	2007	224.0.0.1	1234	37728.7680	3609
192.168.1.130	1	224.0.0.1	58100	31890.4320	2966
192.168.1.10	1947	224.0.0.0	58101	4010.4960	373
192.168.1.10	1947	224.0.0.0	58100	2462.2080	229

INFO TS MEAS RETURN

20 IPTV ASTRA 1H 14:46:09

Src IP	Src Port	Dst IP	Dst Port	Rate(Kb/s)	Packet
192.168.1.130	1	224.0.0.2	58100	34503.1680	3209
192.168.1.10	1947	224.0.0.1	58100	4290.0480	399
192.168.1.10	1947	224.0.0.0	58100	2677.2480	249

INFO TS MEAS RETURN

22 IPTV ASTRA 1H 14:51:55

Src IP	Src Port	Dst IP	Dst Port	Rate(Kb/s)	Packet
192.168.1.210	2007	224.0.0.4	58100	40868.3520	3801
192.168.1.130	1	224.0.0.2	58100	34513.9200	3210
192.168.1.10	1947	224.0.0.1	58100	4365.3120	406
192.168.1.10	1947	224.0.0.0	58100	2720.2560	253

INFO TS MEAS RETURN

This quick and easy feature truly proved its worth in our test center, since we have often spent hours on end setting up an IPTV multicast client only to discover down the road that the server had not been configured correctly in the first place. A mistake we made more often than we would have liked was setting up different IPTV servers with different ports (good), yet using the same multicast IP (not so good). With the handy Deviser S7000 you'd notice such a glitch immediately.

Yet – and you might have guessed already – the IPTV option of the Deviser S7000 offers much more than that. Click on any of the listed IPTV servers to access the IPTV measuring menu, which summarises all major stream parameters. Delay times, for instance, are always a dominant issue and the S7000 provides a very useful graphic overview. Other standard IPTV parameters such as MDI (media delay index), DF (delay factor) or MLR (media loss rate) are of course also available at a glance. Making use of the entire screen offered by the S7000, Deviser has found a way to present all those different details simultaneously using a design that is both practical and pleasing

to the eye.

With the TS MEAS function it's possible to launch the built-in transport stream analyser for the currently selected IPTV server. Incidentally, this is the very same TS analyser that also deals with the measurement of cable, terrestrial and satellite signals. The Deviser S7000 simply passes through the IPTV transport stream to the TS analyser, which is a smart move because the latter could not care less about the origin of the transport stream it dissects. As a matter of fact, it might as well come from a TS file stored on an external USB storage medium that is connected to the meter.

If you want to refresh your memory as regards the huge range of features and capabilities of the integrated TS analyser we suggest you have a read of TELE-audiovision issues 09-10/2013 and 11-12/2013 again, which both featured in-depth reviews of the Deviser S7000. All those features and functions can just as well be used for IPTV analysis, so you can be sure that there is nothing left to be desired.

With the most recent firmware update Deviser strikingly proves yet again that its S7000 meter is the flagship in

TV signal measurement. With the new IPTV option both installers and head-end technicians are given important extra functions for quickly and efficiently diagnosing errors and malfunctions.

In addition, this new firmware reminds us of all the core benefits the Deviser S7000 has built in right from the start. Its modular hard-

ware and software design allows the meter to be kept up to date and ahead of the pack throughout its service life. The manufacturer's code-based approach to add additional functions is another tool for extended customisation. You only have to get what you really need, which in itself is a strategy worth applauding.

Why You Need to Measure IPTV

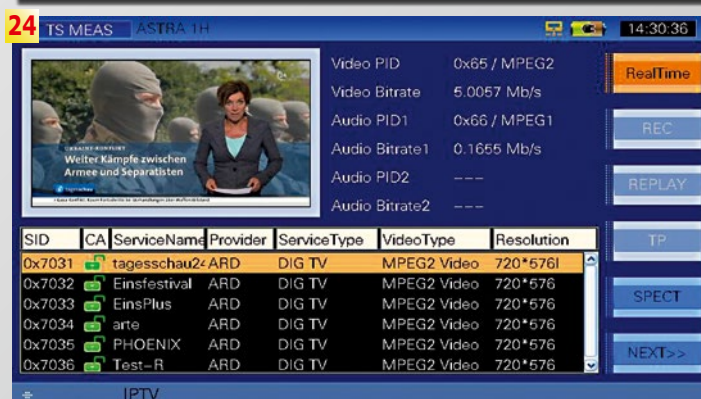
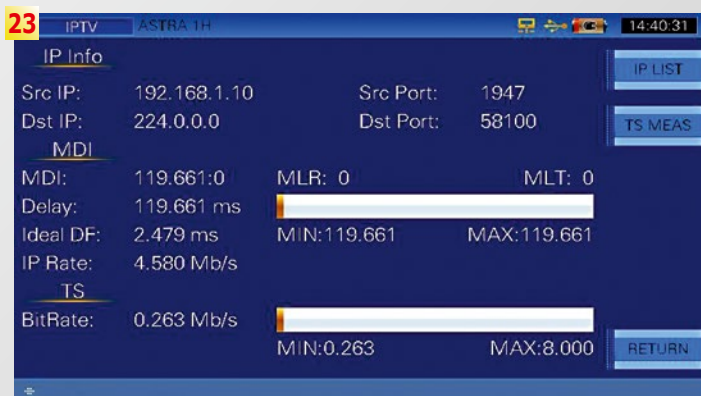
IPTV frees the technician from worries regarding the common problems of the distribution through a coaxial cable network, like signal attenuation, distortion, etc. However, new issues arise: because IPTV uses information packets sharing the medium with other information packets, timing becomes important. Problems occur if the bandwidth is too high or if delays keep the required IPTV packets from reaching the decoder in time.

To measure what is happening in the IPTV distribution, several parameters can be measured. The most important ones being:

Media Delivery Index (MDI) – This represents the ratio between the Delay Factor (DF) and the Media Loss Rate (MLR)

Delay Factor (DF) – This measures how big the buffer on a virtual receiver has to be to avoid picture loss due to the time distortions (jitter). In other words: if the packets arrive with a delay greater than the delay factor there will be an interruption in the picture.

Media Loss Rate (MLR) – This indicates the number of packets lost per second.



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



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Manufacturer	TBS Tenow
Website	www.tbsdtv.com
Function	DVB-S2 Receiver for Multi Input Streams
DVB-S2/LAN	• / —
USB/SD Card	• / —
Internal Storage	no
Scart/Digital Audio	— / —



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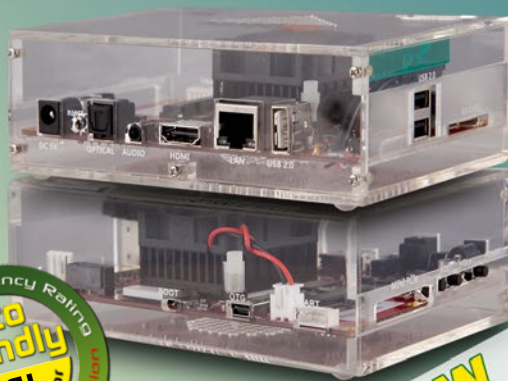
Manufacturer	TBS Tenow
Website	www.tbsdtv.com
Function	Mini PC for web/IPTV and live TV
DiSEqC	1.0 / 1.1 / 1.2
WIFI/LAN	• / •
Internal Storage	no
CVBS/HDMI	— / •
USB/SD Card	• / •
Scart/Digital Audio	— / •



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TENOW

Manufacturer	Giga Blue
Website	www.gigablue.de
Function	DVB-S2, DVB-C2, DVB-T 4-Tuner HDTV Receiver
DVB-S2/LAN	• / •
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	— / •



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GIGA BLUE



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



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



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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	— / —



TENOW



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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	• / •



MKTECH



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CHANGHONG RB78A

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

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Changhong Smartcenter
Very successful hybrid receiver for digital TV

Energy Efficiency Rating
eco friendly
0.55 power factor
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CHANGHONG iho SmartCenter

CHANGHONG

HDT-275C

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

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

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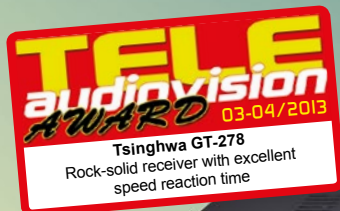
www.TELE-audiovision.com/13/03/panodic
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HDT-275C

PANODIC



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



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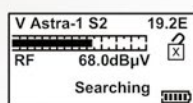
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Horizon Digital Meters

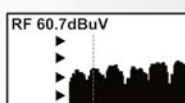
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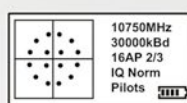
- High definition broadcasts in DVB-S, DSS and DVB-S2
- Storage of up to 256 transponders
- 16 user customisable selections for on-site unique carriers
- Precise and accurate installation
- Built-in, long life, high output rechargeable battery pack



Satellite signal display



Spectrum display



Constellation Diagram*

*Typical 16APSK, 8PSK & QPSK also available



All meters include a carry case, mains lead, 12v car adaptor, USB cable, and installation manual.



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从八木天线的发明 -
我们知道八木天线是怎样炼成的！



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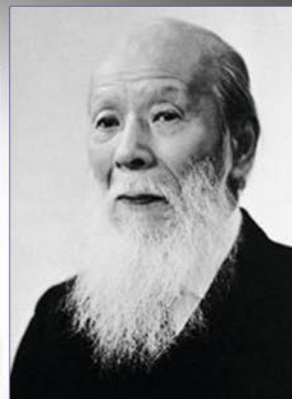
**DESIGNED IN
JAPAN**

Dr. Hidetsugu Yagi invented the Yagi antenna in 1926

八木天线由八木秀次博士于1926年发明

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Expert Opinion

www.TELE-audiovision.com/15/01/deviser
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Manufacturer	Tianjin Deviser Electronics Instrument
Website	www.devisertek.com
Function	Multi Norm Digital TV Signal Analyser
Frequency Range	5 - 1050 MHz (TV); 950-2150 MHz (Satellite)
Video Output	HDMI
Built-in Monitor	7" TFT LCD, 800x480 pixels



DEVISER S7000

Unique:
A single meter for measuring
all digital TV standards



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www.TELE-audiovision.com/14/03/rohde-schwarz
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Manufacturer	Rohde & Schwarz
Website	www.rohde-schwarz.com
Function	Professional DVB Signal Analyzer
Frequency Range	5 ~ 2500 MHz
Video Output	HDMI
Built-in Monitor	640 x 480 FFT display



Rohde & Schwarz EFL210 + EFL-Z100
The best and most complete professional
instrument for CATV operators and their
installers.



TELE-audiovision
International
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Expert Opinion

www.TELE-audiovision.com/14/01/deviser
Read TELE-audiovision Test Report

Manufacturer	Tianjin Deviser Electronics Instrument
Website	www.devisertek.com
Function	Professional Meter for DVB-T, DVB-T2, DVB-C
Frequency Range	5 ~ 1052 MHz
Video Output	—
Built-in Monitor	320 × 240 TFT display



TELE
audiovision
AWARD 01-02/2014

DEVISER DS2400T
Well equipped for the measurements
in all terrestrial DVB standards

DEVISER



TELE-audiovision
International
Magazine

Expert Opinion

www.TELE-audiovision.com/13/09/horizon
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Manufacturer	Horizon Global Electronics
Website	www.horizonhge.com
Function	Digital Meter DVB 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

HORIZON



TELE-audiovision
International
Magazine

Expert Opinion

www.TELE-audiovision.com/13/09/deviser
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Manufacturer	Tianjin Deviser Electronics Instrument
Website	www.devisertek.com
Function	Professional TV Signal Analyzer
Frequency Range	5 - 1050 MHz (TV); 950-2150 MHz (Satellite)
Video Output	HDMI
Built-in Monitor	7" TFT LCD, 800x480 pixels



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



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Expert Opinion

www.TELE-audiovision.com/13/05/deviser
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Manufacturer	Tianjin Deviser Electronics Instrument
Website	www.devisertek.com
Function	Satellite Antenna Meter
Frequency Range	950~2150 MHz
Video Output	—
Built-in Monitor	LCD display



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



TELE
audiovision
AWARD 03-04/2013

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

HORIZON



TELE-audiovision
International
Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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



TELE
audiovision
AWARD 11-12/2012

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

SATLINK



TELE-audiovision
International
Magazine

Expert Opinion

www.TELE-audiovision.com/12/11/horizon
Read TELE-audiovision Test Report

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



TELE
audiovision
AWARD 11-12/2012

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

HORIZON



TELE-audiovision
International
Magazine

Expert Opinion

www.TELE-audiovision.com/12/11/deviser
Read TELE-audiovision Test Report

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

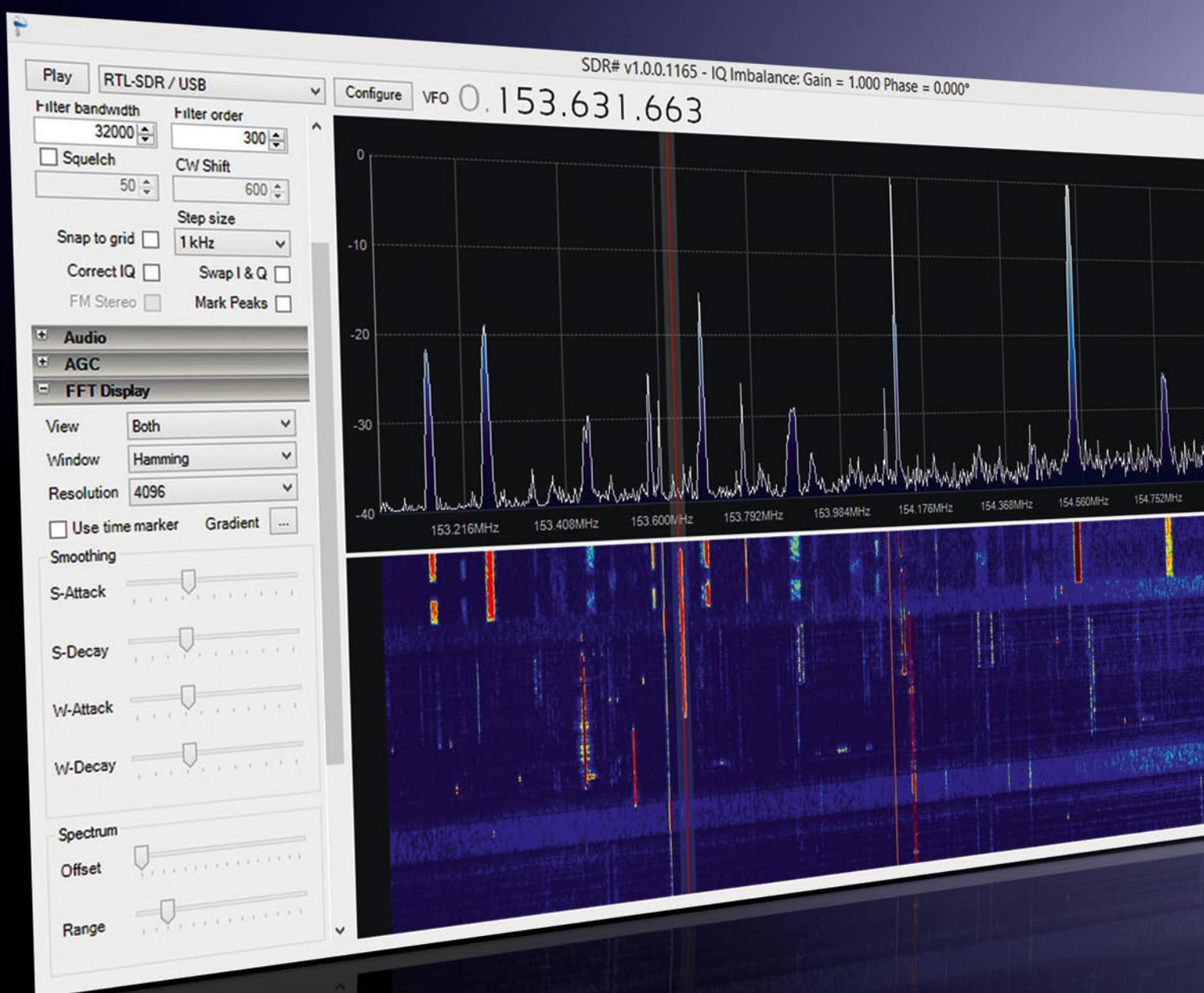


TELE
audiovision
AWARD 11-12/2012

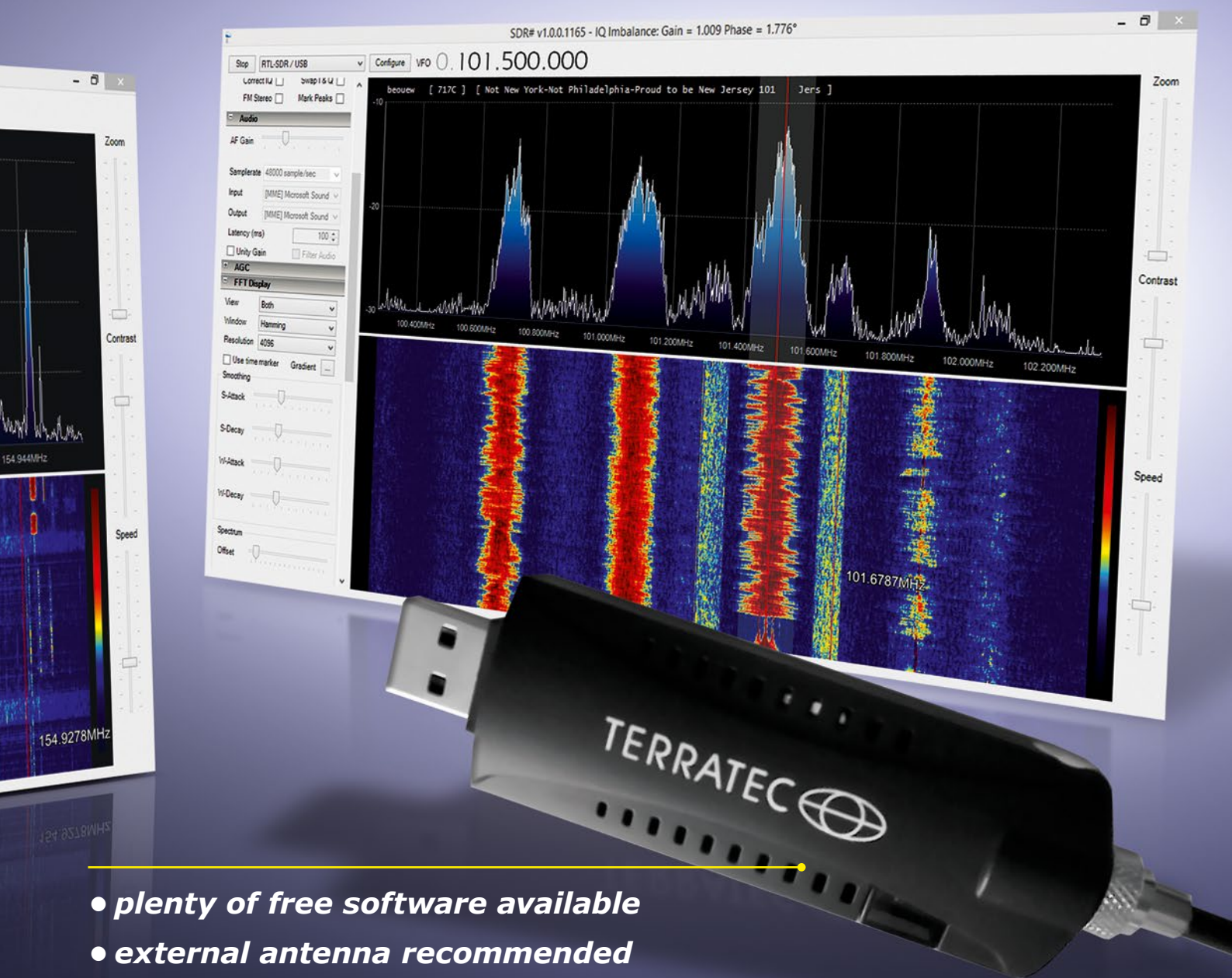
DEVISER AE 120
Optical Power Meter
Extremely simple to use but
at same time very accurate

DEVISER

Software Defined Radio



with a DVB-T Dongle



- *plenty of free software available*
- *external antenna recommended*
- *do not use the software which comes with the dongle*
- *add-ons widen the spectrum to include AM and SW*

Use of Digital Video Broadcast-Terrestrial (DVB-T) Dongles as Broadband Receivers

by Mario Filippi, N2HUN

DVB-T and DVB-T2 are the terrestrial digital tv standards in many parts of the world. If you own a laptop or a desktop computer, then a very economic way to receive those tv signals is the use of those thumb-sized dongles. They run off the USB port, are powered by five volts, and most of them receive from the low end of the VHF band all up to the top of the UHF band.

In other parts of the world the terrestrial digital tv standards are ISDB-Tb (most of South America) and ATSC (North America). So in those parts of the world such a DVB-

(Digital Radio Mondiale). Add to this the feature of viewing a two MHz wide portion of spectrum (using companion software) you'll have a veritable receiving powerhouse that opens up a world of listening pleasure.

Prices of those DVB-T dongles range from \$12.00 to \$90.00 USD depending on the chipset. By chipset I'm referring to the two most important electronic components; the tuner and demodulator, which govern not only the price but the receive frequency range. For example, DVB-T dongles with the Elonics 4000



1. Typical R820T DVB-T dongle covering 25 - ~1700 MHz.

2. Terratec TStick+ dongle covering 64 - ~2400 MHz with Elonics 4000 tuner.



T dongle is of no use, right? To the contrary! Amazingly, these dongles support listening modes of interest to the hobbyist everywhere in the world, such as AM (Amplitude Modulation), FM (Frequency Modulation, both narrow and wideband), USB (Upper Sideband), LSB (Lower Sideband), CW (Continuous Wave, a.k.a. Morse code) and even DRM

tuner covering 64 - 2300 MHz cost upwards of \$90.00 USD while those based on the R820T chipset cover 25 - 1700 MHz and are more reasonably priced around \$16.00 USD.

Some points to ponder before purchasing a dongle are: compatibility with your computer, the type of operating system, need for at least one USB port, what software

to use, access to the Internet (for downloading software programs), soundcard requirement, user's level of computer literacy, what antenna to use for reception, coaxial cable for the antenna, and coax adapters for connecting the DVB-T dongle to an external antenna. Lastly and most importantly is choosing a reputable vendor

since very little documentation exists for this adaptation of the dongle for radio reception.

