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INTERNATIONAL



Test Report

HAENLEIN

Ralf Haenlein is the
Receiver Video Recording
Software Specialist



Test Report

TBS QBOX

James Liu's All-in-one Satellite
Box Really Does Receive
Everything that is Digital



Company Report

RT-RK

Vukota Pekovic Offers State-
of-the-art Turnkey Solutions
for Digital TV Receiver Testing



Test Report

MAXING

MX-OCS12

Bob Zheng Squeezes Two
Ku Sub-bands into One Cable

Test Report

CableWorld CW-4412



Encoder
for all
Seasons



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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
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- HTML5 Playback and PlayReady/Widevine DRM
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Panodic Electric (ShenZhen) Limited

High Tech Office: 12/F, Greentech Building, Keji.C. Road 3rd Hi-Tech Industrial Park, Nanshan District, Shenzhen, P.R.China

Factory: C/D Block, Zhengchangda Ind. Park, Jian'an Road, Tangwei, Fu Yong, Baoan Dist., Shenzhen, China

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

Panodic Electric (Hong Kong) Limited

Headquarter: Unit 1703A, 17/F, Nanyang Plaza, 57 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Tel: +852 2951 4538 Fax: +852 2951 4738 Email: market@micoelectric.com

www.panodic.com



**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,

Preparing TV channels for distribution is becoming an increasingly straightforward task. Remember the time when all settings and adjustments had to be performed directly at the output device? No more! This issue of TELE-audiovision looks at the latest generation of encoders that can be accessed and programmed right through the Internet. The deal gets even better when those encoders can handle more than one reception method and thus can be used almost universally. In a nutshell, encoders hitting the market these days are not only convenient to operate and to customise, they also can be used for a wider range of applications than ever before.

What's even better is that those added features and capabilities won't break the bank, since prices keep coming down as well. As a very pleasant consequence, those innovative encoders now get into the reach of smaller-scale cable operators or even private individuals contemplating their own Internet TV channel. In the latter case, a wide range of accepted input signals is paramount, including older technologies such as analog video, for example. Corporate use might well be another

field of application for state-of-the-art and cost-efficient encoders, as they present an easy tool for making your own screen content available to colleagues and workplaces across the entire company intranet, to give just one example.

As you can see, encoders can be put to many uses, and the scope of application is really only limited by one's imagination and creativity. Devices that used to be restricted to the professional realm until very recently are now reaching users and segments that had never even thought about all those brilliant technical possibilities in the past.

Isn't it wonderful how state-of-the-art technology is becoming ever more versatile and affordable?

Alexander Wiese

Editor-in-Chief TELE-audiovision Magazine



Address TELE-audiovision Magazine, PO Box 1234, 85766 Munich-Ufg, GERMANY/EUROPE

Editor-in-Chief Alexander Wiese, alex@tavmag.com

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TELE-audiovision is seen by more than 350,000 digital tv professionals around the world.