My first dongle was purchased from Nooelec (www.noelec.com) and my experience has been very positive as their customer service is superb and they supply detailed product specifications for most of their dongles. Keep in mind that this is not a "plug and play" endeavor so be prudent when buying, check out the customer feedback on the product and the seller, and see what the specifications of the dongle are prior to purchase.

When you've finally purchased your dongle it will include accessories such as a miniature magnetic/suction cup mount antenna for DAB

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3



use a good quality coaxial cable for broadband use such as low loss, double shielded 75 Ohm RG-6 which is readily available at most "big box" stores and is economically priced at about \$20.00 USD per 100 foot roll. RG-6 coax usually comes supplied with male F type compression connectors on each end so you'll have to purchase the proper adapters to connect the feed line to the dongle and antenna. Remember to keep coaxial cable runs as short as possible to minimize loss.

Another consideration is that DVB-T dongles will have either a PAL (IEC 169-2) or MCX connector for attaching the antenna so you'll need to purchase an adapter connector such as a PAL-to-F adaptor or MCX-to-F adapter. These are readily available at a reasonable cost from websites

3. DVB-T Dongle along with typical accessories supplied by vendor.

4. Author's Procomm Spider broadband antenna covers 30 – 1200MHz.

radio, FM radio (64 – 108 MHz), and DVB-T television reception, a Quick Setup Guide CD, user manual, sometimes a short USB to USB cable, and possibly an infrared remote control. The CD contains instructions for using the dongle for DVB TV, FM and DAB radio reception along with the application software and required drivers. However, do not download those drivers as they are completely irrelevant for using the dongle as a broadband receiver. Later on in the article we'll talk about software, including the driver program necessary for the computer and dongle to communicate with each other. For our purposes the only useful item will be the DVB-T dongle.

The next item on your agenda should be choosing a receiving antenna as the supplied mini-antenna has very limited capture area and will not work optimally. In the

world of radio the old adage "bigger and higher is better" applies. That is, mount your antenna as high as possible, preferably outdoors, and the larger antenna the better. Antennas can be "homebrewed" (home-made) or purchased and a plethora of choices exist depending on one's budget, location, neighborhood restrictions, etc. An omni-directional broadband antenna would be a good first choice so again do some data mining on the Internet using search strings such as "scanner antenna" or "broadband antenna" and discover what is available. At my location I use a commercially available antenna purchased from Universal Radio Inc. (www.universal-radio.com), namely the Procomm Spider SP-800 (www.procommproducts.com) which covers 30 – 1200 MHz and costs \$39.95 USD. For an antenna feed line

4



5



5. Examples of adapter connectors for external antennas.

6. SDR # dashboard of local New Jersey broadcaster 101.5. Notice RDS (Radio Data Service) info above the spectral display.

such as Ebay (www.ebay.com), Amazon (www.amazon.com), or Nooelec (www.noelec.com). The best approach is to purchase the correct adapter(s) when ordering your dongle to minimize additional delays in getting started.

Software choice is the next major and challenging decision point as there are a number of types to choose from based on your computer's Operating System (OS). Some are PC based using Windows, others are Linux based, and some are for the MAC. The application software and drivers required to transform your dongle into a Software Defined Radio (SDR) receiver are easily obtainable from the Internet and a majority of them are free. Again, your OS will dictate what software you'll download. For this article I am using Windows 8 as this is the OS for my Dell Inspiron 15 laptop computer.

The two most common applications software are HSDR (High Definition Software Defined Radio) and SDR# (a.k.a. SDR Sharp) and you can find information on their respective websites, www.hdsdr.de and www.sdrsharp.com. These sites offer no-cost downloads along with detailed installation instructions, so carefully read the specifications and recommendations carefully prior to downloading. Both of these excellent programs not only convert the dongle into a

low cost SDR (Software Defined Radio) receiver but also come with a mind-boggling array of user options such as mode selection (AM, FM, SSB, etc.) RF/AF gain, AGC (Automatic Gain Control,) variable bandwidth filters, spectral analysis/waterfall display, infinite channel memory, variable squelch, signal strength (S meter), digital noise reduction, noise blanker and choices of different FFT (Fast Fourier Transform) displays. Note that there are some differences in user options between the two programs so do your homework and investigate all they have to offer and make an informed decision. Having extensive experience using both HSDR and SDR# I can unequivocally state that these programs are all you need to pursue endless hours of radio listening entertainment consisting of FM

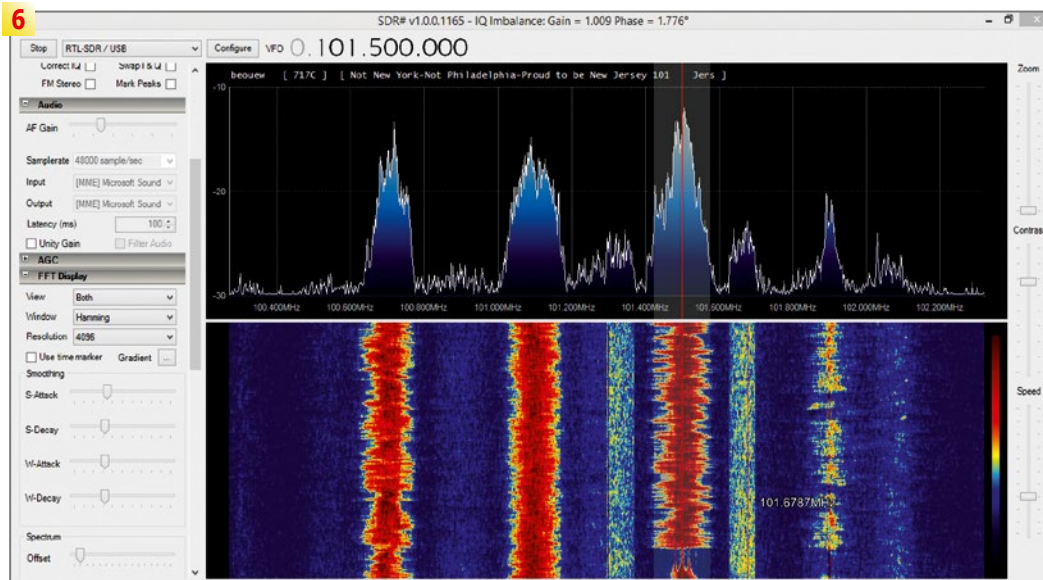
broadcasts, police, fire, EMS (Emergency Medical Service), NOAA (National Oceanic and Atmospheric Administration) weather broadcasts, marine radio, aeronautical, ham radio, pagers, railroads, business band and utility radio transmissions.

In this article we'll not delve into the specifics of how to download the application software, but basically you'll first download the driver from the aforementioned websites, along with the software specific for the dongle radio and your computer's OS. Another excellent source of information on how to set up a dongle radio is YouTube (www.youtube.com) where you'll find countless how-to's from hobbyists around the world who have discovered innovative uses for this mini-receiver. Other websites specializing in this hobby are HamRadio-

Science (www.hamradioscience.com) and RTL-SDR.com (www.rtl-sdr.com). Also, searching the Internet using search strings such as "DVB-T dongle," "SDR dongle," or "RTL-SDR" will supply enough hits to keep one occupied until doomsday!

So, what can one hear and "see" when firing up the dongle radio along with HSDR or SDR#? Well the fun certainly commences once you have your dongle running and antenna attached; you'll spend many hours surfing the ethers due to the prodigious width of the radio spectrum that's available to you and the numerous signals inhabiting the airwaves. You may initially suffer from option paralysis as to what to listen to first but my suggestion is to tune into the FM broadcast band initially, as these high powered 24/7 stations are the easiest to hear and known by many. Try "getting your feet wet" (as we Americans say) in this 20 MHz sliver of the spectrum (generally from 87.9 - 107.9 MHz depending on your location) and experiment using the various user options in HSD-

6



DR or SDR#. This is a great starting point for neophytes to become accustomed to and comfortable with the intricacies of software defined radio. Be sure to plug in headphones or ear buds and listen in as these SDR radios sound very similar to good quality FM receivers.

One of the powerful features of both SDR# and HDSDR

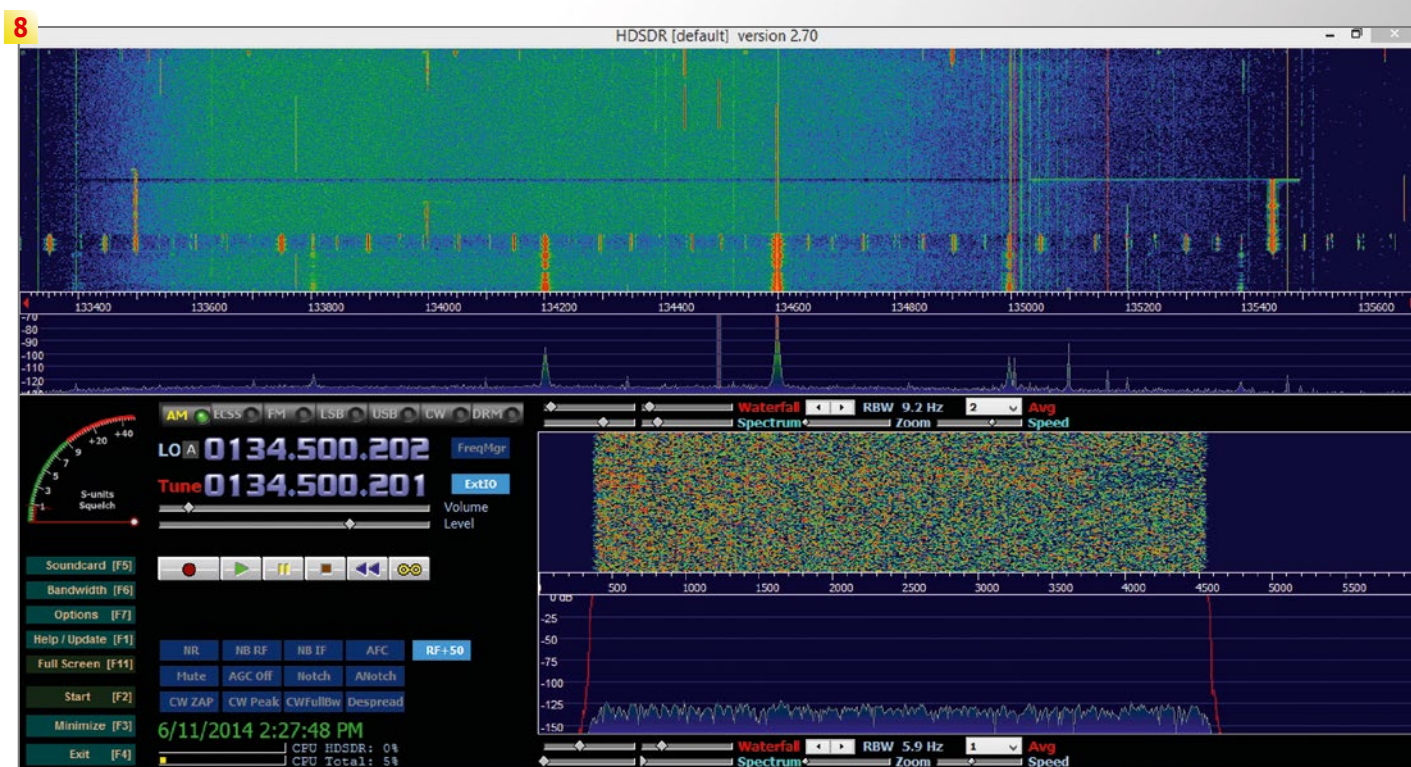
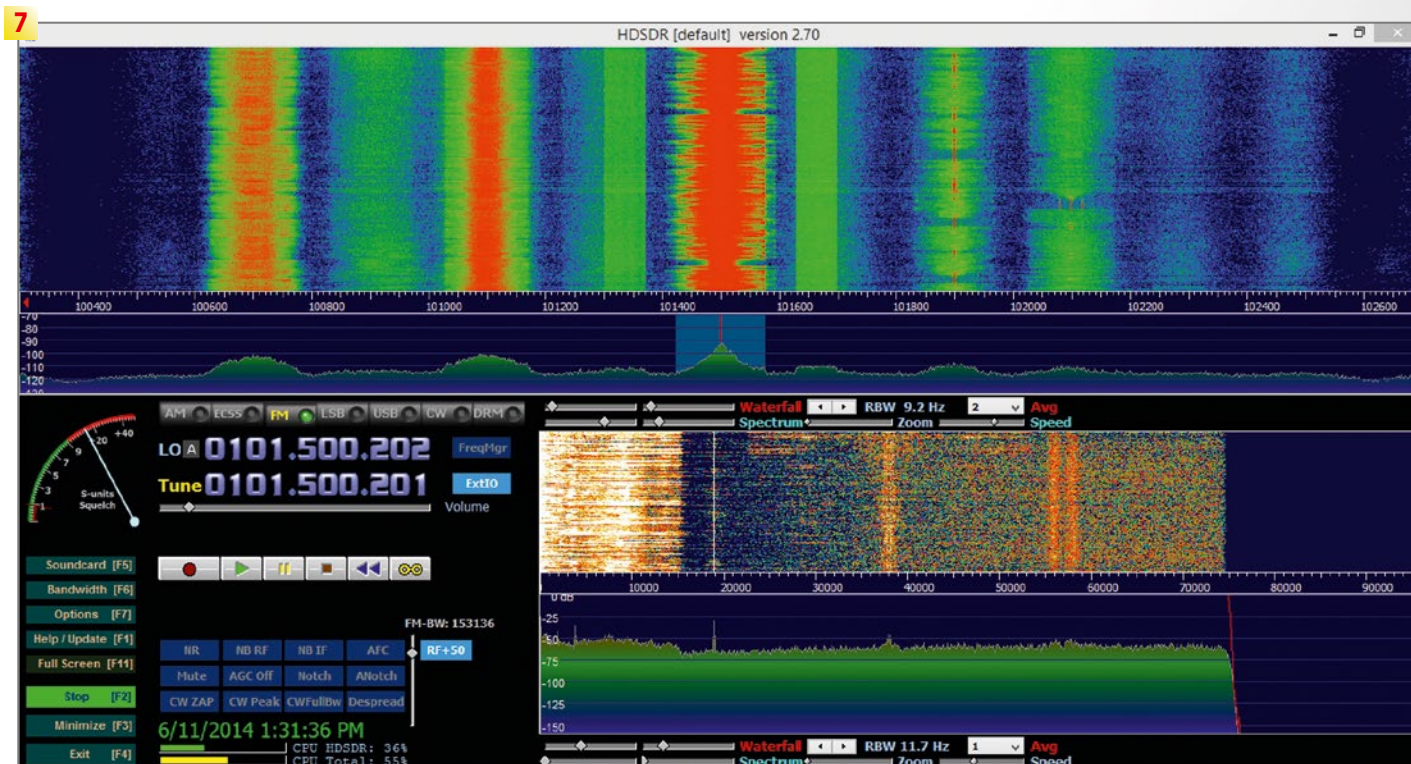
is the RF (Radio Frequency) spectral display and waterfall. These visual parameters are of immense value to the radio hobbyist; for example the upper spectral display can be used to determine the bandwidth, signal strength, signal fade, waveform and distortion of a received signal. The lower or "waterfall" display is a time recording of the sig-

nal and an indicator of signal intensity as red indicates a very strong signal and white indicates a weak signal. Some of the SDR# user options are visible to the left such as, AF Gain (volume control), AGC, and slider bars to adjust the FFT. Slider bars on the right are to zoom in on a smaller portion of the spectrum, waterfall contrast, and speed of

the spectral/waterfall display. Spend your first few hours with the dongle on the FM band and familiarize yourself with all the plentiful features

7. HDSDR dashboard of NJ 101.5 on the FM band. Other FM stations peaks are at 200 KHz intervals.

8. Two MHz scan of the aircraft band showing peaks at 134.2, 134.6 from pilot communications.



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Digital Satellite Meter

WS-6936

DVB-T&S COMBO METER WITH SPECTRUM



DVB-S Spectrum:

In satellite signal C band and KU band range ,
show the energy distribution of the received signal,
show Cursor location and signal strength downlink frequency,
Signal was locked.

Show spectrum bandwidth: 1200MHz; 540 MHz; 108 MHz

DVB-T Spectrum:

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

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

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



WS-6909
DVB-T&S COMBO METER



WS-6918P
DVB-S2 Satellite Finder Meter



WS-6932
HD Satellite Finder Meter

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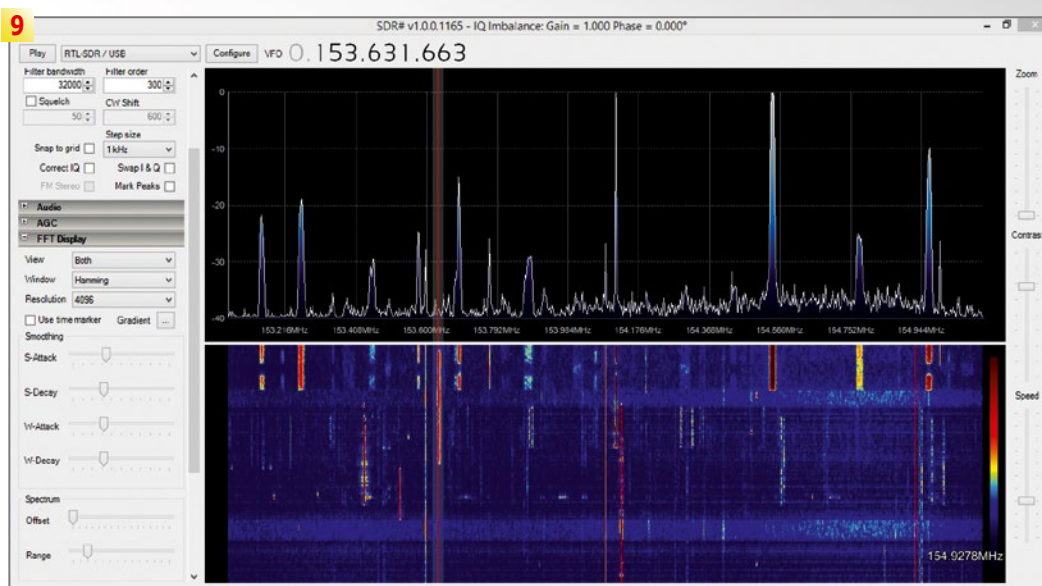
E-mail: dp02@baotong.cc

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

that the software provides.

HSDR is another of the popular software application programs available from the Internet and presents quite a different appearing operating screen but has many commonalities with SDR# such mode (AM, FM, USB, LSB, CW etc.), bandwidth, volume, noise reduction, AFC, squelch level, noise blanker, soundcard selection, and sliders for adjusting the spectral/waterfall displays. One conspicuous difference is the large S (Signal Strength) meter which comes with a calibration protocol for those analytical types. Whether you choose SDR# or HSDR is a personal preference but why not utilize both as I do? They are both excellent performers but you still may prefer one over the other. Note that both programs have a Frequency Manager option which allows the user to store an unlimited amount of memories and recording options for playback at a later date.

Once you've become comfortable using the DVB-T dongle on the FM broadcast band you can now navigate the other thousand or so megahertz of the VHF/UHF band to satisfy your curiosity. Perhaps the VHF aeronautical band is of interest to you so let's ride the magic carpet a few megahertz up to the 108 - 137 MHz portion of the radio spectrum and see what's happening in the skies above. Be sure to select the AM mode as all voice communications between pilots and ground stations communicate via Amplitude Modulation. Best time to listen to air traffic is during rush hour and the closer you are to a main air traffic route or airport the

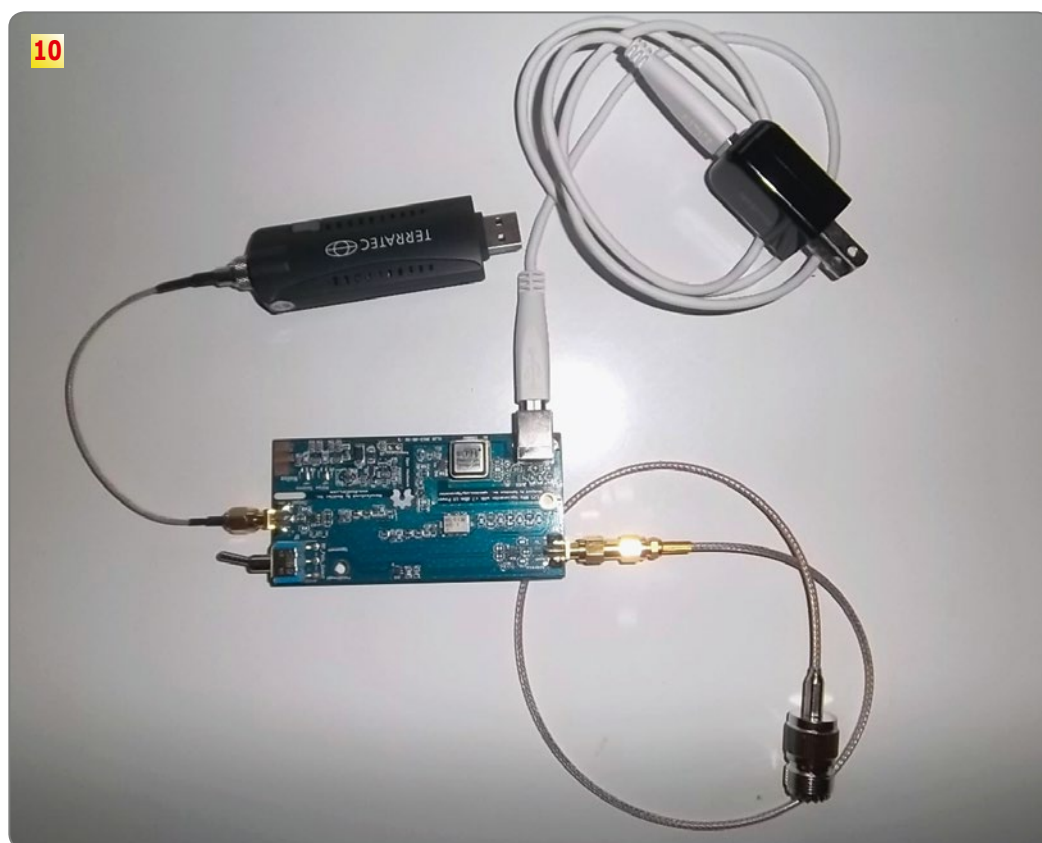


better. Aircraft communications are of very short duration with minimal words exchanged, so you have to be very quick and move the frequency cursor selector around the band quite frequently. Pilot and ground station traffic will be found in the 118 - 137 MHz portion of the band so keep that in mind. With experience you'll eventually find commonly-used frequencies where you can sit back and wait patiently for

the next radio transmission from a pilot or air traffic control tower. An outside antenna mounted well above ground is almost mandatory to enjoy this portion of the band with any success.

Global warming, whether man-made or not has resulted in an uptick of Mother Nature's wrath in all portions of the globe. Not a day goes by without media reports of some area of the world under siege from catastrophic

meteorological, geological or oceanographic events. To stay informed, especially during emergencies such as fire, floods, mudslides, tornadoes, ice storms, tsunamis, earthquakes, and hurricanes the dangle radio is your pipeline to important information as it is happening. During emergencies the public service sector shifts into high gear, responding to flooded areas, downed power lines and trees, attending and rescuing



9. Activity abounds in the public service portion of the VHF band with signals from police, fire, emergency medical services, and pagers.

10. Adding a Ham It Up RF upconverter in line with dongle expands frequency range down to 150 KHz.

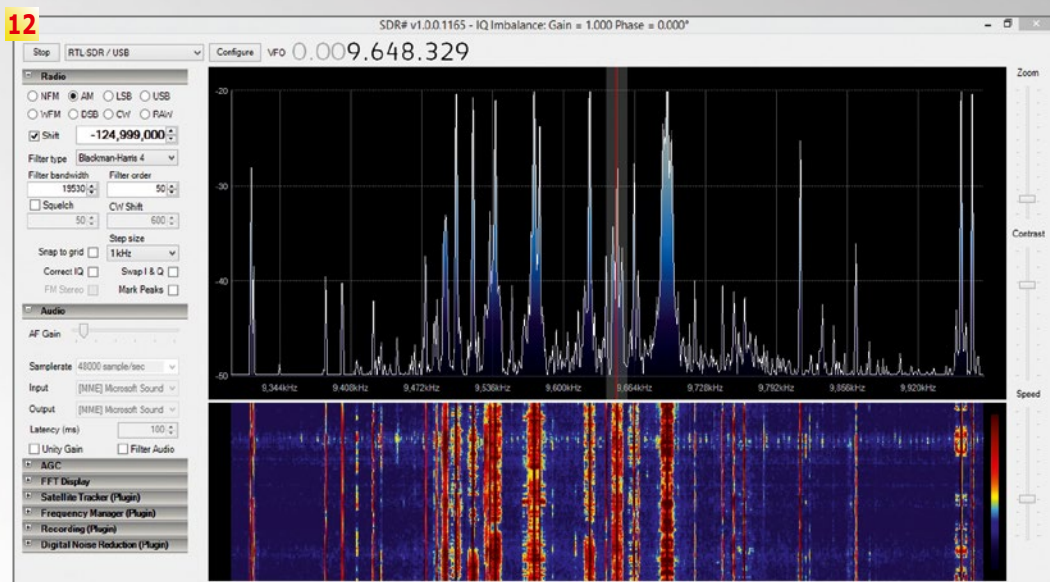
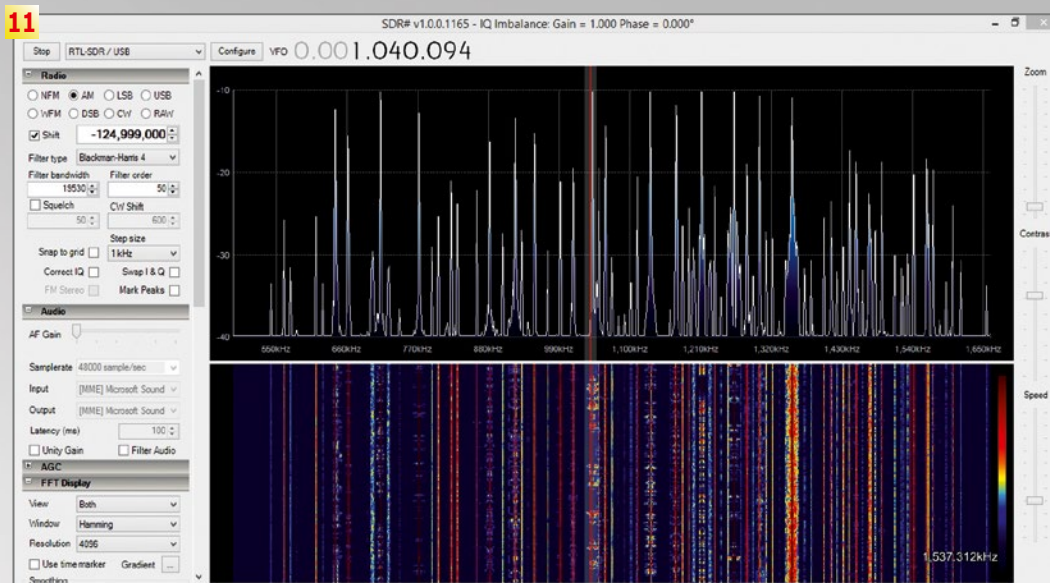
11. AM broadcast band, 540 – 1710 MHz, through the eyes of the dongle radio.

12. 31m shortwave band (9.4 – 9.9 MHz) is home to several shortwave broadcasters including Radio Romania International, Radio New Zealand International, Radio Habana Cuba, and Radio Japan.

the sick and injured, responding to accidents and traffic troubles along with an array of other catastrophes that plague neighborhoods when disasters strike. A wideband receiver such as a DVB-T dongle will allow one to monitor a very wide swath of frequencies used by first responders and will keep you informed with what is happening long before discovery by the news media.

If your thirst for adventure needs to be assuaged then adding a converter in tandem such as the Ham It Up RF up-converter (www.nooelec.com) will expand the frequency range of the dongle down to the LF (Low Frequency), MF (Medium Frequency), and HF (High Frequency) areas of the radio spectrum thus allowing you to listen to shortwave broadcasts, shortwave utility stations, the AM broadcast band, and the Longwave band. As a avid shortwave listener since the 1960's I purchased the Ham It Up up-converter from Nooelec.com with undue haste after my dongle arrived since my interests included reception of shortwave radio broadcasts, time signal stations such as WWV and CHU, RTTY (Radio-TeleType), WEFAX (Weather Facsimile), DGPS (Differential Global Position System), NAVTEX (Navigational Telex), CW (Morse Code), ALE (Automatic Link Establishment), Sitor B (Simplex Teletype Over Radio Mode B), and many other non-voice digital modes that abound on shortwave.

Several versions of upconverters are on the market that will pair with the SDR dongle ranging in cost from \$40.00



USD and up. Some, like the Ham It Up require a separate five volt power source, additional connectors, and of course another antenna designed for shortwave reception. The Ham It Up up-converter uses a 125 MHz crystal oscillator to shift the dongle's LO (Local Oscillator) up by 125 MHz. It is a very well-made, well-documented, and excellent product that comes at a very low price, \$44.95 USD. Once you have your up-converter you'll have to erect an antenna such as simple outdoor 30 to 50 foot wire strung as high as possible. This antenna will suffice initially but again, there's a limitless supply of commercially available shortwave antennas on the market and many antenna

designs available Do-It-Yourselfers on the Internet. For apartment dwellers and those with antenna restrictions all is not lost, as there are several manufacturers of indoor "active antennas." By "active" is meant that the antenna has built in circuitry to amplify received signals and attenuate unwanted signals. One such supplier is MFJ Enterprises Inc., (www.mfjenterprises.com), a long-time reputable manufacturer of an array of amateur radio and shortwave products. You can also check Universal Radio Inc., (www.universal-radio.com) for their selection of active indoor antennas. And happily, SDR# and HSDR will work perfectly when using the dongle/converter combination.

Let's discuss a bit more about what's to be heard on shortwave using your dongle with an upconverter. The high frequency (HF) band by convention spans the range of 2 – 30 MHz and in this 28 MHz of spectrum you'll find foreign broadcast stations such as Radio Habana Cuba, BBC, WBCQ, VOA (Voice of America), Voice of Vietnam, Radio Japan, and Radio Romania to name a few. Stations broadcasting on HF use AM mode and are found in distinct, designated regions of the HF spectrum. These distinct regions are called "shortwave bands" and are classified according to wavelength such as the 60m (60 meter), 41m, 31m, 25m bands etc. In all, there are approximately a

dozen shortwave bands to choose from. If you are interested in listening to international shortwave broadcasts begin with the 31m band covering frequencies 9.400 – 9.900 MHz. The 31m band is one of the more heavily occupied bands where you'll find plenty of interesting listening 24/7 due to favorable ionospheric conditions affecting this slice of spectrum. Sadly, many old-time shortwave broadcasters such as Swiss Radio International, Radio Austria, and Radio Moscow have "gone dark" (ceased

broadcasting) on shortwave due the advent of satellite and Internet radio, but plenty of entertainment from around the world still exists on shortwave, so tune in and listen.

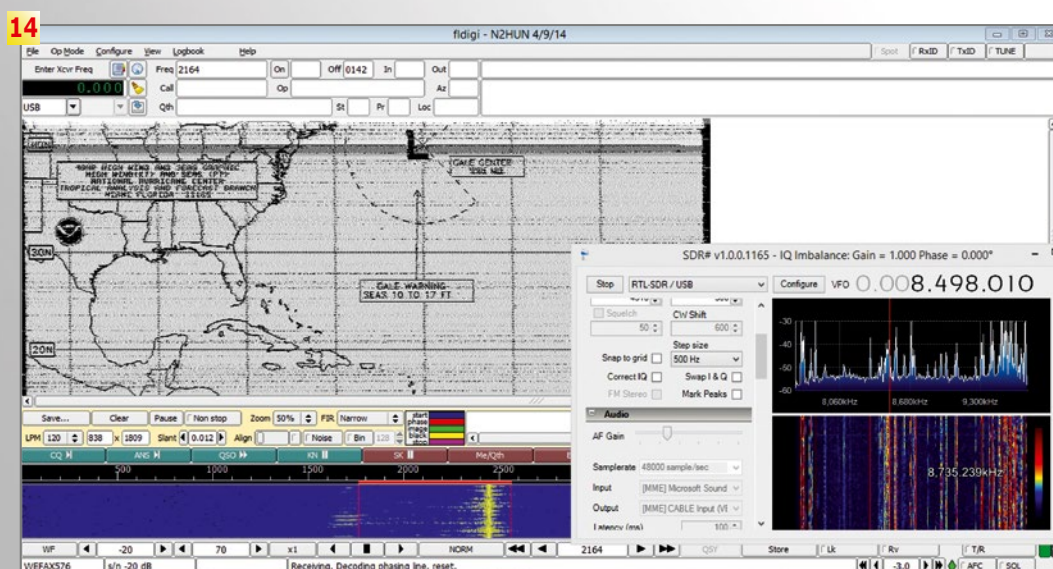
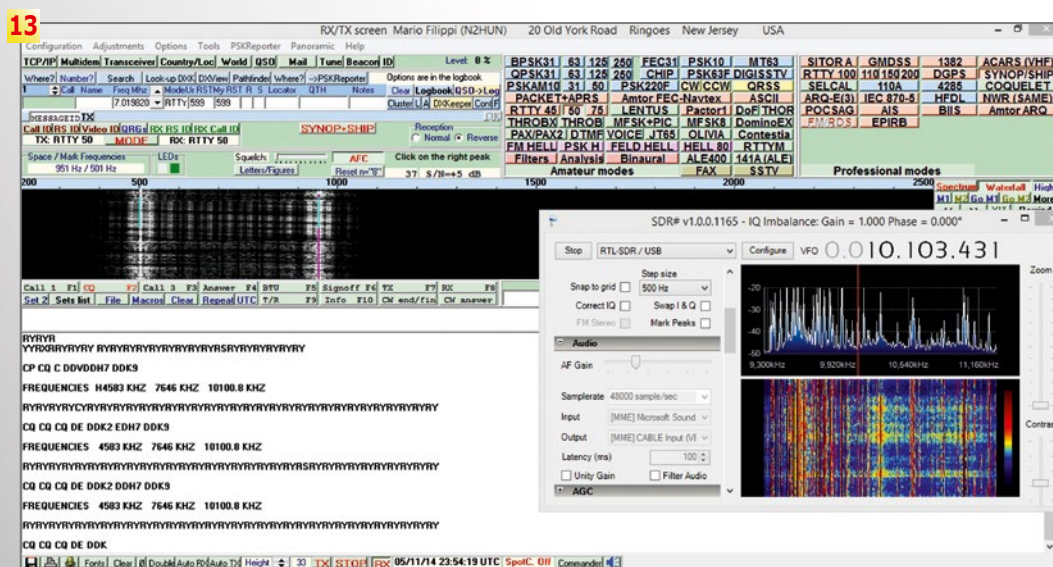
In addition to international broadcasters, the HF spectrum is occupied by military, government, aeronautical, amateur radio, marine, weather, and other utility ("ute") communications using voice (Upper or Lower Side Band) and non-voice digital modes such as CW, RTTY, FAX, ALE, Sitor B, NAVTEX, HF DL, JT65, PSK31, and

SELCAL to name a few. Interesting transmissions such as synoptic marine weather reports to mariners, QSOs (conversations) between ham operators using Morse code, PSK31, and teletype, facsimile weather maps of different regions of the world, infrared satellite images, and emergency/welfare messages from ships at sea are being transmitted around the clock. The good news is that the SDR dongle is sensitive, selective, and stable enough to allow decoding of many of these non-voice digital trans-

missions. This aspect of the radio listening hobby is referred to as HF Utility ("UTE") monitoring. If you are interested in these types of transmissions an excellent source of information is The Spectrum Monitor Magazine (www.thespectrummonitor.com), a monthly on-line magazine staffed by columnists with a wealth of experience in the radio listening hobby.

Use of digital mode decoding software will significantly enhance the overall experience with your SDR dongle as there are many exiting and informative transmissions being sent by commercial, military, and amateur radio entities.

Two excellent programs worthy of consideration are fldigi (www.w1hkj.com) and MultiPSK (<http://f6cte.free.fr/index>) which feature decoding of many common digital modes including RTTY, FAX, CW, PSK31, NAVTEX, Sitor B, etc. Two other digital modes used by commercial interests include SELCAL (Selective Calling) and ALE (Automatic Link Establishment). One word of advice though: before venturing into digital mode decoding software become thoroughly comfortable with using your SDR dongle. Take your time and remember that the learning curve will be very steep the first few weeks. If you belong to a radio club perhaps a member already has experience with an SDR dongle so tap into their knowledge and experience. If you are on the fast track then I suggest you check out YouTube as it contains a prodigious number of user videos by those already experienced in the hobby. Finally, remember that at a cost of \$16.00 USD a dongle SDR will not perform on par with commercially available SDRs costing several hundred dollars. However, for its minimal cost you'll get a lot of "bang for your buck" as we Americans say.



13. RTTY (RadioTeleType) transmission from German station DDK 9 broadcasts marine weather for locations such as Western Europe. You'll need a good decoding program such as MultiPSK to decipher RTTY transmissions. SDR# is running in the foreground with MultiPSK in the background. The audio stream from SDR# is fed directly to MultiPSK.

14. Facsimile broadcast from US Coast Guard Station NMG, New Orleans, LA, with map of coastal US and Caribbean. Many stations service the marine community with facsimiles containing important meteorological information in the form of weather maps and satellite images. SDR# is running in the foreground with fldigi (decoding software) in the background.



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- International standards production process
- Manufactured in environmental friendly factory



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Take Advantage

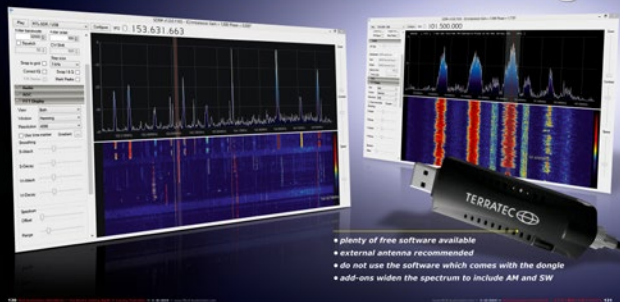
A young woman with long, wavy red hair and blue eyes is smiling at the camera. She is wearing a red, short-sleeved top with ruffled shoulders. She is holding a black tablet computer with both hands. The tablet screen displays a white rectangular box containing text.

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Self-Made Broadband Receiver

FEATURE Self-Made Broadband Receiver

Software Defined Radio with a DVB-T Dongle



- plenty of free software available
- external antenna recommended
- do not use the software which comes with the dongle
- add-ons widen the spectrum to include AM and SW

www.TELE-audiovision.com/TELE-audiovision-1501/eng/feature-dongle.pdf

Coding Standard

FEATURE New Standard

AVS2 A New Video Coding Standard



- requires even less of the original video information
- re-creates parts of the original video by artificial intelligence
- saves on the amount of data required to transmit
- makes use of software developed for gaming

www.TELE-audiovision.com/TELE-audiovision-1411/eng/feature-avs2.pdf

Terrestrial Satellite Reception

FEATURE Terrestrial Satellite Reception

ROKS MITRIS

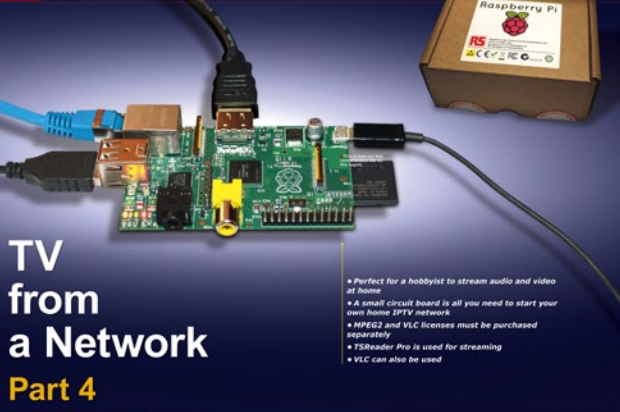
- Easy way to provide large areas with TV
- Utilizes existing satellite TV reception technology
- Technically feasible solution using prefabricated components for all different kinds of terrain and service areas
- Large bandwidth for up to 300 TV channels



www.TELE-audiovision.com/TELE-audiovision-1407/eng/feature-mitris.pdf

Self-made IPTV

FEATURE Self-made IPTV



TV from a Network Part 4

- Perfect for a hobbyist to stream audio and video at home
- A small circuit board is all you need to start your own home IPTV network
- MPEG2 and VLC licenses must be purchased separately
- TSReader Pro is used for streaming
- VLC can also be used

www.TELE-audiovision.com/TELE-audiovision-1311/eng/feature-satip4.pdf

New DVB Extensions

FEATURE New DVB Standards

Extensions to DVB-S2

- new enhancements allow for higher data rates
- more rectangular transponder spectrums provide more space for additional transponders
- reducing sidelobe gives more space for more transponders
- wide-band transponders add to efficiency
- new modulation with 6 bits



www.TELE-audiovision.com/TELE-audiovision-1311/eng/feature-dvbs3.pdf

Self-made IPTV

FEATURE Self-made IPTV

TV From a Network Part 3



- The basics of data transmissions in a network
- TCP, UDP and RTP - What do they mean?
- Utilizing a network
- Network cabling makes all other cables redundant
- 1000Mbps recommended for reliable operation

www.TELE-audiovision.com/TELE-audiovision-1309/eng/feature-satip3.pdf

Ultra High Definition TV

FEATURE Ultra High Definition Television



- Can better display colors, mainly red and green shades
- suitable for 3D due to its higher frame rate
- requires an enormous bandwidth
- users will need brandnew equipment as UHD TV is not backward compatible

www.TELE-audiovision.com/TELE-audiovision-1309/eng/feature-uhdtv.pdf

Self-made IPTV

FEATURE Self-made IPTV

TV From a Network Part 2



- Structure of a Transport Stream
- Multiple TV channels can be placed in a transport stream using a Multiplexer
- TS Reader offers a multiplex function
- Certain Linux receivers operate via a streaming function
- Only high-speed WLANs are suitable for IPTV

www.TELE-audiovision.com/TELE-audiovision-1307/eng/feature-satip2.pdf

Ultra High Definition

The New HEVC/H.265 Standard

- reduced bandwidth by 50%
- can be used also for very small screens
- divides the video in data pixel blocks
- requires advanced processors in the receiver

www.TELE-audiovision.com/TELE-audiovision-1307/eng/feature-hevc.pdf

Self-made IPTV

TV from a Network Part 1

- Digital TV distribution via your own Internet network
- No cables needed if used with WLAN
- Laptops, Smartphones, Tablets can be used as TVs
- Very high data flow with HDTV

www.TELE-audiovision.com/TELE-audiovision-1305/eng/feature-satip1.pdf

Phase Shifts in Digital TV

I/Q Vectors Swap

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

$I(t) = V_2 \sin (\omega t + 315^\circ)$

$Q(t) = V_2 \sin (\omega t + 315^\circ)$

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

www.TELE-audiovision.com/TELE-audiovision-1303/eng/feature-iqswap.pdf

Digital Terrestrial TV - 2nd Level

ATSC 2.0

- combines various separate norms and standards into one single suite
- puts all the existing tv viewing features available nowadays into one suit
- merges all variations into one
- enables superior video and audio quality
- new standard will replace current one eventually

www.TELE-audiovision.com/TELE-audiovision-1301/eng/feature-atsc2.pdf

The Secret Special Transmission Modes

Making life hard for DXers – or: TV stations' little tricks to avoid viewers

Thomas Haring

Transmissions that are broadcast via satellite usually can be received by anyone within a particular satellite's footprint. In the case of DTH (direct to home) TV and radio reception this is a welcome scenario, because providers are trying to reach out on potential audiences. On the other hand, programs also need to be distributed within and between different providers without any viewers being able to receive them. In satellite speak these transmissions are called feeds. Feeds can be used to transmit a baseball game from the US, for example, or a live report from a news event.

www.TELE-audiovision.com/TELE-satellite-1209/eng/feature-transmission.pdf

All About Fiber Optic Connectors

Wavelengths & Connector Types

Optical Fibers

- 6 different wavelength bands
- what dispersion is doing to a signal
- the advantages of Laser diodes
- finding the lowest attenuation

www.TELE-audiovision.com/TELE-satellite-1209/eng/feature-optical.pdf

Basic Knowledge: Polar Mount Antennas

Polar Mount Antennas Motorised Antennas for Satellite Reception

Adolf Oberhuber

If you consult the relevant literature you will find that no or – at most – insufficient background information is available about how the type of motorised polar mounted antennas actually works. The same is true for the required formulas and their derivation. The following illustrations are meant to provide answers to all questions in association with a polar mount. This also includes, inter alia, various size determinations for positions as well as calculations for the satellite orbit based on a specific example. Altogether this report is a collection of data and calculations which, the author believes, have hitherto been scattered across an endless number of publications and accounts. For the sake of completeness and reference, technical terms and their origin will be explained in a separate addendum at the end.

www.TELE-audiovision.com/TELE-satellite-1207/eng/polarmount.pdf

DVB-S2: Hide the SD inside the HD

H-8PSK Hierarchical Modulation

- backwards compatible to regular DVB-S2
- useful to pack SD and HD version of a tv program into one transponder
- very sensitive to misalignment
- may remain a niche technology

www.TELE-audiovision.com/TELE-satellite-1207/eng/feature-h8psk.pdf

How a tuner for VCM operates

FEATURE

VCM Tuner



VCM Signal Reception

- allows more than one stream for each transponder
- dynamic change of FEC coding rates
- different content can be assigned to different transmission modes
- compatible tuner needs function to determine coding rates
- VCM signals only receivable with compatible tuners

www.TELE-audiovision.com/TELE-satellite-1205/eng/dvb-S2-vcn.pdf

DVB-S2 MIS Reception with VCM/ACM

FEATURE

Satellite Reception

The New Flexible MIS Transmission Technology

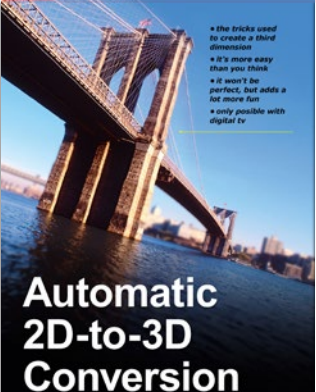
- The receiver chooses the optimal reception mode
- Programming providers can optimize transmission rates
- Picture quality based on usable signal
- From "Broad"-Cast it becomes "Individual"-Cast

www.TELE-audiovision.com/TELE-satellite-1201/eng/tenow-TBS6925.pdf

Automatic Creation of 3D

FEATURE

3 Dimensional Television



- the tricks used to create a third dimension
- it's more easy than you think
- it won't be perfect, but adds a lot more fun
- only possible with digital TV

Automatic 2D-to-3D Conversion

Software automatically creates the third dimension (depth)

Jack Pawlowski



www.TELE-audiovision.com/TELE-satellite-1109/eng/2d3dconversion.pdf

How a Silicon Tuner Works

FEATURE

Tuner Secrets

What's inside a silicon tuner?