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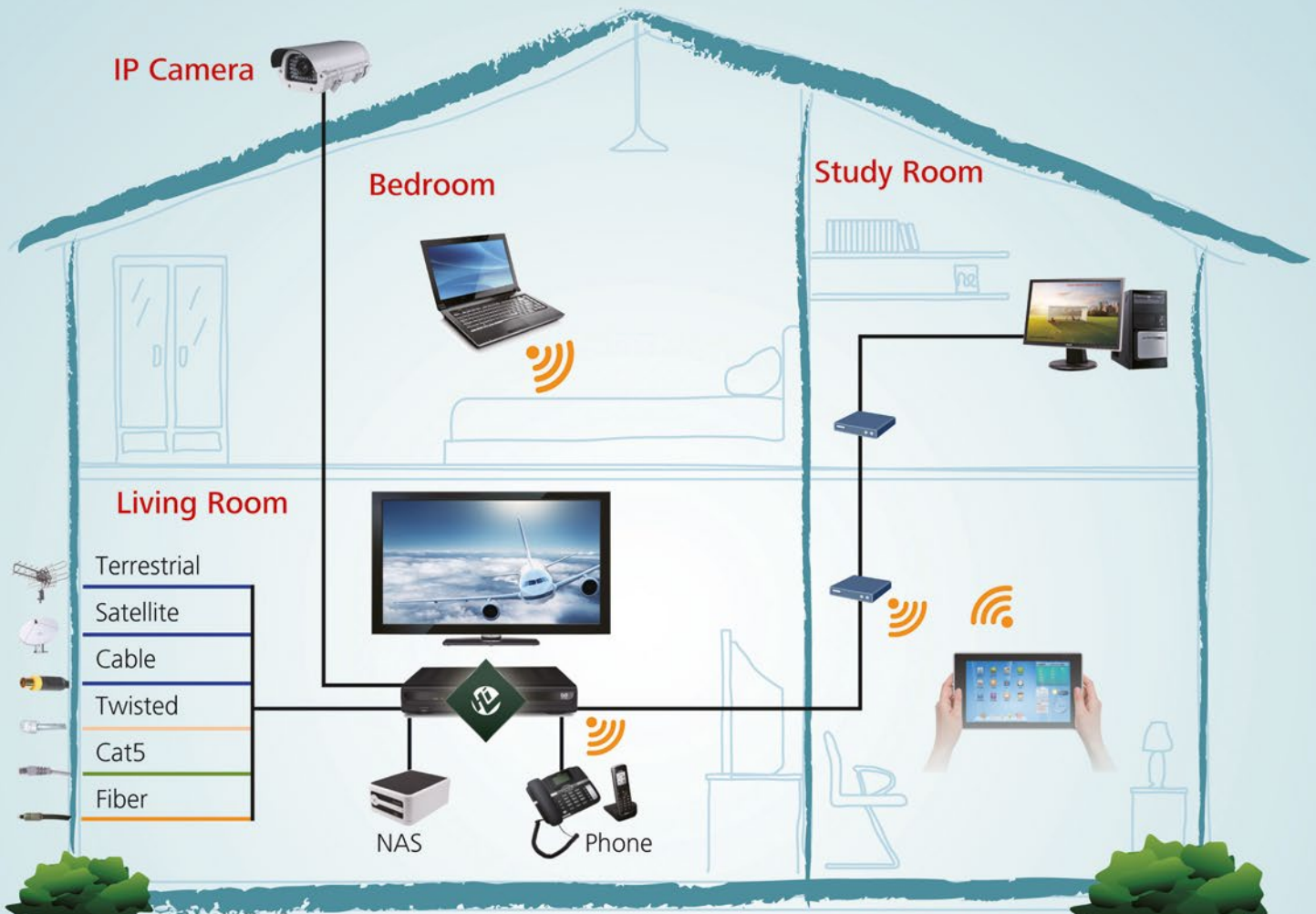
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Hisilicon

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

Sumavision Product

All DTV Head-end Devices
Support DVB-C, DVB-T/T2, DVB-S/S2, IPTV, Mobile TV
Most Advanced Technologies
Multi-Function Combination
High Density and Low Power Consumption

Enhanced Multimedia Router(EMR)

- 1U chassis card-insertion structure(6 slots)
- Embedded EPG generator
- Ultra low bitrate HD encoding
- Low latency and 4:2:2 10 bit HD encoding
- Multi-Format encoding: SD/HD, MPEG2/H.264
- Transcoding between MPEG2 and H.264
- DVB-C/S/S2/T/T2 signal receiving and modulating
- ASI input and output
- GbE IP input and output, 4G throughput capacity
- Massive internal multiplexing, 8.5G processing ability
- Embedded scrambling module
- Web network management



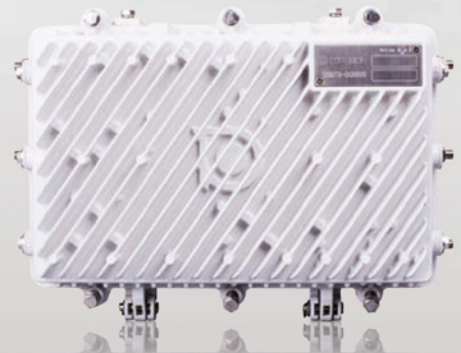
Android+OTT STB

- CAS/DRM ready, Content Protection
- VOD & Live TV
- Multi-Screen Interaction
- Fully Open Internet and OTT Content Access
- TV Application Market, Thousands of Android Applications on TV



E²CMTS

- Compatible with DOCSIS 3.0, DOCSIS 2.0, Euro-DOCSIS, C-DOCSIS
- 16 downstream channels for 800Mbps, 4 upstream channels for 160Mbps
- Support up to 500 CMs
- Network adaptability
- Outdoor design
- Plug and Play, intelligent configuration



Contact Us

SUMAVISION TECHNOLOGIES CO.,LTD
Tel: +86 10 82345859/69/70
Fax: +86 10 62978800

Email: worldmarket@sumavision.com
Website: www.sumavision.com

Global Headquarters: Sumavision Plaza, 15 Kaituo Road,
Haidian District, 10085, Beijing, China

CABLEWORLD CW-4412

MPEG-4 Encoder Duo 14



TENOW
TBS QBOX 5925
USB Receiver
for MIS 40



MAXING ELECTRONIC
TECHNOLOGY
MX-OCS12
One Cable LNB 50



TRIAX
TSS400
Satellite-IP
Converter... 56

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

AWARD Winning:
Digital Receivers of 21st Century 70

AWARD Winning:
Signal Analyzers of 21st Century 78

Test Report:
DVR-Studio HD 3 84

Feature:
AVS2 - New Standard 94

Digital Technology:
New Developments 98

Company Report:
Digital TV Shop Aling,
Shenzhen, China 104

Company Report:
Software Developer, RT-RK, Serbia..... 112

Global Company Directory:
The Decision Makers in
Worldwide Digital TV Industry 128

Satellite DXer Overview:
Hall of Fame of Satellite
Enthusiasts of the World..... 142

TELE-audiovision History:
TELE-audiovision in 1994..... 158

TELE-audiovision History:
TELE-audiovision in 2004..... 160



Video Software 84



A New Video Coding Standard 94



Digital TV Shop Aling 104



Software Developer 112

CHANGHONG

Professional in STB

CREATING EASY LIFE



Smart Center Box

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



Products & Technologies

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

Company Profile

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



MHEG-5



NDS Core



m@p

SICHUAN CHANGHONG NETWORK TECHNOLOGIES CO.,LTD

ADD:35,East Mianxing Road,High-tech Park,Mianyang,Sichuan,China

Tel:0086-816-2410305 Fax:0086-816-2417040 Zipcode:621000

Http://www.changhong-network.com

E-mail:stbinfo@changhong.com

ALUOSAT	China	77	JIUZHOU	China	164
ALUOSAT-YAGI	China	97	JEZETEK	China	164
ASIATVRO	China	153	JONSA	Taiwan	93
AUDOLICI	Portugal	131	MAXINGCO	China	35
AZURESHINE	Taiwan	27	MFC	USA	47
B-MAGA	Japan	141	MICO	China	2
BSD	Brazil	155, 157	MKTECH	China	9
CABLEWORLD	Hungary	59	PANODIC	China	2
CABSAT2015	Dubai	139	PERFECTVISION	USA	87
CCBN2015	China	137	ROHDE&SCHWARZ	Germany	163
CES2015	USA	133	ROKS-TV	Ukraine	151
CHANGHONG	China	7	SARFTNET	China	157
COSMOSAT	Argentina	119	SATBEAMS	Belgium	153
DEVISER	China	31, 149	SAT-IMPEX	Germany	65
DEKTEC	Netherlands	67	SAT-LINK	China	17
DIGITALTELEMEDIA	China	164	SES	Luxembourg	121
DISHTUNING	India	155	SICHUANJIUZHOU	China	164
DVBCN	China	145	SPAUN	Germany	145, 147, 149
FERNSEHSEE	Germany	109	SPAUN ELECTRONIC	Germany	91
FRAUNHOFER	Germany	109	SUMAVISION	China	5
GIGABLUE	Germany	65	TEKNIKSAT	Turkey	151
GLOBALINVACOM	UK	25	TENOW	China	147
GOTECH	China	9	TIANDITONG	China	43
HISILICON	China	4	TITANIUM SATELLITE	USA	19
HORIZON	UK	53, 76	TSINGHWA	China	115
INTERBEE2014	Japan	135	UGODISK	China	127

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

TELE-audiovision Magazine is the #1 Digital TV Industry Publication for 34 years - and we continue to expand!

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- Distributors
- Dealers
- Wholesalers
- Installers
- End Consumers
- Content Providers
- Networks

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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



MKTECH
Gotech International Technology Ltd

66 Yongda Road, Hongqi, Jinwan District, Zhuhai 519090 P.R. China
Tel: +86-756-6905 884 Fax: +86-756-6801 798 E-mail: info@gotechcn.com

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Broadcast Asia 2014



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*Published in
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Arabic
العربية



Bahasa
Indonesia



German
deutsch



English



Spanish
español



French
française



Italian
italiano

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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INNOVATION PRODUCTS LEADING INTO



AWARD

THE FUTURE

INNOVATION
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AWARD MAGAZINE



CableWorld CW-4412



- *two independent MPEG-4 encoders*
- *analog and digital inputs for all standard source signals*
- *ASI and IP outputs*
- *controllable with dedicated Windows software or via web browser*
- *status LEDs indicate current operating mode*
- *professional design for 24/7 operation*

MPEG-4 Encoder Duo



MPEG-4 Conversion in Real-time

When it comes to efficient transmission of digital video signals, MPEG-4 is THE established standard these days. But then again, head-ends are still frequently faced with analog source signals or digital signals that have been compressed using MPEG-2. If those signals need to be provided in DVB-S/S2, DVB-C/C2 or DVB-T/T2 modulations, there is no way around converting them into the MPEG-4 format – in real-time!