Jack Pawlowski



www.TELE-audiovision.com/TELE-satellite-1107/eng/silicontuner.pdf

Channel Capacity of a Transponder

FEATURE

Satellite Technology

How many SD/HD channels can we get from one transponder?

Jack Pawlowski

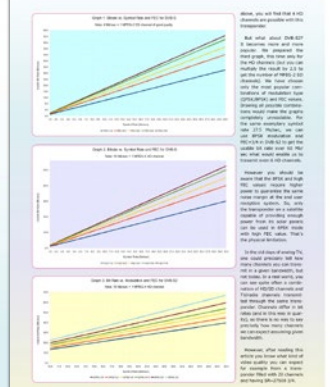
Everybody who ever studied satellite charts with transponder data knows that the symbol rate of a transponder is one of its most important parameters. And that's not only because you need to know it to set the data in manual channel setups in your receiver. Symbol rate directly affects the amount of useful data that can be transmitted via a transponder. The higher it is, the more data can be sent. More data means more TV and radio channels.

But how many channels can we get from one transponder? This is a question that many people ask. The answer is: it depends. There are several factors that affect the number of channels that can be transmitted via a transponder. These factors include the symbol rate, the modulation, the coding rate, and the number of channels that are already being transmitted via the transponder.

The symbol rate is the number of symbols that are transmitted per second. The modulation is the way in which the data is encoded. The coding rate is the ratio of the number of data bits to the number of transmitted bits. The number of channels that are already being transmitted via the transponder is also a factor.

There are several ways to increase the number of channels that can be transmitted via a transponder. One way is to increase the symbol rate. Another way is to use a more efficient modulation. A third way is to use a higher coding rate. A fourth way is to reduce the number of channels that are already being transmitted via the transponder.

It is important to note that increasing the number of channels that can be transmitted via a transponder also increases the risk of interference. Therefore, it is important to use the transponder efficiently and to avoid overloading it.



www.TELE-audiovision.com/TELE-satellite-1107/eng/sdinhd.pdf

CI+ and HD+Encryption

FEATURE

HDV Copyright Management



- prevents unauthorized distribution of HDV content
- gives TV providers full control over content
- blocks many popular features - such as time-shift viewing and PVR functions - for customers

www.TELE-audiovision.com/TELE-satellite-1107/eng/CI+HD+.pdf

How MPEG Surround Works

FEATURE

Audio Transmission

The New Audio: MPEG Surround

Are we to forget the old good audio codecs? Not exactly!

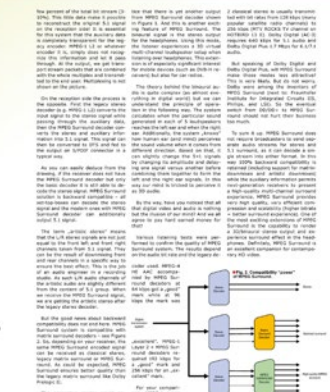
Jack Pawlowski

When we think about digital TV we usually focus on HDV and refer to video resolution. To save bandwidth, the original video data stream has to be compressed. Most of our TV satellite receivers are very familiar with the two most popular video compression standards: MPEG-2 and H.264 (also known as MPEG-4 AVC or MPEG-4 Part 10).

But what about audio? Most of our TV satellite receivers are also familiar with the two most popular audio compression standards: MPEG-1 and MPEG-2. These standards are used to compress audio data into a format that can be transmitted via a transponder.

MPEG Surround is a new audio compression standard that is designed to provide high-quality audio with a low bit rate. It is based on the MPEG-1 and MPEG-2 standards, but it uses a more efficient coding scheme. This allows it to provide high-quality audio with a lower bit rate than the MPEG-1 and MPEG-2 standards.

MPEG Surround is a good choice for digital TV because it provides high-quality audio with a low bit rate. It is also a good choice for digital TV because it is compatible with most digital TV receivers.



www.TELE-audiovision.com/TELE-satellite-1105/eng/mpeg-surround.pdf

How the SFN Modulation Works

FEATURE

Transmission Technology

Single- and Multi-Frequency Networks in Digital Terrestrial Television

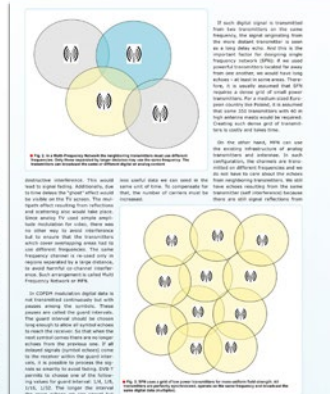
Jack Pawlowski

DVB-T2 and DVB-T2-SD standards for digital terrestrial TV use COFDM modulation. COFDM stands for Orthogonal Frequency Division Multiplexing and is a digital modulation technique that is used to transmit data over a radio channel. It is a type of multiple access technology that allows multiple users to share the same radio channel.

COFDM is a type of multiple access technology that allows multiple users to share the same radio channel. It is a type of multiple access technology that allows multiple users to share the same radio channel. It is a type of multiple access technology that allows multiple users to share the same radio channel.

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www.TELE-audiovision.com/TELE-satellite-1103/eng/sfn.pdf

Sumavision's EMR Platform System

- 
- A large, modern, multi-story office building with a glass and concrete facade. The building has large windows and a prominent entrance. Bare trees are in the foreground, and a few people are visible near the entrance. The sky is clear and blue.
- ***End-to-End Technology for broadcasters with flexible adaptation to new standards and features***
 - ***Freely Expandable***
 - ***Applicable for networks starting at about 500 terminals up to millions of terminals***
 - ***Quick upgrades through module exchanges***
 - ***Full range of features for broadcasters in all digital TV modes***

■ Sumavision's headquarters can still be found in this building complex north of Beijing. A large portion of their R&D developers can also be found here, but soon everybody will have moved to the new campus



■ Haitao Zheng, who founded the company and who is today's chairman of the board



faster rate - from SD to HD, from HD to 4K, from 4K to 8K, you can already plan for when there will be 16K."

That might only take a few years and then your entire living room wall can become a TV screen.

With this introduction there's no doubt that Sumavision thinks on a very long-term basis. The result of this very long-term thought process is the company's product palette.

Usually, a new advance in technology results in the development and marketing of a new product. „The advantage is that you're always selling new products. On the other hand, the disadvantage is the immense development costs necessary to bring all of the components up to the new level of technology", explains Walter Wang.

„Here at Sumavision we've taken this concept and turned it upside down: we've developed the EMR platform which allows us to upgrade to new technologies simply through the use of modules."

Whenever there's a technological upgrade, from DVB-T to DVB-T2, from DVB-S to DVB-S2, from SD in MPEG2 to SD in MPEG4, from HD in MPEG4 to HD in HEVC, etc., the customer merely has to swap out individual modules instead of replacing the entire broadcasting system from their network.

Walter Wang knows only too well what it's like to travel the other path: „I worked for many years in the Telecommunications industry. I've seen firsthand what it's like when large companies incorporate new technologies. A huge army of developers are constantly at work adapting their infrastructure to new requirements."

But this doesn't always require redesigning everything from scratch. „At Sumavision we converted all of our broadcasting products to the EMR platform

The Ideal Platform Solution for Broadcasters

Alexander Wiese

Moore's theory also applies to broadcast technology. Actually, Gordon Moore, one of the founders of chip manufacturer Intel, was referring to the number of transistors on integrated chips. It was back in 1965 when he theorized what today has become reality: that the processing power of chips would double every 18 months.

This theory is also cited by Walter Wang. At the time of our meeting he

was President for the International Market of broadcast manufacturer Sumavision, but moved on in meantime to a new position - new President for the International Market is Mr. Cui.

Walter Wang told us: „The technology cycles are getting faster and faster; Moore's theory is also valid in the broadcasting sector. You can see that, for example, in picture resolution, it consistently increases at a faster and

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The World's Largest Digital TV Trade Magazine

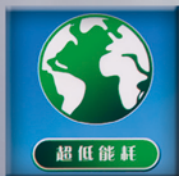


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- Medium storage connected
- Excellent multimedia functions
- HD MPEG4 / H.264
- Supports DTMB and AVS
- 换台快捷
- OSD显示和响应迅速
- 支持PVR刻录
- 强大的多媒体功能



GT-278

高清晰度國標地面數字電視機頂盒

USB HDMI DTV



<http://aluosat.taobao.com/>



■ Lobby of Sumavision's headquarters in Beijing.



back in 2003."

EMR stands for 'Enhanced Multimedia Router'; all of Sumavision's broadcast products are now based on this platform. "In 2008 we introduced the third generation of EMR to the market whereby the differences between the generations lies with performance and not with the basic structure."

Specifically, the EMR system consists of a 19-inch rack in which as many as six modules can be installed.

Currently, there are more than 100 different types each of which has a different function: there are modules with ASI inputs, DVB inputs, modulators, IRD, Encoders, EPG generators, CAS slots, OTT, Multiscreen, etc.

This arrangement allows broadcasters to assemble their networks any way they see fit, just like a kid with Lego blocks. "It doesn't matter if a broadcaster wants to set up a cable network, a satellite network or even a hybrid network like IPTV and cable", comments Walter Wang, "Telephony and Internet can also be added; whatever the broadcaster needs or wants to add later on."

The deciding advantage of Sumavision's EMR platform is that it is secure for the future.

Whenever a new technology appears that is needed, the corresponding module is simply swapped with a new one; you no longer have to replace the entire broadcasting system itself.

Walter Wang reflects once again on Moore's theory: "Technological advances come so fast, it only makes good business sense to be able to swap in new components that actually work with the new technology while keeping the basic structure."

The cost savings for broadcasters is thereby enormous and yet they can still keep their network technologically up to date.

Sumavision's EMR platform consists of the core technologies of a network. Sumavision utilizes the latest version of the Enhanced Coax Modulation Transmission System (E2 CMTS) for the distribution of signals to subscribers as well as terminals over which all of the current services such as telephony, Internet in all its different forms, linear TV, etc, can be carried.

Sumavision is an end-to-end provider. Broadcasters, that is, network operators, receive a complete solution delivered to them from Sumavision and can therefore focus on providing their services to their end users.

The EMR platform gives Sumavision the capability to integrate new technologies and new services simply by

1



1. Walter Wang was Sumavision's President for the International Market (in meantime he moved on to a new position) and was heavily involved in the development of the patented EMR platform

2. George Nie is Sales Manager and shows us how easy it is: simply slide the module in and that's it.

replacing/adding a module to the base system.

Sumavision was founded in 2000 by Haitao Zheng who, together with five employees, manufactured housings as their first product.

But this phase didn't last too long; the young company hired numerous software developers and introduced a new CAS software in 2003 with which Sumavision captured their first customers in the USA in 2005.

Sumavision has been participating in all of the critical broadcast trade shows around the world since 2006. In 2014 Sumavision had more than 2000 employees of which half are in R&D.

Linda Guo, Sales Director for America and Europe, tells us how Sumavision's sales are distributed: „65% of our sales are here in China while the remaining 35% is exported.“

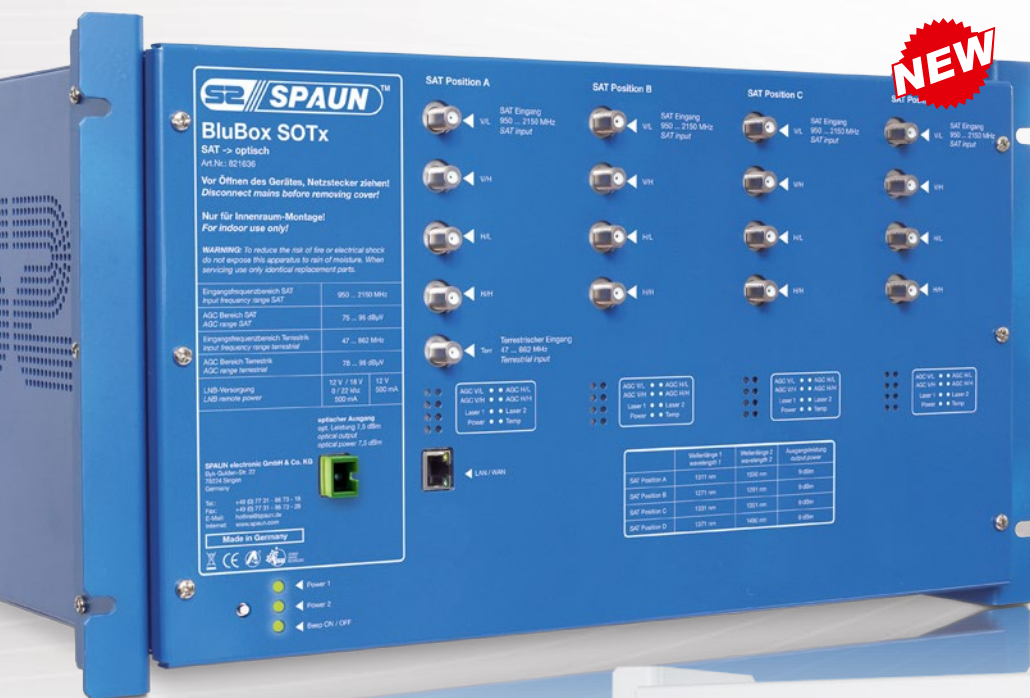
The export side of their sales climbs about 5% each year: „In 2013 the sales ratio was 70% to 30%; in 2015 we expect that ratio to be 60% to 40%.“

With such a large portion of their sales going to export, the question then becomes: how does Sumavision handle after-sales support?

Broadcasters that have acquired their entire network system from Sumavision demand speedy reaction to technical issues.

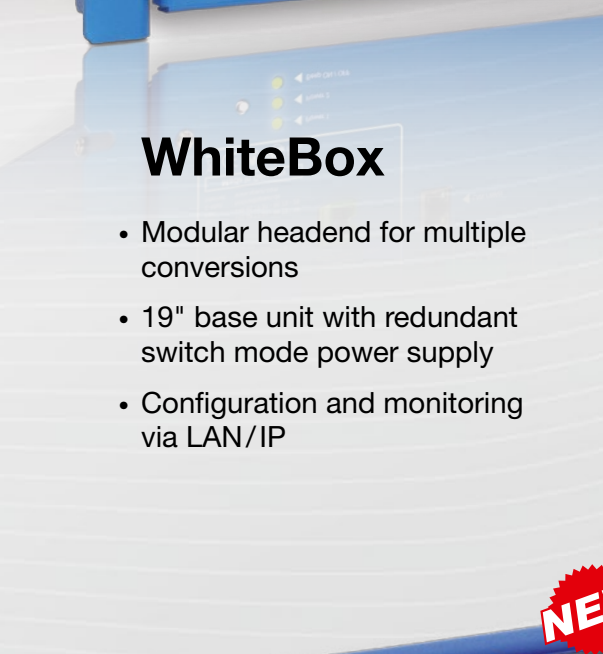
2





BluBox SOTx

- **Up to 16 SAT IF levels and terrestrial over a single fiber optic cable**
- 19" base unit with redundant switch mode power supply
- Distribution to up to 32 optical nodes possible
- Configuration and monitoring via LAN/IP



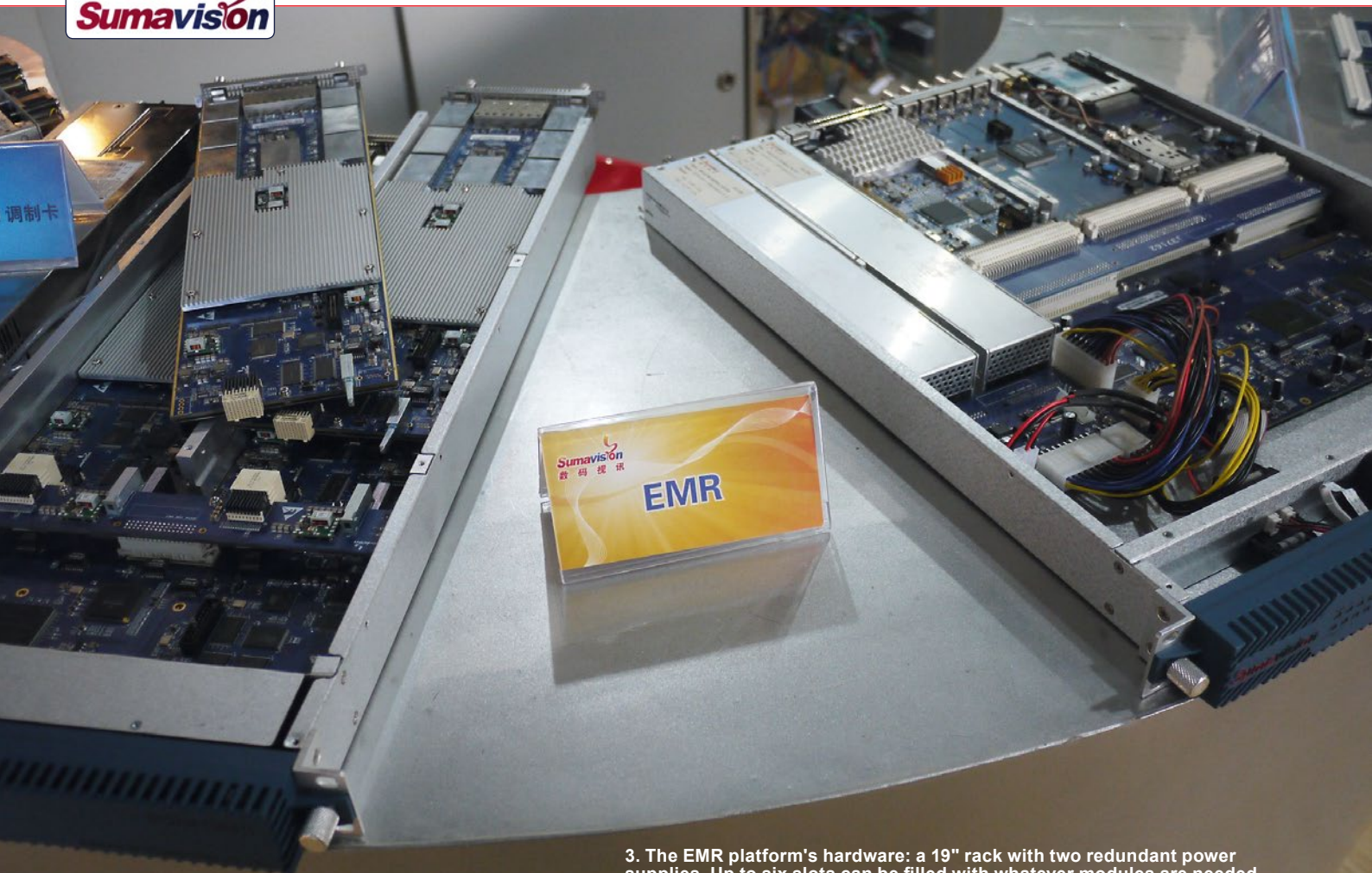
WhiteBox

- Modular headend for multiple conversions
- 19" base unit with redundant switch mode power supply
- Configuration and monitoring via LAN/IP



SPAROS 711 Touch Series

- Intuitive operating thanks to a 10" Touch Screen
- DVB-S/S2, DVB-T/T2, DVB-C, HDTV TV displaying
- Compact and robust aluminium die-cast housing
- Supplied in a stable carrying case!



3

3. The EMR platform's hardware: a 19" rack with two redundant power supplies. Up to six slots can be filled with whatever modules are needed. In this way broadcasters can set up their network any way they want and upgrade it any time they want simply by swapping out the necessary module.

4. Various modules for the EMR platform. More than 100 different types for every possible application are available.



4

ALL **MAXING** TYPES OF LNB



◦ Universal Ku Band LNB:

available colors:



Single: **MX-16, MX-26**
white, orange



Twin: **MX-KT22C**
white, orange



Quad: **MX-KQ24G**
white, orange



One cable solution:
orange **MX-OCS12**

◦ Extral long neck Ku Band LNB for multi-claps:

available colors:



Single: **MX-100L**
green



Twin: **MX-KT22CL**
green



Quad: **MX-100GL**
green

◦ Multi grade dual Ku Band LNB:

available colors:



MX-MD100
green

◦ Custom-Made LNB:

One cable solution
Extral long neck lnb for multi-claps
Multi grade dual ku band LNB



Factory:

3rd Fl., No. 2 YongTai Road, HongQi Town, JinWan District,
Zhuhai, Guangdong Province, China
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口	支持4K VLAN转换表 4K QinQ表项
非对称模式	超低功耗<8w 工业级工作温度下稳定运行
技术	丰富的ONU产品类型，包含SFU、MDU、HGU、电力ONU等

■ Summer He from Sumavision's sales team explains here the further processing of the previously generated content in the EMR platform. Sumavision relies on the Coax Modulator Transmission System. In the picture you can still see the Chinese variant CCMTS; but the newest variant in use is the E2-CMTS (enhanced).

前端机房

分前端机房



广播前端



理



汇聚交换机



CATV光发射机



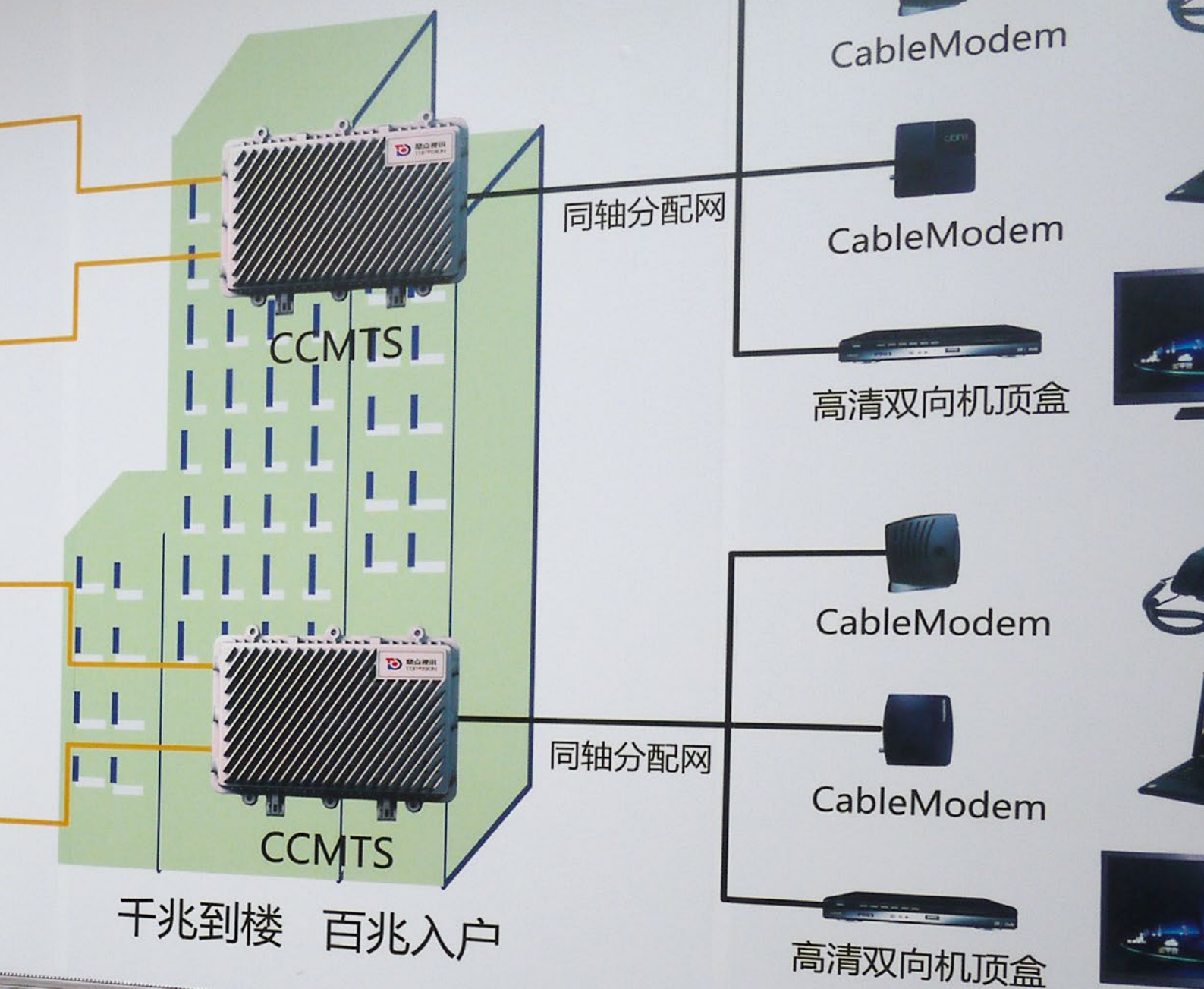
城域环



PN8600系列OLT



CATV光发射机





5

5. A look in the showroom where Sumavision displays some of their available technologies: (from left to right) the CAS system, Middleware, Multiscreen and OTT.

6. The Overseas Sales Team works here taking care of broadcast customers.



6



Titanium Satellite

Next Generation Technology

Titanium Satellite **ASC1**

DiSEqC Positioner & Polarity Controller - **\$180US**

The Titanium Satellite ASC1 DiSEqC Positioner and Polarity Controller takes satellite dish positioning and polarity adjustment to a new level. The ASC1 allows automatic or manual dish positioning, polarization and skew offset adjustment under complete satellite receiver control and memorizes these user settings using standard DiSEqC 1.2 protocol.



Titanium Satellite **C1WPLL**

C band LNBF - **\$40US**

Titanium Satellite provides a **Lifetime Warranty on the C1WPLL** against frequency drift! (If you are not completely satisfied with the performance of the Titanium C1WPLL, we will promptly refund your purchase!)

The C1WPLL Phase Lock Loop C-band LNBF technology provides exceptional reception of weak satellite signals and the most demanding high FEC S2 channels in the wideband 3.4 - 4.2GHz range. For optimum C-band performance in regions with terrestrial WiFi service operating in the 3.4 - 3.7GHz frequency range, we offer the C1PLL model. The C1PLL features a cut filter to remove the 3.4 - 3.7 range.

Address: 16981 Placer Hills RD, STE B7, PO Box 1201, Meadow Vista, CA, 95722 USA
Telephone: +01(530)652-4405 Voice/Fax, (855)200-4373 US/CA Toll Free
Skype: Titanium_Satellite
Sales: sales@titaniumsattelite.com
Support: support@titaniumsattelite.com

innovation
quality
value

www.titaniumsattelite.com



7

7. Linda Guo is the Director of the Sales Team for America and Europe. She can be found at many of the industry trade shows around the world.

8. Software Engineers work here on the continued development of OTT.

9. Quite a bit of hardware in this area: and you'd be right, hardware engineers work here.

10. The opened EMR base unit shows what the engineers are working on: the heart of the entire Sumavision system that is based on EMR.

11. He has a very high responsibility: Hao Xu Dong is the Director of EMR Development

8



As it turns out, it's not a problem; Sumavision already has local branch offices strategically located in the more important market regions.

Walter Wang, President and Manager of the Overseas Sales Team gives us an overview: „In 2011 we opened a Sales and Customer Support Center in Mumbai, India, followed in 2012 by similar centers in Denver and Moscow. In 2013 came Taipei and Manila and in 2014 new centers in Europe and Brazil.“

Sumavision has been active in Europe since 2006 and is represented since 2011 by the company Vector in Poland. „We learned quite a bit about the European market through them and were able to adapt our product palette based on our experience with Vector.“

Sumavision is utilizing an interesting marketing strategy in the USA. In 2012 Sumavision took over the Canadian transmitter manufacturer LARCAN with

more than 50 employees and a branch office in Denver.

After the takeover, the two offices in Denver were combined and since then Sumavision has been operating in North America under the name Suma Scientific. This name was first introduced at the SCTE in Atlanta in 2013.

Sumavision is a large provider of complete broadcasting solutions technology for network operators. In China Sumavision has reached a market presence of more than 30%.

Thanks to the sophisticated EMR platform, Sumavision is able to offer all of the required standards and additional services in all the markets around the world.

In this way Sumavision is more than prepared for the future and one thing is sure about that: it is constantly changing and this, according to Moore's theory, will always lead to new products.



9



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12. The completed EMR components are tested, installed and prepared for the customers.

13. Each individual module is checked and adjusted

14. Once the hardware is ready to be shipped, the final inspection and preparation for shipment to the customer takes place here.



15

15. More than 100 engineers work in Aftersales Customer Support. Some of them are located at the customer site taking care of problems or here at Sumavision's headquarters working on customer problems and discussing solutions with colleagues.

16. Sumavision is currently in the process of erecting a complete campus near Beijing's airport. Some of the fabrication buildings are already in operation.

16

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

The Museum of the Amplifier Experts

- *displays the history of antenna amplifiers in East Germany*
- *engineers at the time were forced to acquire expertise on their own*
- *state-run jamming transmitters were supposed to make reception of foreign signals impossible – to no avail*
- *self-made absorption circuits skirted the jammers*
- *excellent products allowed export to other countries*

■ Günter Wunsch in his museum, holding a catalog featuring the first pilot-controlled line amplifiers with 300 MHz push-pull technology available at the time. He developed this technology together with his R&D colleagues at VEB EGB.



Looking back at TV reception in former East Germany

From a purely technical point of view, there had never been a need for antenna amplifiers in what used to be by the German Democratic Republic (GDR). Under communist rule the state made sure all TV and radio signals of the government-controlled broadcasting system were readily available all over the country. It was only in a few exceptional cases that amplification of already strong signals made sense. So why were antenna amplifiers available in East Germany in the first place?

We met two men who should know. They both run a museum with a large variety of antenna amplifiers on display, all of which were used in the former GDR at some time. How come Thomas Krüger and Günter Wünsch are in the know about this particular aspect of television reception? They both used to work in a plant that was specialised in the production of antenna amplifiers in East Germany.

Today, Thomas Krüger and Günter Wünsch jointly run a business with the name SAT-Kabel (www.sat-kabel.de), which they founded in August of 1990. They have a workforce of almost 40 employees and produce similar products as their former employer, VEB Elektronische Geräte Burgstädt (EGB). As a communist country, the GDR had nationalised almost the entire economy, and VEB was a German abbreviation that appeared in thousands of company names, meaning nationally-owned enterprise.

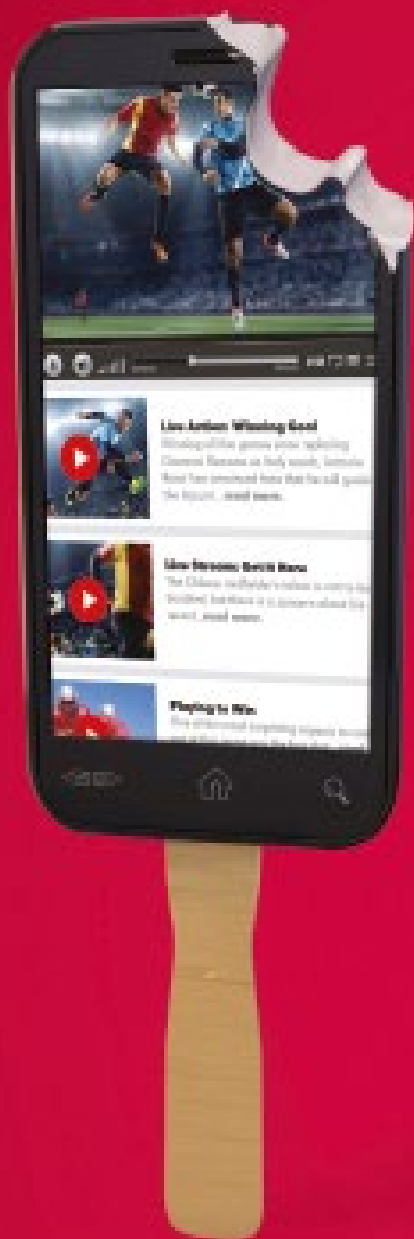
Burgstädt is a small town near Chemnitz in eastern Germany. In SAT-Kabel's seminar room Thomas Krüger and Günter Wünsch have set up their museum. Several display cabinets present antenna amplifiers made by VEB EGB, as well as similar products dating from that time. "This entire line of business can be considered a contradiction in terms, if you think about it. People in the GDR hardly ever required an amplifier to receive the country's state-run channels, but naturally they all wanted to catch signals from West Germany as well."

By law this was not allowed in the GDR, which meant that interested people and – above all – manufacturers of required equipment had to be creative in order to meet that demand without actually calling a spade a spade. "So the make-belief argument was that antenna amplifiers allowed to service several apartments with the same cable, which in turn al-

■ This is Thomas Krüger next to a transmitter tube in mint condition for medium wave signals. As always, there's a story behind the product: "RIAS radio signals from West Berlin were hugely popular among GDR listeners, but not welcome at all by GDR authorities. Jammers were installed that used exactly the same frequencies as RIAS and caused heavy interference with the signals from the West." The replacement tube for one of those jamming transmitters is the one on display in the museum. A relict from the Cold War and testament to a regime that invested absurd amounts of money to jam signals from the 'enemy'.



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**Burgstädt
(Chemnitz)**

lowed the number of rooftop antennas to be reduced." In the end, law enforcement officers never noticed whether western signals were also picked up from antennas, amplified and distributed to individual flats. "Even state employees made use of that method, since it allowed them to watch channels from West Germany without an antenna on their roof giving the slightest hint." TV channels – and later also FM radio stations – from West Germany provided a welcome change from the GDR's own frequently drab and uninspired offering. Western media were much more colourful and also broadcast many shows and films from the United States and other countries, something the GDR media stubbornly avoided.

VEB EGB originally emerged from a company by the name of Häberle, which was founded in 1945 and manufactured a variety of electro-technical products. In 1949 Häberle began to offer medium wave radios and 1952 saw the launch of their first VHF (FM) radios. Two years later, in 1954, the company started to produce antenna amplifiers which were initially meant for FM radio. It was in 1955 that the first TV antenna amplifiers from Häberle hit the market. Things changed in 1972, when the hitherto privately-run business was nationalised and became one of many nationally-owned enterprises, its name being changed to VEB EGB. Most items on display in the museum of Thomas Krüger and Günter Wünsch date back to the period after 1972.

Günter Wünsch was employed by VEB EGB right from the beginning in 1972. He had always shown great interest in radio technology and worked in the research & development department. Thomas Krüger joined VEB EGB in 1975, initially as an intern during his university studies. From 1985 he was also employed at R&D. Walking down memory lane he recalls that "the company had a staff of roughly 100, with 20 engineers in the development department alone." The reason for this high proportion of R&D staff was the fact that at that time imports from western countries were not allowed. "We virtually had to start from scratch and re-invent technologies that had been readily



1



2

available in other countries.” The resulting products were of impeccable quality and could even be exported to other countries. “Almost 20% of our production was sold outside the GDR,” Thomas Krüger remembers.

Knowledge and expertise acquired during that time ultimately equipped these two fellows with all required skills for setting up their own business, SAT-Kabel.

A visit to their museum breathes new life into a by-gone era and lends visible proof to their in-depth experience in the field of antenna amplifier technology. Sometimes a look back in time is all it takes to discover the foundation stones of present-day success.

1. Jamming did not only target western radio stations, but also TV channels from the West. Thomas Krüger remembers: “Here in the southern part of the former GDR the television transmitter from Ochsenkopf in the former Federal Republic of Germany could be received very nicely. On channel 4 it transmitted the national channel of ARD, a major West German public broadcasting corporation. The Soviet military operated a jamming transmitter on the channel 4 frequency from time to time in order to create interference. To circumvent those jamming efforts tinkering tips for a suction circuit called ‘Russian Death’ were readily available and widely used.” It goes without saying that staff from an enterprise dealing with signal amplifiers were the most capable sources for building those circuits. “We spent much of our time off assembling suction circuits for friends and family. Everything that was required could be obtained quite easily and without causing suspicion. A standard milk pot, for example, did just fine.” Local shops never found out why demand for milk pots skyrocketed in the Burgstädt area...

2. Later, professional suction circuits became available through official channels as well. When FM radio gained popularity in the late 1950s antenna splitters experienced strong demand – they could be used to receive all local stations from East Germany plus the offering from West Germany. It’s hard to believe, but VEB EGB used creative marketing speech even back then: The inconspicuous name ‘stereo splitter’ was given to a product whose only raison d’être was to allow reception of western radio stations.

3. When the number of FM stations had started to increase this caused considerable problems for the separation of those channels by the radio tuner. Thomas Krüger recalls the situation at the time: “Local stations of the GDR broadcasting system came in with a very strong signal, while signals from West Germany were much weaker.” A so-called wave trap provided a handy solution: It attenuated local FM signals to an extent that all stations arrived at the FM tuner with a roughly equal signal level.”

4. A look inside the wave trap. “A high level of expertise and – above all – an intuitive feeling for it were required to produce such a wave trap. Needless to say, at VEB EGB we had both the resources and skills for churning out those officially illegal components in our free time.”

5. Casing of one of the first antenna amplifiers produced by VEB EGB.

6. Inside the GAV16: At the time tubes were still used for this residential amplifier for up to 16 outlets, bundling and amplifying bands I and III as well as FM radio.

3



4

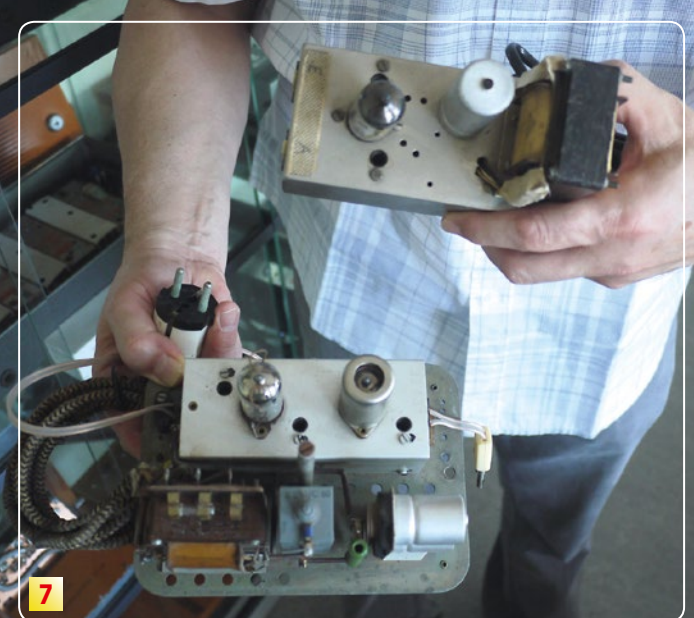


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7. Second amplifier unit for VHF band I and FM radio.

8. Transistors eventually replaced tubes in later antenna amplifiers.

9. The first line amplifiers. They were not required for local TV channels from East Germany, but for amplification of weak western signals.

10. When the UHF range was introduced in the 1970s and available TV sets in East Germany could only receive VHF signals, converters were required to turn UHF signals into VHF signals. In the beginning, tinkerers like Günter Wunsch assembled those converters themselves.

11. Official production of UHF-to-VHF converters only started when GDR television channels also began to broadcast in the UHF range. Seen here is a converter dating back to 1969.



11



BROADCAST, SATELLITE & DIGITAL MEDIA EVENT

MIDDLE EAST • AFRICA • SOUTH ASIA



CABSAT

10-12 March, 2015

Dubai World Trade Centre



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International Association for
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Asia Pacific Satellite
Communications Council



Global VSAT
Forum

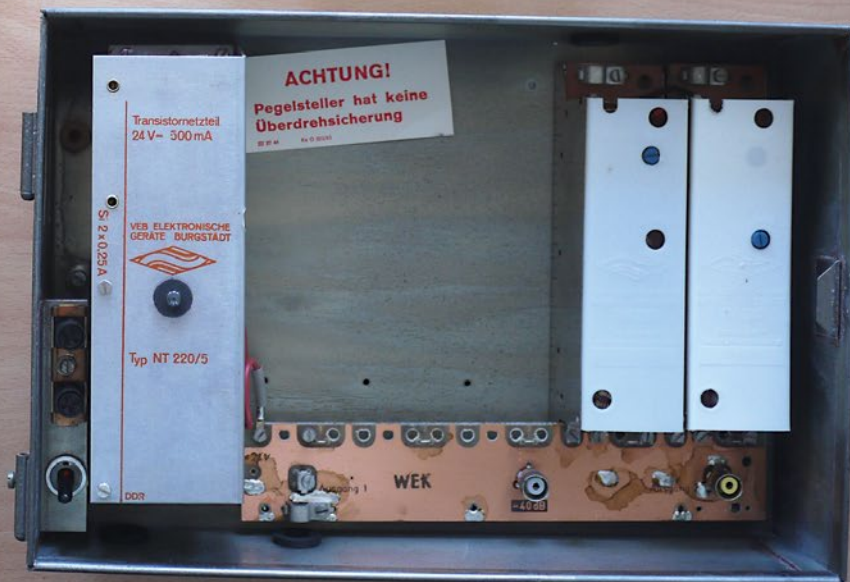


World Teleport
Association

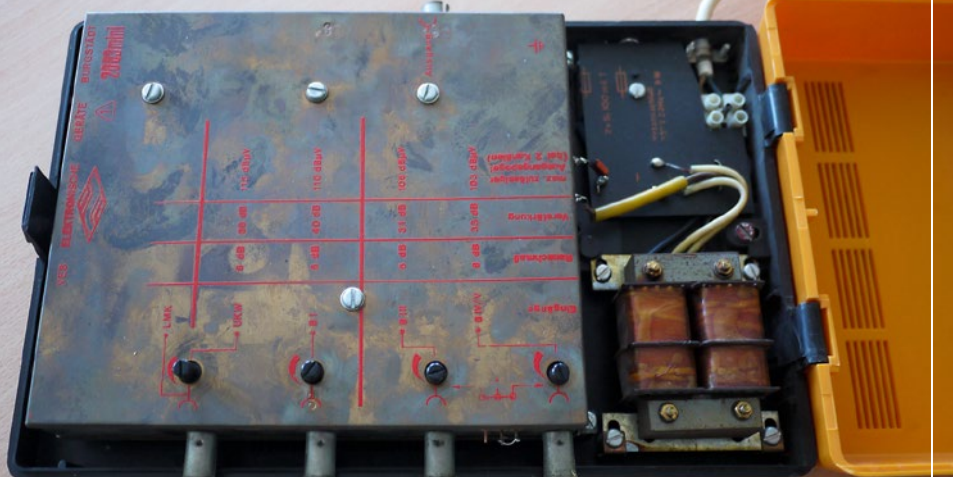


Future of
Broadcast Television





12



14

13

12. VEB EGB produced professional antenna amplifiers as early as 1972.

13. The first series had a distinctly orange look.

14. Looking beyond the orange casing...

15. 1980 saw the colour change to red.

16. And in 1985 white became to new red. It was at that time that the enterprise achieved considerable success in exporting their product range to other countries. Seen here is a model labelled for the Hungarian market.

17. You could not just pop into a radio shack and get an LNB at that time, but many people had relatives in West Germany. Thomas Krüger recalls that "my aunt smuggled this LNB on one her visits here. To this day the mere thought of her potentially being caught by East German border officials sends shivers down my spine. This would have caused endless troubles for both sides."

18. For analog terrestrial TV East Germany had used the SECAM colour system, while West Germany had gone for PAL. Officially there were no PAL decoders for sale in all of East Germany, so Günter Wünsch built one himself.