And we're not only talking country-wide cable networks, mind you! Even small-scale applications such as a limited offering of TV channels via DVB-C or DVB-T in hotels or hospitals use MPEG-4 as state-of-the-art compression format, since it handles signals much more efficiently and therefore is able to transmit more channels with better quality on the same number of available transponders. Given this fact, it does not make sense any more to throw money af-

ter MPEG-2.

While this sounds reasonable enough in theory, the real world poses a number of challenges. What if devices such as cameras or reception equipment are not yet capable of directly processing MPEG-4 signals? Of course, it's always possible to replace existing technology with new state-of-the-art equipment, but this involves considerable amounts of money. Opting for an MPEG-4 decoder instead does away with the need for such a major investment.

Or you may simply want to feed signals from MPEG-2 transponders into your local MPEG-4 network. Here, too, an MPEG-4 decoder is an efficient solution.

Or what if you need to distribute the content of your PC monitor to a number of workplaces in order to present animations or simulations in real-time? Once again, an MPEG-4 decoder will get you there without a lot of hassle.

So here we are, presenting to you a device that will solve all those problems. It's called CW-4412 and comes from CableWorld, a company focusing on developing and manufacturing professional digital equipment such as receivers, modulators, signal meters, transport stream generators, analysers, multiplexers, converters as well as MPEG decoders and encoders. CableWorld has been in business for more than 20 years now and its product

portfolio has been growing impressively.

CableWorld has four different MPEG-4 encoders on offer, all of which belong the same product family:

CW-4411: single H.264 encoder with ASI and IP outputs

CW-4412: two H.264 encoders with ASI and IP outputs

CW-4511: single H.264 encoder with IP output

CW-4512: two H.264 encoders with IP output

All of these four models come with the same encoder type and an identical front-end. This makes for remarkable ease of operation since all encoders feature the same user interface. It is thus possible to obtain differently equipped encoders



SATLINK

Digital Satellite Meter

WS-6936

DVB-T&S COMBO METER WITH SPECTRUM



DVB-S Spectrum:

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

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

DVB-T Spectrum:

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

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

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



WS-6909
DVB-T&S COMBO METER



WS-6918P
DVB-S2 Satellite Finder Meter



WS-6932
HD Satellite Finder Meter

SATLINK**SATLINK TECHNOLOGY CO., LIMITED**

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

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

E-mail: dp02@baotong.cc

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

that meet precise requirements without technicians having to familiarise themselves with new control interfaces for each device.

All used encoders are compatible with H.264 (MPEG-4 Part 10 AVC according to ISO / IEC 14496-10) and can create streams with either CBR (constant bit rate) or VBR (variable bit rate), depending on the configuration of the device. MPEG-4 Part 10 can easily be called the most popular format for video compression today and has become the established standard for recording and distributing video content.

For our in-depth test the CW-4412 variant was shipped to the TELE-audiovision Test Center. The device is packaged inside a sturdy cardboard, which makes sure it arrives at its destination in mint condition. Apart from the encoder itself and the power cable there were only two sheets of paper inside the box: One contained the operating manual in English, the other one featured instructions for the web interface.

Both texts are rather concise and only provide essential steps for operation: The CW-4412 can either be controlled via Windows software or directly through its web interface from any web browser. The default IP addresses for accessing the encoder are also given in the instructions.

With its white rack-sized case the CW-4412 looks just as unpretentious as the instruction manual: The only physical control element is an On/Off switch on the back panel of the encoder. What the back panel does feature, however, is an abundance of connection options. Owing to the fact that the CW-4412 is capable of simultaneously compressing

two independent input signals into the MPEG-4 format we have two connection interfaces each for SDI, component video (YUV), composite video and HDMI. As far as outputs are concerned this encoder sports a total of four ASI outputs, which means there are two ASI sockets for each of the two encoders. Two USB ports – again, one for each encoder – are available for firmware updates.