15



MUSEUM REPORT | Radiomuseum Ringsted, Denmark |

A Satellite Expert's Museum

Alexander Wieso

Over the course of many years satellite expert Bjarne Nielsen has worked up his reputation as Denmark's 'Mr. Satellite'. In retirement now, he has found a new passion in his position as organizer of and driving force behind the 'Radiomuseum' in the small town of Ringsted, not far from the Danish capital Copenhagen. In a TELE-satellite exclusive Bjarne Nielsen opens the museum doors and recalls major events that shaped his life.

Let's start with a remarkable fact: For 25 years Bjarne Nielsen was the publisher and editor-in-chief of Denmark's first and only satellite-related magazine, with the last issue having appeared in the year 2005.

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■ On several occasions in the past TELE-audiovision has reported on museums and radio enthusiasts. Have a look in TELE-satellite 10-11/2010, for example, to read about the Radio Museum run by Bjarne Nielsen in Ringsted, Denmark. Here's the link:

www.TELE-audiovision.com/TELE-satellite-1011/eng/radiomuseum.pdf

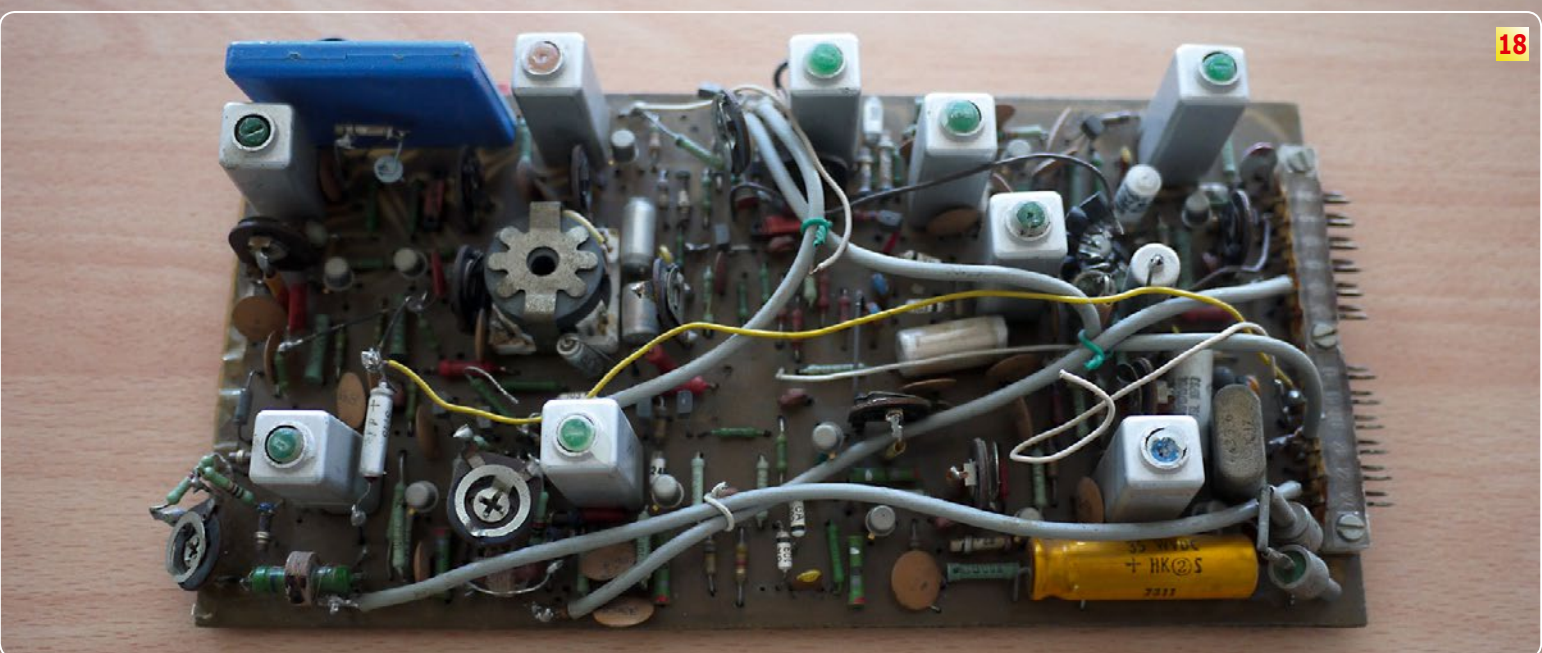
If you, too, have your own museum or know somebody who does please let us know by writing to:

alex@tavmag.com

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18

The Decision Makers

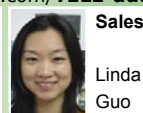
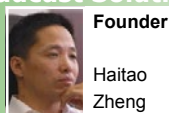
in Worldwide Digital TV Industry

according to TELE-audiovision's Company Reports

Sumavision, China - Broadcast Solutions



- End-to-End Technology for broadcasters with flexible adaptation to new standards and features
- Freely Expandable
- Applicable for networks starting at about 500 terminals up to millions

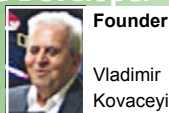


www.TELE-audiovision.com/TELE-audiovision-1501/eng/sumavision.pdf

- of terminals
- Quick upgrades through module exchanges
- Full range of features for broadcasters in all digital TV modes

RT-RK, Serbia - Software Developer

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



- develops software solutions for manufacturers of digital TV devices and content providers
- offers turnkey solutions for testing digital TV receivers; suitable for manufacturers, providers and also repair centres
- designs software solutions for manufacturers of Android-based receivers

www.TELE-audiovision.com/TELE-audiovision-1411/eng/rt-rk.pdf



- develops ready-to-use software packages for SatIP
- distributes a software solution for live testing of a television network through connected receivers on the viewers' side

Horizon, UK - Signal Meter Manufacturer



- The IMC Group was formed in 2007
- IMC specialises in electronic and mechanical instrumentation
- IMC's products are used all over the world



www.TELE-audiovision.com/TELE-audiovision-1409/eng/horizon.pdf

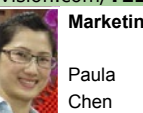
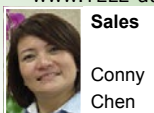


- HORIZON fits perfect into the range of different measurement products of IMC
- HORIZON products frequently win international Product Awards

Jonsa, Taiwan - Satellite Dish Manufacturer



- exports satellite dishes worldwide for 25 years
- guarantees consistently high quality- even with extremely large volume production
- one of only few manufacturers of Ka band antennas



www.TELE-audiovision.com/TELE-audiovision-1409/eng/jonsa.pdf

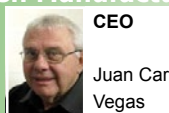
- produces all dish moulds in-house
- ready to manufacture special-purpose dishes, e.g. for multi-satellite reception with multi-LNB holder

Propulsa, Argentina - Dish Manufacturer

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



- Produces all of the dish components themselves
- Also exports out of the country
- Active in the satellite business since 1982



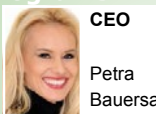
www.TELE-audiovision.com/TELE-audiovision-1407/eng/propulsa.pdf

- Expecting an expansion in activities due to the unblocking of the cable monopoly

Telecontrol, Germany - Analyzing TV Programs



- Patented system lets a TV viewer personalize the EPG
- Favorite and often-watched TV channels are automatically recommended
- When commercials appear, the system can automatically change to



www.TELE-audiovision.com/TELE-audiovision-1407/eng/telecontrol.pdf



- another channel and then back again
- Currently only suitable for German-language TV channels
- Planned expansion into the international market

Hwadar, China - Fiberglass Dishes

☒ Manu
☒ Distr
☒ Whol
☒ Shop
☒ Serv



CEO

Wang
Dang



Sales

Monica
Wang



Chief Engineer

Zhong
Zhiming

www.TELE-audiovision.com/TELE-audiovision-1403/eng/hwadar.pdf



- one step at a time can lead to lasting success
- extraordinary quality thanks to the use of SMC fiberglass offset, PDA and segment dishes in all sizes can be produced

- supplier of choice even for small purchasers
- guarantees very long service life of its dishes

TELE System, Brazil - Logistics and Products

☒ Manu
☒ Distr
☒ Whol
☒ Shop
☒ Serv



GM

Marco
Szili



Engineering

Jonathan
Gregory



R&D

Marcos
Santos

www.TELE-audiovision.com/TELE-audiovision-1403/eng/telesystem.pdf



- largest supplier of complete reception systems for Brazilian pay TV providers
- technical know-how allows swift reaction to changing market requirements

- perfectly equipped for packaging and shipping products in large quantities
- focus on Brazil as the largest market in South America

DVBViewer, Germany - PC Card Software

☒ Manu
☒ Distr
☒ Whol
☒ Shop
☒ Serv



Marketing

Bernd
Hackbart



Software

Christian
Hackbart

www.TELE-audiovision.com/TELE-audiovision-1401/eng/dvbviewer.pdf



- Light version available at no cost since 2002
- Regular software updates

- Can receive all digital TV standards
- Preconfigured for UHDTV

BSD, Brazil - Digital TV Internet Forum

☒ Manu
☒ Distr
☒ Whol
☒ Shop
☒ Serv



GM

Marcos
Benni

www.TELE-audiovision.com/TELE-audiovision-1311/eng/bsd.pdf



- 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

☒ Manu
☒ Distr
☒ Whol
☒ Shop
☒ Serv



GM

Asmundur
Einarsson



Sales

Magnus
Eyjolfsson

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- 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

☒ Manu
☒ Distr
☒ Whol
☒ Shop
☒ Serv



Business Development

Gary
Stafford



Technical Support

Matt
Presdee

www.TELE-audiovision.com/TELE-audiovision-1311/eng/globalinvacom.pdf



- 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

☒ Manu
☒ Distr
☒ Whol
☒ Shop
☒ Serv



Founder

Baldur
Sveinsson



Founder

Sigurour
Gunnarsson

www.TELE-audiovision.com/TELE-audiovision-1309/eng/oreind.pdf



- 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

☒ Manu
☒ Distr
☒ Whol
☒ Shop
☒ Serv



President

Zhong
Changan



MD

Liu Lian
Jun



Production Manager

Li Hong
Xiao



Sales

Jason
Wu

www.TELE-audiovision.com/TELE-audiovision-1307/eng/deviser.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



GM
Sun
Yu

www.TELE-audiovision.com/TELE-audiovision-1307/eng/dexin.pdf



- Established in 1994 in Chengdu
- Specializes in professional tv head-end equipment

- 50% of their production is exported
- Intense quality controls

Forcetek, China - IPTV Solution Provider

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



Sales
Ren
Nan



Marketing
Lan
Haidong

www.TELE-audiovision.com/TELE-audiovision-1307/eng/forcetek.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



GM
Bang Xian
Peng



Production Manager
Bang Xing
Peng

www.TELE-audiovision.com/TELE-audiovision-1307/eng/tianditong.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



Sales Manager
Jefferson
Cruz

www.TELE-audiovision.com/TELE-audiovision-1305/eng/eldtec.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



Product Manager
Wen Liang
Yuan



Sales Manager
Liao Wen
Fei

www.TELE-audiovision.com/TELE-audiovision-1305/eng/lianxing.pdf



- using only top-quality materials
- individually checking each single component

- offering antennas for the C and Ku bands
- very successful on the Japanese market

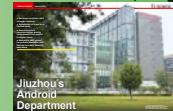
Jiuzhou, China - Android Receivers

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



Product Manager
Yongjun
Zhang

www.TELE-audiovision.com/TELE-audiovision-1303/eng/jiuzhou.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



GM
Qing
Zhang Lin



Project
GuiHuang
Huang

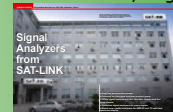


Sales
Nancy



R&D
Han Guang
Rong

www.TELE-audiovision.com/TELE-audiovision-1303/eng/sat-link.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



CEO
Jose Marcos
Freire Martins



COO
Jorge Alberto
Ganuza



Production
Adilson da
Silva

www.TELE-audiovision.com/TELE-audiovision-1303/eng/tecsys.pdf



- Very good operational organization
- Concentration on professional satellite reception products

- In-house development department
- IRD is their success product

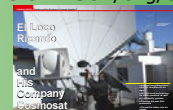
Cosmosat, Argentina - Satellite Dishes

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



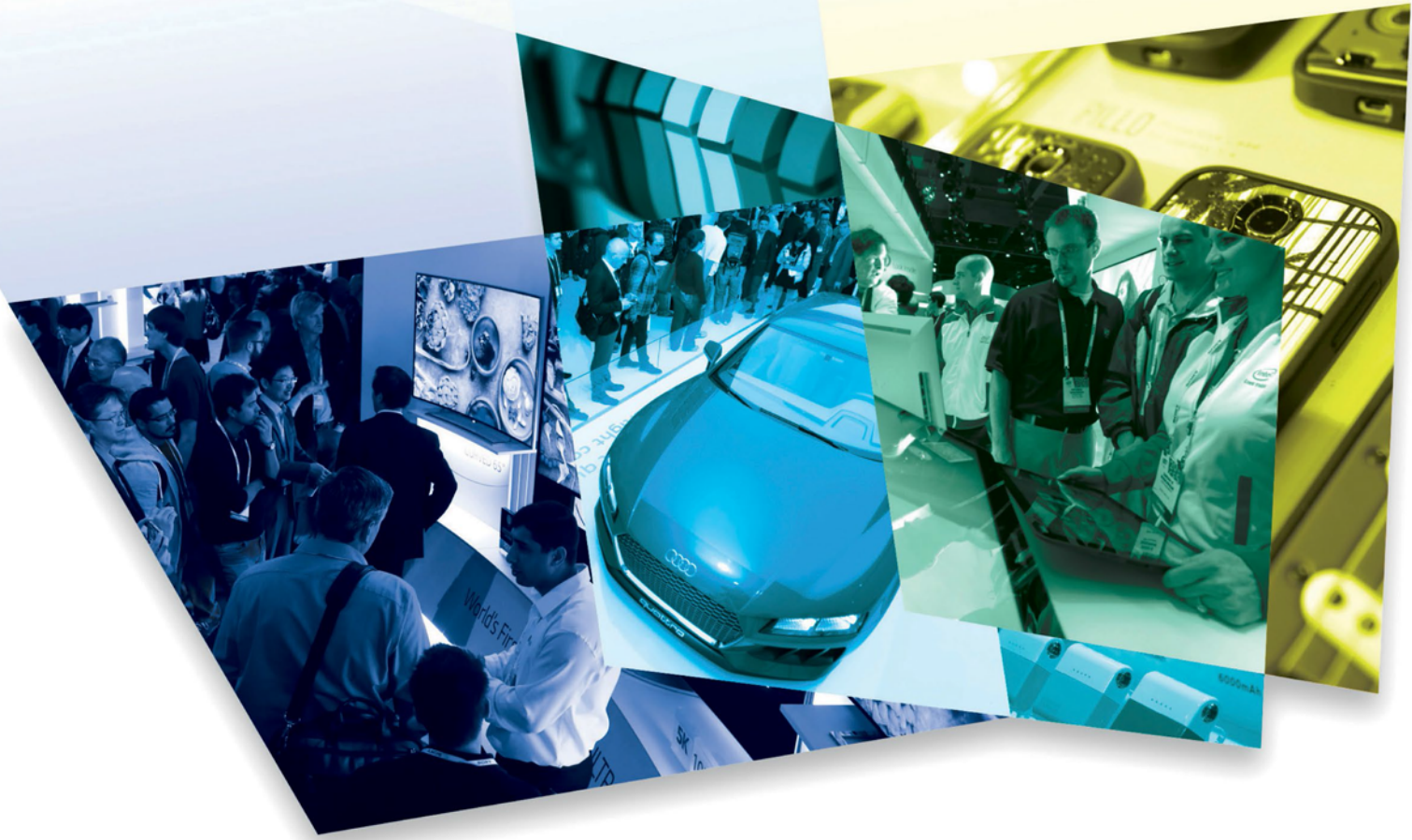
Owner
Ricardo

www.TELE-audiovision.com/TELE-audiovision-1301/eng/cosmosat.pdf



- 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



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SAVE THE DATE

Wednesday, January 6-Saturday, January 9, 2016

Las Vegas, NV | CESweb.org | [#CES2016](https://twitter.com/CES2016)



Horizon, UK - Signal Analyzers



- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



Technical Director
Paul Hardcastle



Technical Manager
Rob Sydee

www.TELE-audiovision.com/TELE-audiovision-1301/eng/horizon.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



CEO
Stefaan Cornelis



Technical Manager
Didier Debey

www.TELE-audiovision.com/TELE-audiovision-1301/eng/satson.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



MD
Trevor Paintain



Sales
Arnold Boeijen

www.TELE-audiovision.com/TELE-satellite-1211/eng/antiference.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



MD
Jose Manuel Pereira



CFO
Allam Almughrabin

www.TELE-audiovision.com/TELE-satellite-1211/eng/usatel.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv

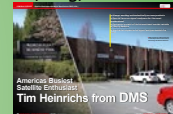


CEO
Tim Heinrichs



President
Vicky Heinrichs

www.TELE-audiovision.com/TELE-satellite-1209/eng/dms-international.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



Chairman
Zongbao King



GM
Chaofeng Ge



Sales
James You

www.TELE-audiovision.com/TELE-satellite-1209/eng/topsignal.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



Owner
Anna Xie



Chief Editor
Victor Ho

www.TELE-audiovision.com/TELE-satellite-1207/eng/dvbcn.com.pdf



- 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

- ☑ Manu
- ☑ Distr
- ☑ Whol
- ☑ Shop
- ☑ Serv



CEO
Wang Duo



Sales
Becky

www.TELE-audiovision.com/TELE-satellite-1207/eng/svec.pdf



- 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

☒ Manu
☐ Distr
☐ Whol
☐ Shop
☐ Serv



Owner
Rod
Hewitt

www.TELE-audiovision.com/TELE-satellite-1207/eng/tsreader-rod-hewitt.pdf



- 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

☐ Manu
☒ Distr
☐ Whol
☐ Shop
☐ Serv



MD
Neal

www.TELE-audiovision.com/TELE-satellite-1205/eng/hypex-icecrypt-uk.pdf



- 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

☐ Manu
☒ Distr
☒ Whol
☒ Shop
☐ Serv



Owner
Rick
Caylor



Owner
Rick
Caylor

www.TELE-audiovision.com/TELE-satellite-1205/eng/ricks-satellite-azbox.pdf



- 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

StelliteGuys, USA - Internet Forum

☐ Manu
☐ Distr
☐ Whol
☐ Shop
☒ Serv



Owner
Scott
Greczkowski

www.TELE-audiovision.com/TELE-satellite-1205/eng/satelliteguys.us.pdf



- 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

☒ Manu
☐ Distr
☐ Whol
☐ Shop
☐ Serv



GM
Eagle
Chain

www.TELE-audiovision.com/TELE-satellite-1205/eng/sowell-iptv.pdf



- 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

☒ Manu
☒ Distr
☒ Whol
☐ Shop
☐ Serv



Owner
Neide
Wadt



Technical Director
Joao
Wadt

www.TELE-audiovision.com/TELE-satellite-1205/wadt-brazil.pdf



- 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

☒ Manu
☐ Distr
☐ Whol
☐ Shop
☐ Serv



Vice Marketing
Jimmy
Zhang



Vice GM
Richard

www.TELE-audiovision.com/TELE-satellite-1203/jiuzhou-ott.pdf



- Develops 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

☒ Manu
☐ Distr
☐ Whol
☐ Shop
☐ Serv



Founder
You Zhen
Yu



Founder
Huang
Wei

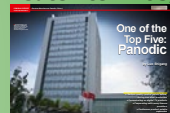


CEO
Xu Hai Bin



Marketing Manager
Alan Yu

www.TELE-audiovision.com/TELE-satellite-1203/panodic.pdf



- 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

☐ Manu
☒ Distr
☒ Whol
☐ Shop
☐ Serv



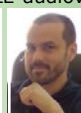
Founder
Ladislav
Šmárik



GM
Pavol
Macko



Sales
Alexander
Záhončík



Sales
Pavol
Lukáč

www.TELE-audiovision.com/TELE-satellite-1203/sortec.pdf



- 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

- ✓ Manu
- ✓ Distr
- ✓ Whol
- Shop
- ✓ Serv

- own receiver line ICECRYPT
- 50% of sales outside Great Britain
- Focus on receivers, CAM, SmartCards and LNBs



Sales
Chris Ward



Technical Director
Ray Gargiulo

www.TELE-audiovision.com/TELE-satellite-1203/turbosat-icecrypt.pdf

- 80,000 receivers a year
- produces Dolly Buster TV programming via HOTBIRD



BSD, Brazil - Internet Forum

- Manu
- Distr
- Whol
- Shop
- ✓ Serv



Owner
Marcus Bernardini

www.TELE-audiovision.com/TELE-satellite-1201/bsd.pdf

- 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

- Manu
- ✓ Distr
- ✓ Whol
- Shop
- Serv



Owner
Tibor Posta

www.TELE-audiovision.com/TELE-satellite-1201/p-sat.pdf

- 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



AB-COM, Slovakia - Receivers

- ✓ Manu
- ✓ Distr
- ✓ Whol
- ✓ Shop
- ✓ Serv



Founder
Juraj Masaryk



Marketing Manager
Michal Grezo



Sales
Pavol Blaho

www.TELE-audiovision.com/TELE-satellite-1111/abcom.pdf

- 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

- ✓ Manu
- ✓ Distr
- Whol
- Shop
- ✓ Serv



GM
Tom Haywood



Engineering
Jeff Haas



Sales
Scott Haywood

www.TELE-audiovision.com/TELE-satellite-1111/appliedinstruments.pdf

- 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

- ✓ Manu
- Distr
- Whol
- Shop
- ✓ Serv



Marketing Manager
Othmar Fuchs

www.TELE-audiovision.com/TELE-satellite-1111/huber+suhner.pdf

- 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

- Manu
- Distr
- Whol
- Shop
- ✓ Serv



CEO
Zoltan Korcsok



CTO
Andor Pasztor

www.TELE-audiovision.com/TELE-satellite-1109/ipont.pdf

- iPONT's software solution 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

- ✓ Manu
- ✓ Distr
- ✓ Whol
- Shop
- ✓ Serv



GM
Sven Melzer

www.TELE-audiovision.com/TELE-satellite-1109/megasat.pdf

- 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

- ✓ Manu
- ✓ Distr
- ✓ Whol
- Shop
- Serv



Owner
Lubomír Probošcz



Sales
Petr Zwrtek



Sales
Jana Probošczová

www.TELE-audiovision.com/TELE-satellite-1109/sapro.pdf

- 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





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General partner:



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Strategic partner:



General media partner:



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WSInternational, USA - Receiver and Wholesaler

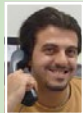
www.TELE-audiovision.com/TELE-satellite-1109/wsinternational.pdf