Turning to the front panel, we find 10 LEDs which indicate the encoders' current operating mode. Divided into three sections, 4 LEDs on the left refer to encoder 1 (Input 1, BUSY, HD and ERROR), 4 LEDs on the right do the same for encoder 2, while the middle section indicates the following general states: LINK, ACT, PWR and FIBER.

With the clear labelling of those LEDs, their purpose is more or less self-explanatory:

INPUT 1 and INPUT 2: These two LEDs indicate whether or not a signal is fed into the encoders.

BUSY: A slowly flashing LED indicates that new firmware is being loaded. If the LED flashes in short intervals, this indicates that process parameters are loaded by the computer. In both cases the MPEG-4 compression routine is temporarily stopped. In general, however, such interruptions do not last longer than 1 or 2 seconds.

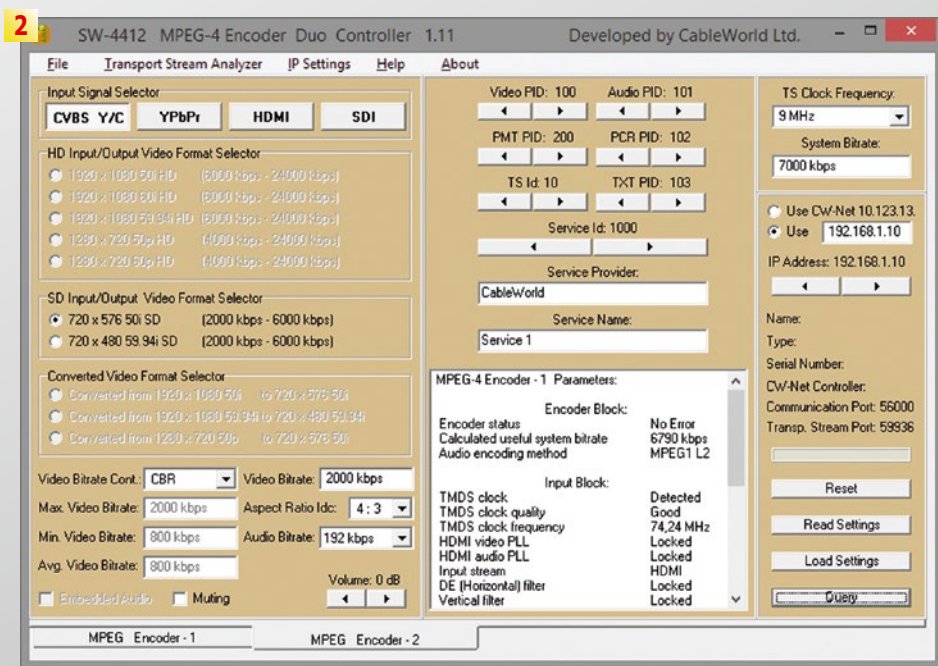
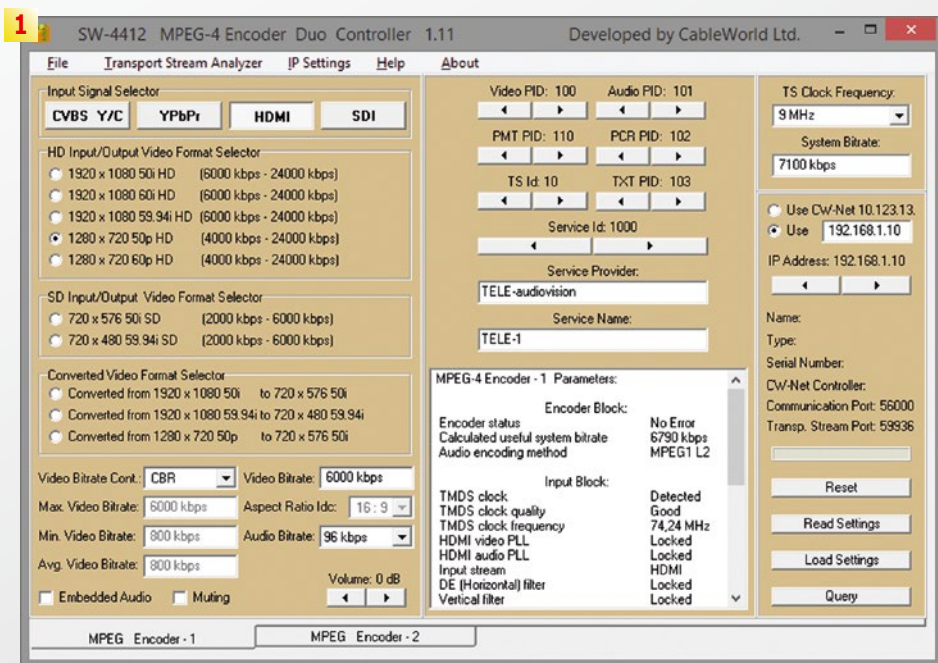
HD: Lights up whenever an HD signal is available from the encoder input.

ERROR: In case an error occurs during the encoding process this LED will light up. This can happen if the process

SW-4412

1. This application allows to configure the input signal on the CW-4412 encoder. You can convert high resolution signals to lower resolution signals. Also, it is possible to select if a constant bit rate (CBR) or a variable bit rate (VBR) should be used. The latter can be used to decrease the summed bit rate of a transport stream containing many channels: in average different channels rarely have high bit rate requirements in the same moment in time, which helps keeping the overall transport stream bit rate low. To use the VBR option, different interdependent parameters have to be specified. Fortunately, the CW-4412 will let you know instantly if they make sense and suggest how to calculate correct values – this will help you save the time of digging out reference manuals. Another important set of configurable parameters that include the Service Provider and Service Name and the allocated Video, Audio, PMT, PCR, TS and TXT PID's.

2. Clicking on the MPEG Encoder -2 tab will simply open the exact same set of parameters for the second encoder of the CW-4412. In fact, the CW-4412 acts as two independent MPEG-4 encoders, which just happen to share the same case, power supply and operational frontend.





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parameters are incorrect. To prevent a total failure of the compression sequence the encoder attempts an automatic reset. In actual fact, this is by far the easiest and frequently most efficient trouble shooting method available. After all, who hasn't been asked by support staff "Have you tried turning it OFF and ON again?" Come to think of it, why don't all electronic devices behave like that?

LINK: This LED indicates that a network cable is connected to the IP output.

ACT: Each outgoing data packet prompts this LED to flash, just like with network switches.

PWR: This LED becomes active as soon as the device is switched on and powered.

FIBER: As soon as a fibre-optic cable is attached to the device this status LED lights up. The FIBER interface is available as an option and our test encoder was not equipped with one.

The 10 LEDs do a tremendous job in always keeping you informed about the current status of the encoder. A short glimpse is all you need to find out if an error has occurred. We cannot praise this feature highly enough, because we

know that in most cases technicians have no end of other tasks to take care of, so they'll appreciate that there's no need to dig into several layers of status menus to see what's going on. A quick look must do. And with the CW-4412 it actually does.

The only way to operate and control the CW-4412 is from a PC, which is why we started out with visiting the manufacturer's website at <http://www.cableworld.eu> to download the required software. Some may wonder why essential software is not provided on CD or DVD any longer, but these days manufacturers can reasonably assume that buyers of their products have Internet access, and this way the latest software release can be made available at any point in time. If our opinion is anything to go by,

that's the only way to go in this day and age. But we digress...

In our case it was not even necessary to download new software, since the test unit came with the latest firmware release which cannot only be controlled with specially developed PC software but also through the newly integrated web interface, which can be accessed from any standard web browser. We tried out Internet Explorer, Firefox and Chrome and found no fault with any of them. All can be used to set up and control the CW-4412 as required.

There's only one little downer that we should not keep secret: Current smartphones and tablets cannot be used to control the CW-4412 because Java Runtime – which would be essential for that – is lacking. In addition, the imple-