- ✓ Manu
- ✓ Distr
- ✓ Whol
- Shop
- Serv



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

- ✓ Manu
- ✓ Distr
- Whol
- Shop
- Serv



GM

Slimane
Ait Yala



Boiingsat, China - LNB

www.TELE-audiovision.com/TELE-satellite-1105/boiingsat.pdf

- ✓ Manu
- Distr
- Whol
- Shop
- Serv



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

- ✓ Manu
- Distr
- Whol
- Shop
- Serv



Technical Manager

Tewfik
Lamrani



Prevail, China - Fibre Optics and CATV

www.TELE-audiovision.com/TELE-satellite-1105/prevail.pdf

- ✓ Manu
- Distr
- Whol
- Shop
- Serv



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

- ✓ Manu
- Distr
- Whol
- Shop
- Serv



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



Tenow, China - PC Cards

www.TELE-audiovision.com/TELE-satellite-1103/tenow.pdf

- ✓ Manu
- ✓ Distr
- Whol
- Shop
- Serv



Founder

Richard
Zhang



Founder

Bob
Liu



Founder

Eric
Deng



Founder

James
Liu

- IPTV box production may reach 1 million units in 2011
- Jiuzhou starts HbbTV boxes for Europe



NetUP, Russia - IPTV

www.TELE-audiovision.com/TELE-satellite-1101/netup.pdf

- ✓ Manu
- ✓ Distr
- Whol
- Shop
- ✓ Serv



Co-Founder

Abylay
Ospan



Co-Founder

Evgeniy
Makeev



Sales

Konstantin
Emelyanov

- IPTV box production may reach 1 million units in 2011
- Jiuzhou starts HbbTV boxes for Europe



Tevii, Taiwan - PC Cards and Receiver

www.TELE-audiovision.com/TELE-satellite-1101/teyii.pdf

- ✓ Manu
- ✓ Distr
- Whol
- Shop
- Serv



Founder

Matthias
Liu



Satbeams, Belgium - Software

www.TELE-audiovision.com/TELE-satellite-1011/satbeams.pdf

- ✓ Manu
- ✓ Distr
- Whol
- Shop
- ✓ Serv



Founder

Alexander
Derjugin



Spaun, Germany - Power Supplies

www.TELE-audiovision.com/TELE-satellite-1011/spaun.pdf

- ✓ Manu
- Distr
- Whol
- Shop
- Serv



IBC
Certificate
Holder



MD

Kevin
Spaun



Asia-Pacific's
Largest Broadcasting Show



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Visit registration: 010-8609 1647 / 3436 / 1340

CCBN-BDF forum registration: 010-8609 5613 / 3465 / 2133

www.ccbn.tv

Boxsam, China - Receivers

- ☒ Manu
- ☐ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



GM
Xiaofeng
Huang



VP
Jeffrey
Zhao

www.TELE-audiovision.com/TELE-satellite-1009/boxsam.pdf



Atlanta, Dubai - Wholesaler

- ☐ Manu
- ☐ Distr
- ☒ Whol
- ☐ Shop
- ☐ Serv



Founder
Rajmal
Jain



Director
Sanjeev
Jain

www.TELE-audiovision.com/TELE-satellite-1007/atlanta.pdf



Yinhe, China - Receiver

- ☒ Manu
- ☐ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



**Marketing
Manager**
Jianbiao
Zhu

www.TELE-audiovision.com/TELE-satellite-1007/yinhe.pdf



GlobalInvacom, UK - Fibre Optics

- ☒ Manu
- ☐ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



Sales
David
Fugeman

www.TELE-audiovision.com/TELE-satellite-1005/globalinvacom.pdf



Changhong, China - Receiver

- ☒ Manu
- ☐ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



Sales
Richard
Cheng Li

www.TELE-audiovision.com/TELE-satellite-1003/changhong.pdf



Kaifa, China - Receivers

- ☒ Manu
- ☐ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



**Marketing
Manager**
Jackie
Yan

www.TELE-audiovision.com/TELE-satellite-1003/kaifa.pdf



Skyworth, China - Receivers

- ☒ Manu
- ☐ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



Vice GM
David
Ken



**Technical
Manager**
Jack
Zhang

www.TELE-audiovision.com/TELE-satellite-1003/skyworth.pdf



Promax, Spain - Signal Analyzers

- ☒ Manu
- ☐ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



Founder
José
Clotet



GM
José-Maria
Clotet

www.TELE-audiovision.com/TELE-satellite-0909/promax.pdf



Infosat, Thailand - Dishes

- ☒ Manu
- ☐ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



Founder
Niran
Tangpiroontham

www.TELE-audiovision.com/TELE-satellite-0907/infosat.pdf



Aluosat, China - Wholesaler

- ☐ Manu
- ☒ Distr
- ☒ Whol
- ☒ Shop
- ☐ Serv



Founder
Luo
Shigang



Sales
Luo
Jun

www.TELE-audiovision.com/TELE-satellite-0905/aluosat.pdf



MFC, USA - Filters

- ☒ Manu
- ☒ Distr
- ☐ Whol
- ☐ Shop
- ☐ Serv



CEO
Carl
Fahrenkrug



Sales
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Parsell



**Marketing
Manager**
Sandy
Nelepovitz

www.TELE-audiovision.com/TELE-satellite-0903/mfc.pdf



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www.TELE-audiovision.com/TELE-satellite-0901/nanoxx.pdf





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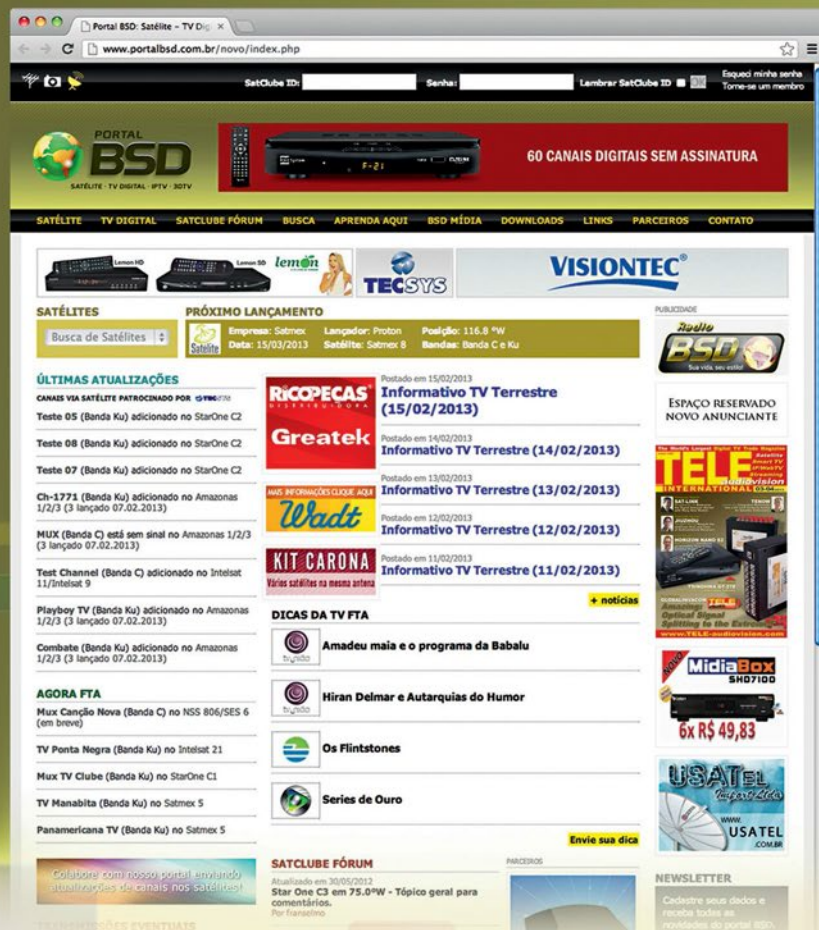
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Chinasatcom

- *All satellite TV channels in China utilize satellites from Chinasatcom*
- *Free capacity offered internationally for the first time*
- *Initial steps to becoming an internationally active satellite provider*
- *Especially interesting for programming providers in the Middle East, Eastern Africa and Southeast Asia*



■ A few of
Chinasatcom's
satellite dishes
at their Beijing
headquarters



Chinese Satellite Provider Expanding

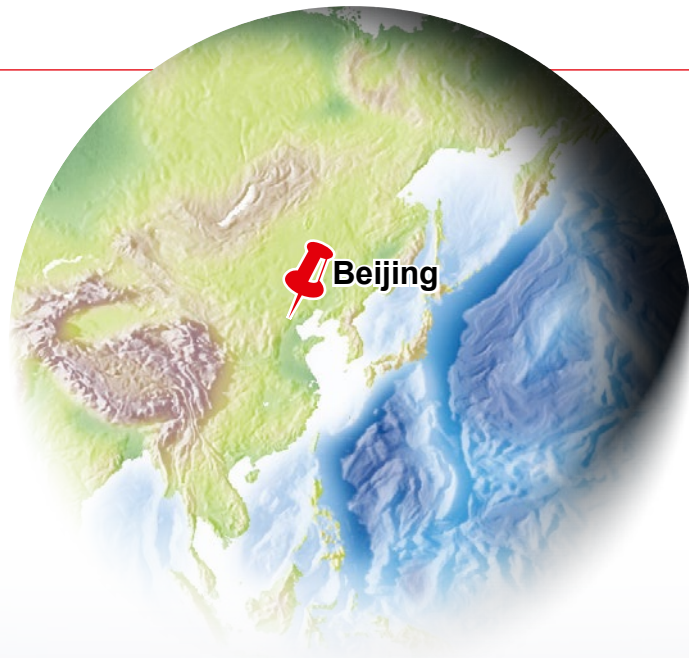
Every TV channel in China that is broadcast via satellite utilizes the satellites from national satellite provider Chinasatcom. Up until now, the domestic Chinese market was good enough for this operator but they have begun expanding into the international market albeit very carefully and in very small steps. To learn more about this we paid a visit to Chinasatcom's headquarters in Beijing, China.

In the 1980's, Chinasatcom's predecessor company took over the task of providing China with satellite services. Back then it was mostly telephony and data traffic. The first TV channels started broadcasting in the 1990s and in 2001 Chinasatcom (China Satellite Communications Co., Ltd.) was officially founded as a subsidiary to the national Chinese space authority China Aerospace Science. Chinasatcom operates the fleet of CHINASAT satellites and is also involved with the operator (headquartered in Hong Kong) of the APSTAR satellites.

Chinasatcom's headquarters can be found in the enormous Xibeiwang IT park northwest of Beijing. Many other IT firms such as the computer manufacturer Lenovo and the Chinese Internet search engine Baidu can also be found here.

Chinasatcom erected their control center on their grounds right next to the satellite dishes from the China Meteorological Authority. Chinasatcom's fleet of satellites are all controlled with more than 30 very large 15-meter dishes and many more smaller satellite dishes.

We met up with Yang Tao in the main building. He is the Deputy General Manager in the Sales Department and from him we learn more about Chinasatcom: „All Chinese satellite TV chan-



■ Yang Tao is Chinasatcom's Deputy General Manager

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nels use our satellites. At the moment there are more than 340 TV channels that use our satellites." The company employs 260 workers. „We operate another control center in Shahe, about 20km from here."

Yang Tao tells us more about their expansion into the international market: „We are perfectly equipped for the Chinese market and want to start growing internationally." It's the unused capacity on CHINASAT 12 at 87.5 east that makes international expansion possible. „This satellite has capacity in the C-band that we can make available inexpensively."

Naturally, the primary market for Chinasatcom's satellites has been up until now the Chinese domestic market and some surrounding areas in South-east Asia. But the increasing globalization also tempted Chinasatcom to ex-

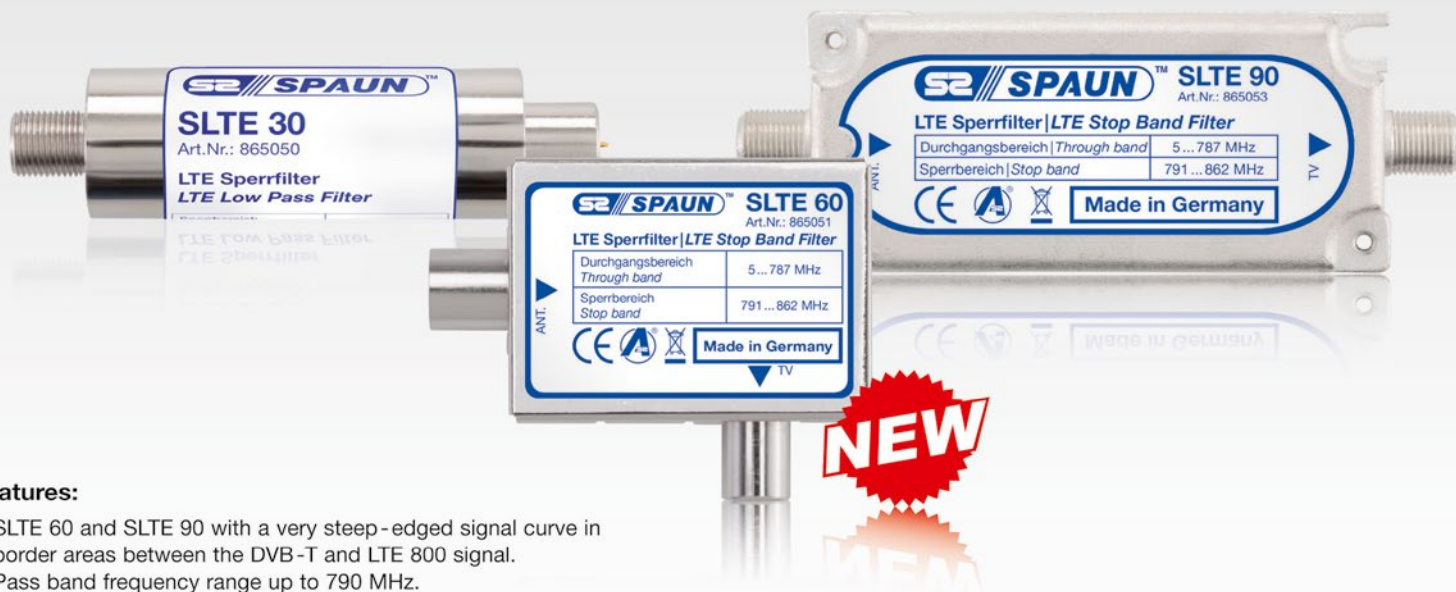


1. Zhang Yu is Chinasatcom's Senior Sales Manager and is responsible for marketing the available capacity on CHINASAT 12. Programming providers that are interested can contact him directly via e-mail at zhangyu@chinasatcom.com

2. Olivia Chan from the PR department is seen here standing in front of Chinasatcom's street sign



SLTE 30, SLTE 60 and SLTE 90



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3

3. Chinasatcom's main entrance in Xibeiwang in the Haidian District northwest of Beijing.

4. Chinasatcom's main lobby

4



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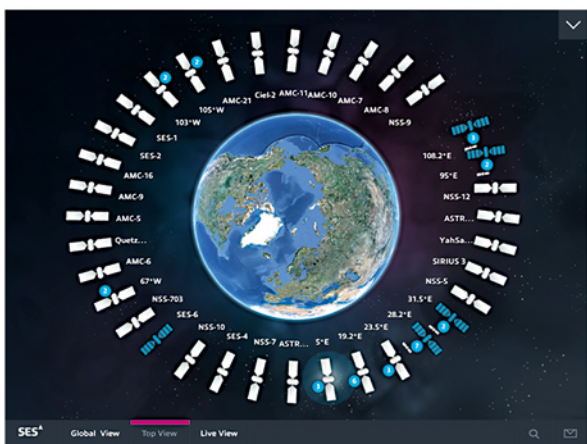


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(Niclas Friese Greene, Senior Vice President of Marketing and Corporate Communications, SES)



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pand. „We're in no rush and are under no pressure; instead we're taking one small step at a time“, says Yang Tao, „Thanks to our partnership with Apstar, we're already in the international market.“

Zhang Yu explains the company's sales strategy to us. He is their Senior Sales Manager and tells us: „We are mostly interested in new programming providers that are not already working with another satellite operator. We are able to offer them very attractive terms.“

The footprint for the CHINASAT 12 satellite is perfect for programming providers in the Middle East, eastern Africa and all of Southeast Asia. „Future satellites would allow us to serve other areas“, adds Yang Tao as he provides a glimpse into Chinasatcom's long term plans for the future.

By moving from the domestic Chinese market into the international market, Chinasatcom has taken the first step to becoming a satellite provider to broadcasters outside of China.

■ A look in Chinasatcom's control center. From here all of the Chinasat series of satellites, among other things, are controlled.



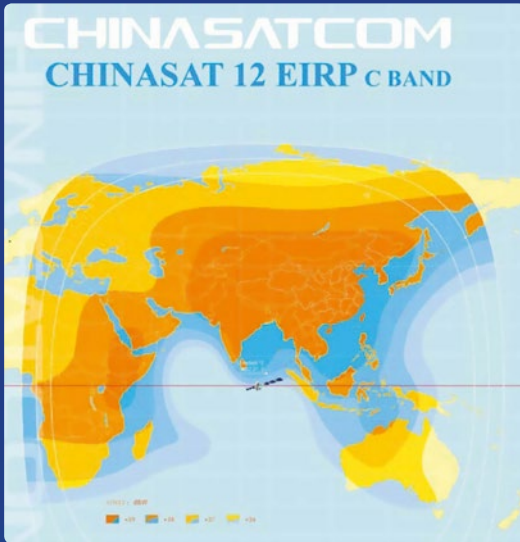


Chinasatcom's Satellites

CHINASAT 5A: **142E**
 CHINASAT 5C: **3E**
 CHINASAT 5D: **51.5E**
 CHINASAT 5E: **163E**
 CHINASAT 6A: **125E**
 CHINASAT 6B: **115.5E**
 CHINASAT 9: **92.2E**
 CHINASAT 10: **110.5E**
 CHINASAT 11: **not yet defined**
 CHINASAT 12: **87.5E**
 CHINASAT M: **not yet defined**

Note: The APSTAR satellites are operated in a cooperative effort



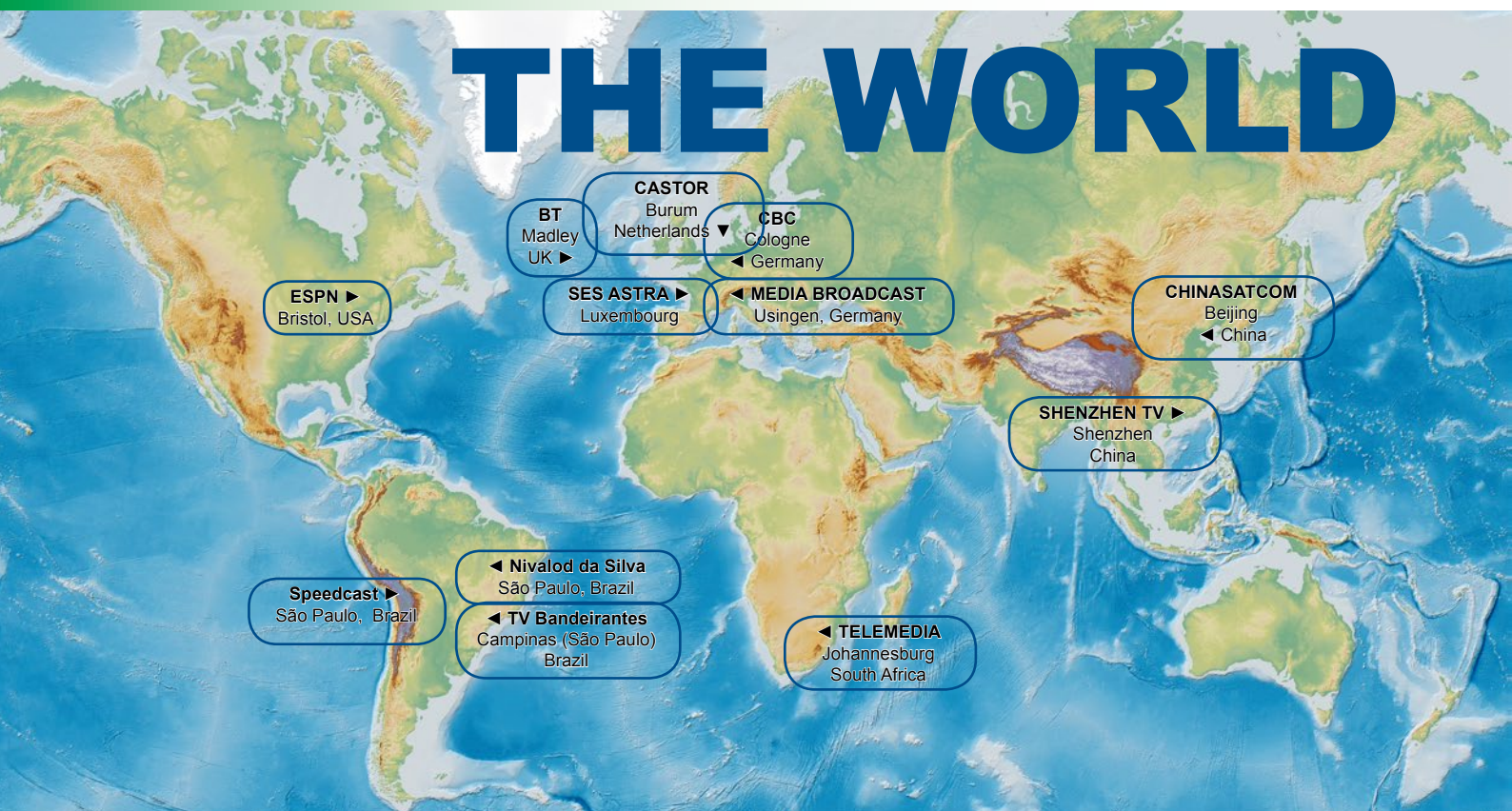


■ CHINASAT 12 footprint in the C-band. Transponders on these beams still have free capacity.

■ More than 30 large 15-meter dishes are erected on Chinasatcom's grounds, even an 18-meter dish is operated by Chinasatcom from here.



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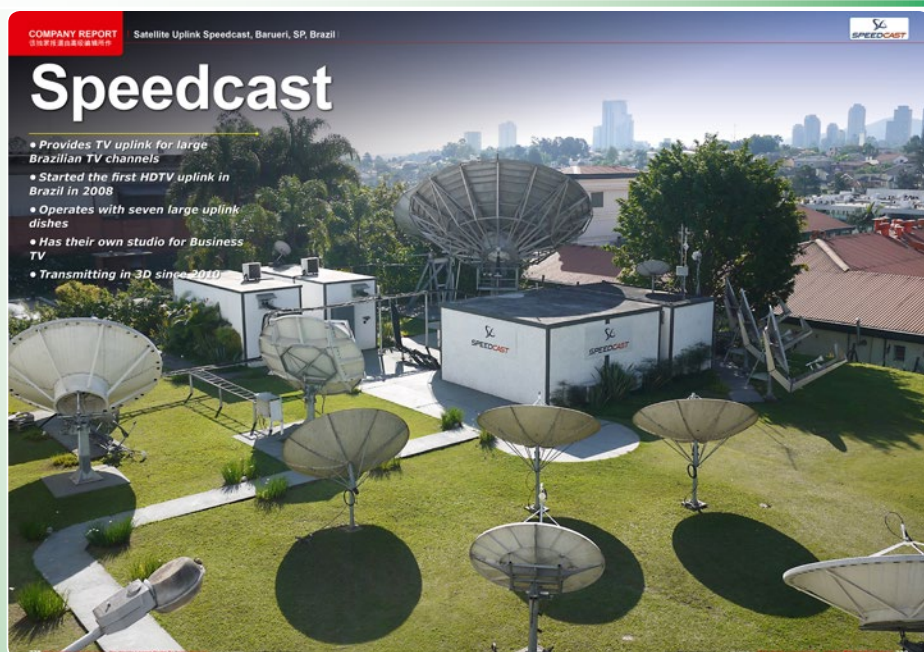


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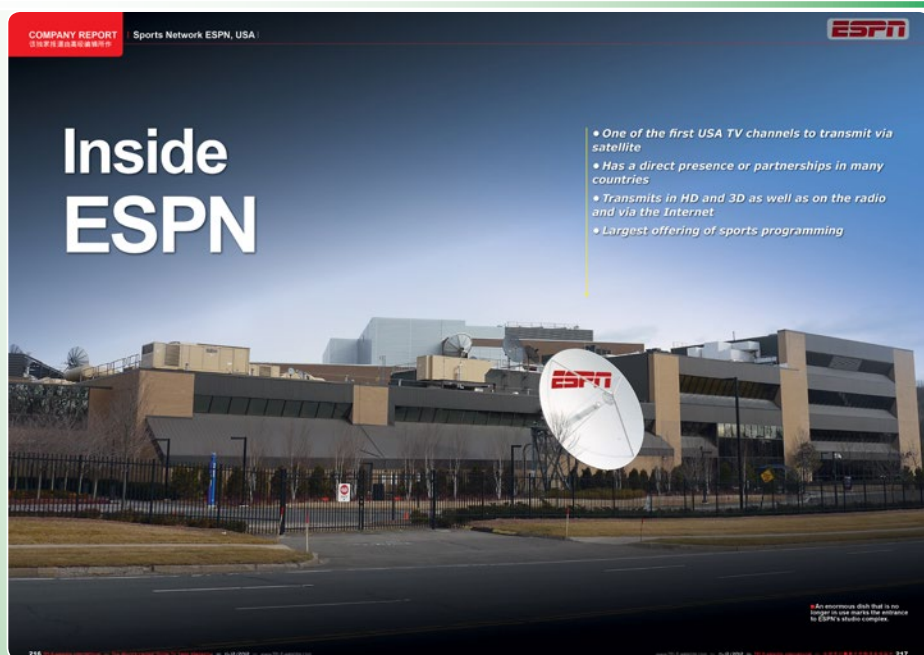


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COMPANY REPORT Satellite Uplink Station, Netherlands

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COMPANY REPORT Uplink Provider

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- global content distribution
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- fully equipped for HD TV

BT Madley UK

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COMPANY REPORT BT Madley International Communications Centre, UK

Partner for the Big Players

- Operates 65 dishes in southwestern Great Britain
- Recently began offering uplink services for programming providers
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COMPANY REPORT 集团业绩报告及战略方向 | Satellite Provider

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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 DTHers 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.

View of a section of the Usingen earth station, which boasts a total of 110 antennas.

Station manager Ludger Gundertmann sits down at the reception desk of the Usingen earth station. He has been working at the station since 1988. He is a former member of the German national team for the 1988 Summer Olympics.

Usingen (Frankfurt)

[illegible]

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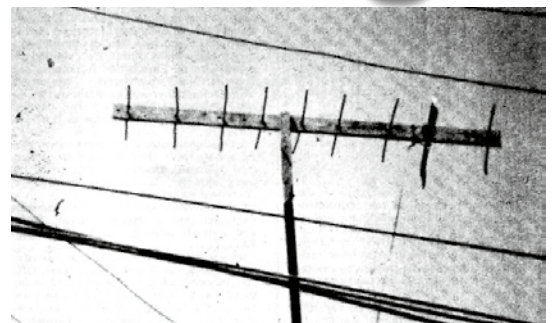
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30 Years Ago

Selfmade
Antenna
seen in
Albania



Radio-TV Werbung in Skandinavien

Während im übrigen Europa Rundfunkwerbung zum Alltagsbild gehört, sind in fast allen skandinavischen Ländern Radio und Fernsehen noch reklamefrei. Aber auch dort hat die Diskussion über die Einführung von Werbung an Schärfe zugenommen. Im Folgenden geben wir einen Überblick über die Situation in den einzelnen Ländern; im nächsten Heft wird unser Skandinavien-Korrespondent Per Erikson über das finnische kommerzielle Fernsehen Mainos-TV berichten sowie über einen Versuch mit Reklameradio in Schweden.

Dänemark

Keine Werbung bei Danmarks Radio, dem staatlichen Rundfunk und Fernsehen. An just der Frage Werbung ja oder nein scheiterte bisher eine Einigung im dänischen Parlament über die Einführung eines zweiten, landesweiten TV-Programms (TV-2), das die regierenden Christdemokraten durch Werbung finanziert sehen möchten. Dem haben sich die oppositionellen Sozialdemokraten bisher strikt widersetzt. Die Antireklamefront beginnt sich allerdings langsam aufzulösen, sodaß das künftige TV-2 wohl doch reklamefinanziert sein wird.

Auch die Programme der neuen unabhängigen lokalen Radio- und TV-Sender müssen laut Gesetz reklamefrei sein. Einige Betreiber versuchen aber mehr oder weniger bewußt bis in eine Grauzone vorzustoßen, um die Parteien zu einer Stellungnahme zu bewegen.

Färöer

Bisher keine Werbung weder im Radio (Útvarp Føroya) noch im jetzt gut ein halbes Jahr alten Fernsehen (Sjónvarp Føroya).

Finnland

Bei Yleisradio, dem nationalen finnischen Rundfunk gibt es keine Werbung im Radio oder Fernsehen. Im Unterschied zu den übrigen skandinavischen Ländern gibt es in Finnland jedoch eine kommerzielle Fernsehgesellschaft, Mainos TV. Sie verfügt nicht über ein eigenes Fernsehnetz, sondern mietet Sendezeit auf dem YLE-Netz an.

Die unabhängigen Lokalradios, die in Kürze den Betrieb aufnehmen werden, dürfen

in ihren Programmen Werbung ausstrahlen. Die Werbezeit darf 10% der Gesamtsendezeit nicht überschreiten.

Island

Island ist das einzige nordische Land, in dem es seit langem Hörfunk- und Fernsehwerbung gibt, bei RUV, dem staatlichen isländischen Rundfunk. Darüberhinaus ist ein neues Rundfunkgesetz in Vorbereitung, das die Einrichtung privater, kommerzieller Sender vorsieht.

Norwegen

Bei NRK, dem norwegischen Rundfunk, gibt es weder im Radio noch im Fernsehen Werbung, und auch nicht bei den unabhängigen Nærradios. Eine Medienkommission des norwegischen Parlaments hat sich für Werbung in einem zukünftigen zweiten TV-Programm ausgesprochen, sowie für Werbung auch im Nærradio.

Schweden

Auch in Schweden gibt es bisher keine Radio- oder Fernsehwerbung, auch nicht bei den Nærradios. Eine gewisse Ausnahme bilden die Kabelnetze (das gleiche gilt auch für Norwegen und Finnland), in denen es zumindest Fremdreklame gibt durch das Heranführen von Satellitenprogrammen wie Sky Channel u.ä. Die Diskussion über insbesondere Fernsehwerbung hat in Schweden in den letzten Jahren hohe Wellen geschlagen, ohne jedoch bisher zu konkreten Ergebnissen geführt zu haben. Zumindest in nächster Zukunft will man zunächst einmal der Einführung von Pay-TV den Vorrang vor Werbung geben.

□ BT

Hobby

TAV-Titelfoto DX-Anlagenvorstellung

"DXer's Traum": TAV-Leser Johann Rebsbach stellt seine Super-Empfangsanlage vor.

"Nachdem schon etliche Antennen-Empfangsanlagen in TAV gezeigt wurden, möchte ich meine bescheidene DX Empfangs Station vorstellen. Sie befindet sich 136m ü. NN.

Der vierteilige Gittermast mit Motor, der teleskopartig von 9,50m auf 34,0m ausfahrbar ist, ist mit folgenden Antennen bestückt (von oben nach unten):

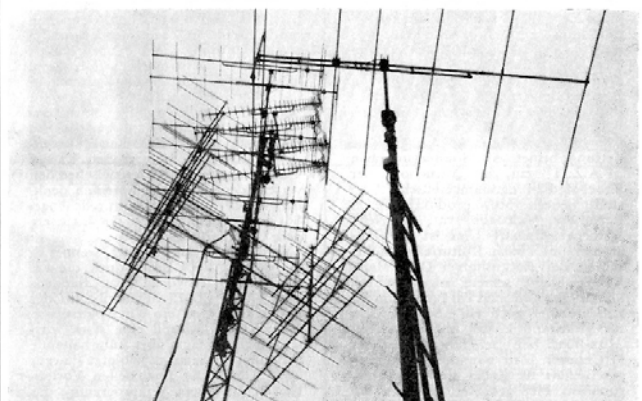
Für den UHF-Bereich eine Vierer-Gruppe von Kathrein AOT 165 auf Rotor; im VHF-Bereich vier Antennen von Astro für Kanal E-7 (für "RTL-Plus"); für VHF vier Kathrein-Antennen nebeneinander für die Kanäle 5 bis 8; für den UKW-Bereich vier US-18 An-

tennen von Stolle, das Ganze auf Rotor.

Außerdem noch einen 14m hohen Mast mit einer Antenne für Band-I Kanal 2 von Astro, auch auf Rotor.

Als Fernseher benutze ich je ein Philips und Grundig Mehr-Normengerät, für UKW Empfang einen SABA 9241 mit Bandbreiten-Umschaltung. Zusätzlich kann ich mit einem Drake R7 und 20m Draht auf der "kurzen" Welle ganz gut hören sowie auf 23 und 70cm hören und sehen."

Die Anlage ist von:
Johann Rebsbach
Huescheider Str. 48
D-5090 Leverkusen 31



Mehr Aufwand kann man schon gar nicht mehr treiben: Super-Fernempfangsanlage von TAV-Leser Johann Rebsbach aus Leverkusen.
Foto: Johann Rebsbach, Leverkusen

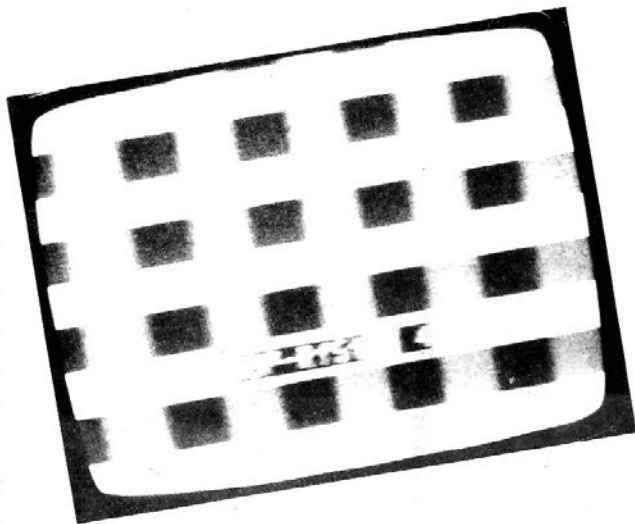
Bilder aus Berlin

Fernsehen in Berlin, das macht Spaß, da ist was los. Soviel Abwechslung wie die Berliner Fernsehszene findet man so schnell nicht woanders.

Zu den Fotos: Das große Foto unten ist die Auflösung eines mysteriösen Senders, der lange Zeit unerkannt sein Unwesen trieb: auf den Kanälen E10 und E12 waren bisweilen tagelange Ausstrahlungen von Karomustern zu sehen (siehe Berlin-Bericht in TAV-16, S.16). Das total verrauschte Bild konnte durch extrem lange Belichtung „verdeutlicht“ werden: Bei 5 Sekunden Belichtung wird die Einblendung sichtbar: „DBP RfSt 4“. Die „Richtfunk-Stelle 4“ der Deutschen Bundespost ist's.

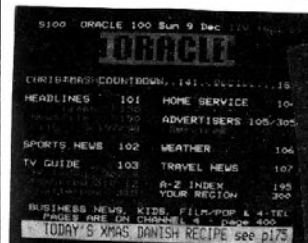
Zu den Fotos auf der rechten Seite: Die oberen beiden Bilder zeigen die neue Identifikation des französischen Armeesenders in Berlin, tfb, darunter eine Sample-Seite aus dem Oracle-Videotext, wie es vom Berliner BFBS-Sender ausgestrahlt wird. Daneben eine Mitteilung des DDR-Fernsehens. Die letzten beiden Bilder sehen gar nicht so aus, als ob sie in Berlin empfangen worden wären, sie sind es aber, links das FuBK-Testbild ohne Kreis des HR mit der neuen großformatigen Einblendung. Das letzte Bild war auch das „letzte“: „Fernseh Umsetzer Hameln (K5) ab 4. September 1984 ausser Betrieb!“ lautet der eingeblendete Text: „Bitte schon jetzt auf K12 (Standort Klüturm) umstellen.“ Wird gemacht.

Foto unten: Peter Damsat; alle Fotos rechts: Jürgen Klassen, beide Berlin

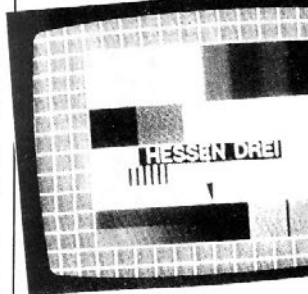


34

27 1985 TELE-audiovision



Die Sendungen des Fernsehens der DDR - 1. Programm über den Sender Berlin, Kanal 5, werden morgen wegen Antennearbeit bis gegen 18 Uhr über Kanal 27 gesendet.



TELE-audiovision 27 1985

35

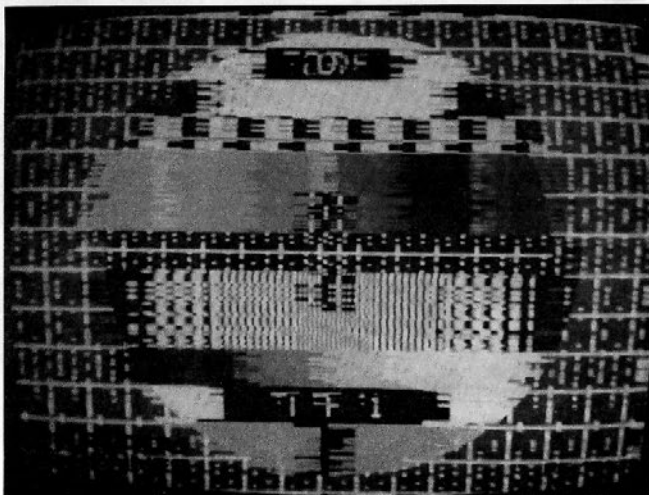
Canal Plus

Das kommerzielle 4. Programm Frankreichs

Als im November 1984 in Frankreich die Sender für Canal Plus ihr Programm aufnehmen, gab es vielerorts Enttäuschungen. Manche der Zuschauer waren vom Scrambling überrascht, andere hatten sich zwar rechtzeitig einen Descrambler geleast, lagen aber nicht im Sendegebiet. Andere wiederum verfügten bei ihrem Fernsehgerät nicht über ein VHF-Teil, was in Frankreich jahrelang wegen der dort ausgestrahlten 819-Zeilen-Norm nicht gebräuchlich wurde. Und hatten die TV-Geräte ein VHF-Teil, so verarbeiteten diese eben die 819 Zeilen-

Norm und waren damit für Canal Plus ebenfalls unbrauchbar. Da sich auf VHF lange Zeit also nichts abgespielt hatte, fehlte es im Handel auch an den VHF-Antennen mit samt den Weichen. Ein schwerer Start für das neue Programm.

Wohl aus Copyright-Gründen wird ausländischen Zuschauern kein Descrambler geliefert. Diese bekommen das Bild nur verschlüsselt auf ihren Schirm. Es werden sowohl der Ton wie das Bild verschlüsselt. Der Ton wird nach französischer Norm in Amplitudenmodulation ausgestrahlt,



Das schaut ja herrlich aus, lauter Pünktchen. Das soll Fernsehen sein? Es ist. So sieht der Pay-TV-Kanal „Canal Plus“ mit seinem PM5544-Testbild aus, wenn er ohne Descrambler empfangen wird. alle Fotos: Pierre Godou, Rennes (Frankreich)

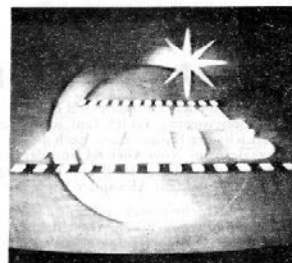
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27 1985 TELE-audiovision

TV-Sender

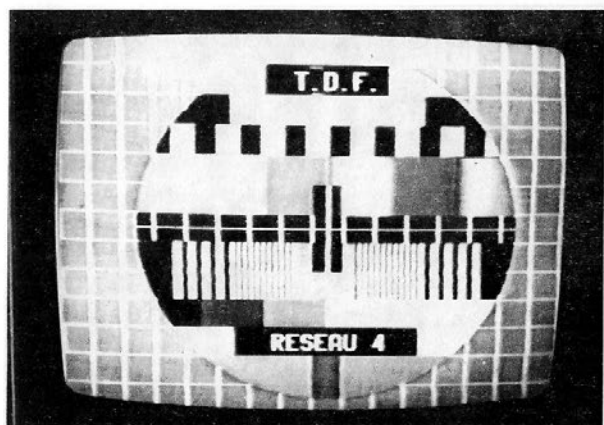
so auch bei Canal Plus. Jedoch wird vom Sender her der Träger unterdrückt, ein normales TV-Gerät produziert daher nur ein knatterndes Rauschen. Ein Descrambler liefert den notwendigen Träger. Er liegt auf 12,8 kHz. Diese schon sehr niedrige Frequenz resultiert aus der Zeilenfrequenz, die bei 15626 kHz liegt. Multipliziert mit 512 (= 2 hoch 9) bekommt man 8 MHz. Dies durch 625 geteilt, ergibt 12,8 kHz. Eine derartige Teilerei kann man sehr leicht mit IC's realisieren; der Tonempfang ist also auch ohne Descrambler aber mit Bastelkenntnissen möglich.

Komplizierter ist der Video-Schlüssel zu knacken. Jede Zeile wird gemäß Verschlüsselung individuell zeitversetzt, um 0, 1 oder 2 Mikroskunden. Dies geschieht nach einer Art Zufallsprinzip, nach sechs Bildern scheint sich der Rhythmus zu wiederholen. Canal Plus ist aber auch ohne Dis-



crambler zu sehen, die ID wird groß genug eingeblendet. Vielleicht sieht das Bild auch bei den Zuschauern mit Descrambler bisweilen so aus, dann nämlich, wenn Überreichweiten auf Band-I die Mattscheibe flimmern lassen. ...

Rainer Bärmann, Karlsruhe



Canal Plus mit Descrambler.

TELE-audiovision 27 1985

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LH
80 CM OVAL OFFSET DISH

Antennen von Lanson Heath sind für erstklassige Arbeitsweise und lange Lebensdauer konstruiert. Der Polarmount ist von robuster Bauweise aus feuerverzinktem Formstahl. Der Aluminiumspiegel ist nach wissenschaftlichen Erkenntnissen in eine exakte Parabolform gebracht und arbeitet daher mit größtmöglichem Wirkungsgrad. Die Empfangseinheit wurde mittels CAD entwickelt, um eine perfekte Arbeitsweise zu gewährleisten. Berücksichtigen Sie 'Lanson Heath' für Ihre Hochleistungssysteme.

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Zubehör

Multifeedhalter

Polarmount

Technische Daten	
Spiegelgröße	: 85 cm (80 x 86)
Material	: Aluminium (1.9mm)
Oberfläche	: pulverbeschichtet
Bauart	: Offset (22°)
Empfangsbereich	: 10.7 - 12.8 GHz
Gewinn	: 10.95 GHz (38.00 dB) 11.40 GHz (38.35 dB) 12.40 GHz (39.00 dB)
Halterung	: AZ/EL oder Polarmount
Material	: Stahl (2 mm)
Oberfläche	: galvanisch verzinkt
Maxtdurchmesser	: 40 - 63 mm
Feedhalter	: 23 + 40 mm (Option 60 mm)
Windlast	: max. 160 Km/h
Gewicht	: 7 Kg



Messebericht
in Bildern



Kecskemét, Ungarn
vom 27.-29.10.94



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SPECIFICATIONS

MODEL	GES 60 OF
Type	Offset
Offset Angle	28°
Aperture Diameter	60 cm
Reception Frequency	10.70 - 12.75 GHz
Antenna Gain (Ku-Band)	35 dB - 37 dB
Material	Galvanized Steel
Finish Coat	Polyester Powder Coating
Color	Grey (RAL-7035)
Small Axis Diameter	60 cm
Long Axis Diameter	66 cm
LNB Holder	23 - 40 mm
F/D	0.5
Operating Temperature	-40° - +60°
Operation Wind	90 km/h
Survival Wind	150 km/h

AE 456
GW 645T
WB 455



85 cm. (87x97) Offset Antenna

SPECIFICATIONS

MODEL	GES 85 OF
Type	Offset
Offset Angle	26°
Aperture Diameter	87 cm
Reception Frequency	10.70 - 12.75 GHz
Antenna Gain (Ku-Band)	38.9 dB - 39.8 dB
Material	Galvanized Steel
Finish Coat	Polyester Powder Coating
Color	Grey (RAL-7035)
Small Axis Diameter	87 cm
Long Axis Diameter	97 cm
LNB Holder	23 - 40 mm
F/D	0.5
Operating Temperature	-40° - +60°
Operation Wind	90 km/h
Survival Wind	150 km/h

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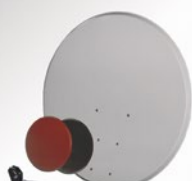
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#	1501	1503	1505	1507
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