SW-4901

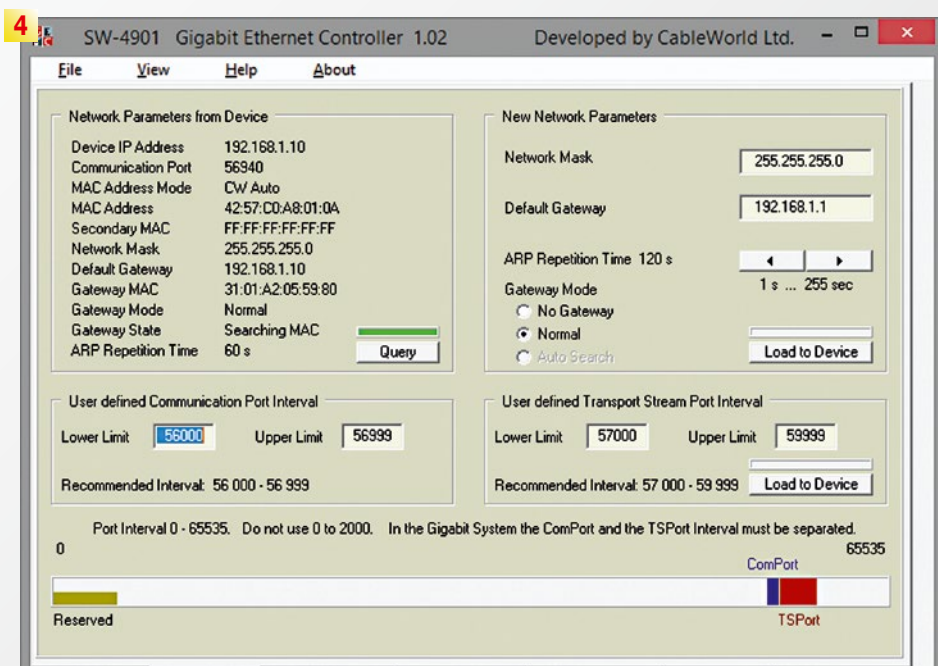
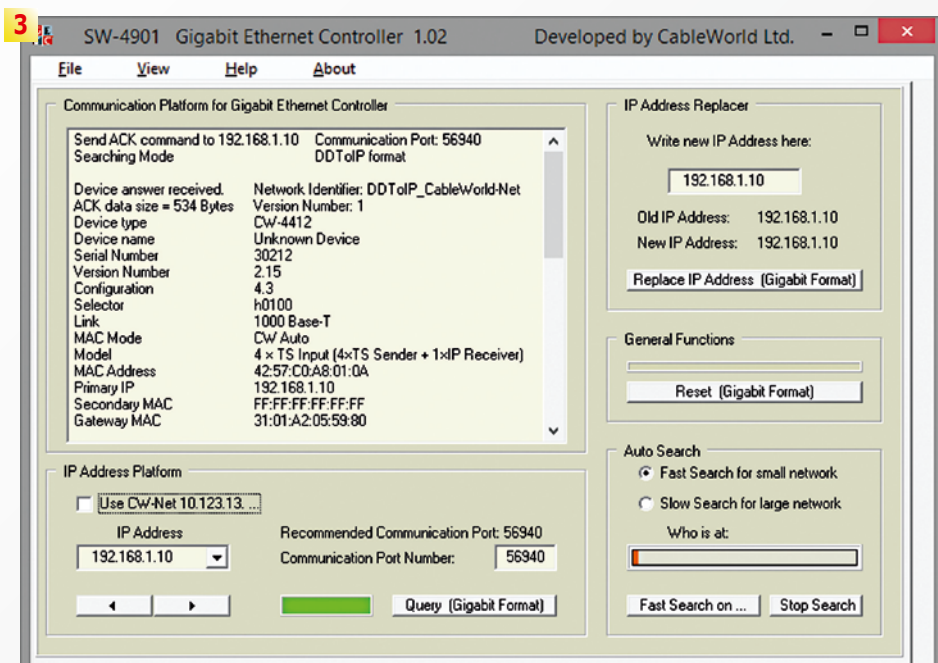
3. The SW-4901 software is a generic application for CableWorld devices. It can be used to configure every networking aspect of the CW-4412, including the IP streaming options. The SW-4901 application is very structured and the first tab will simply allow the user to configure the correct IP address to establish the communication link to the device. The Query button will then test if such connection has been established and lists a sum-up of the device. If you don't remember what the correct IP address is, don't be ashamed – it happens to all of us. CableWorld included a neat Search function, which will detect the device in the network.

4. The second tab allows setting up the network: which ports are to be used for management and streaming and, of course, you can set the desired IP address of the CW-4412.

5. The IP Receiver Platform tab is of no use for the CW-4412 and can be ignored for this device. It allows setting up incoming IP Transport Streams.

6. It is the TS Sender Platform tab, which has to be configured, in case IP output is desired on the CW-4412. Because the CW-4412 has two independent encoders, the two upper groups, Transport Stream Sender 1 and 2 are to be used. Configuration is extremely self-explanatory, as all required fields are presented with corresponding names. If you want quick results, just hit the Send TS button, as all pre-established values are perfectly reasonable. You may want to change from "Send TS to Multicast" to "Send TS to IP", in case Unicast is needed.

7. The Schematic Diagram tab shows a picture explaining the common setup and the last two tabs for Special Settings and the SW-4800 Controller are best left for CableWorld engineers, in case there is a problem with the networking module.



mented Java application is not signed.

Of course this did not keep up us from giving the encoder a quick try right away. We simply connected an Xbox 360 to the CW-4412 via HDMI and distributed the encoded stream via multiplex on our local network. Did it work? Just like that? It actually did, and we could flawlessly receive and process the stream with the TSReader and VLC applications. Our first conclusion: Using the CW-4412 is child's play and self-explanatory.

Encouraged by this initial success we went about experimenting with different bit rate settings in order to evaluate their impact on the video quality.

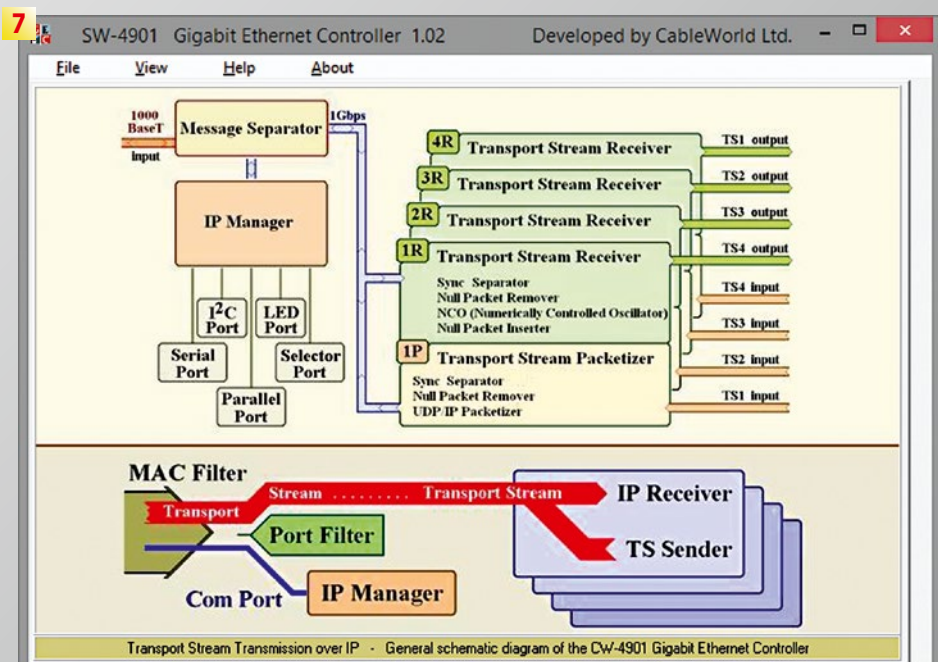
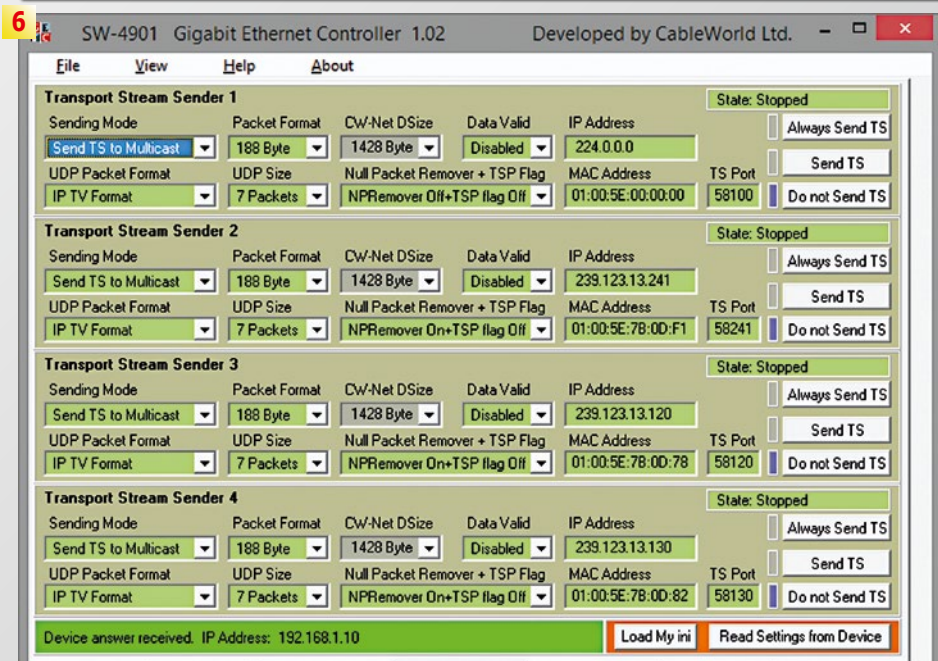
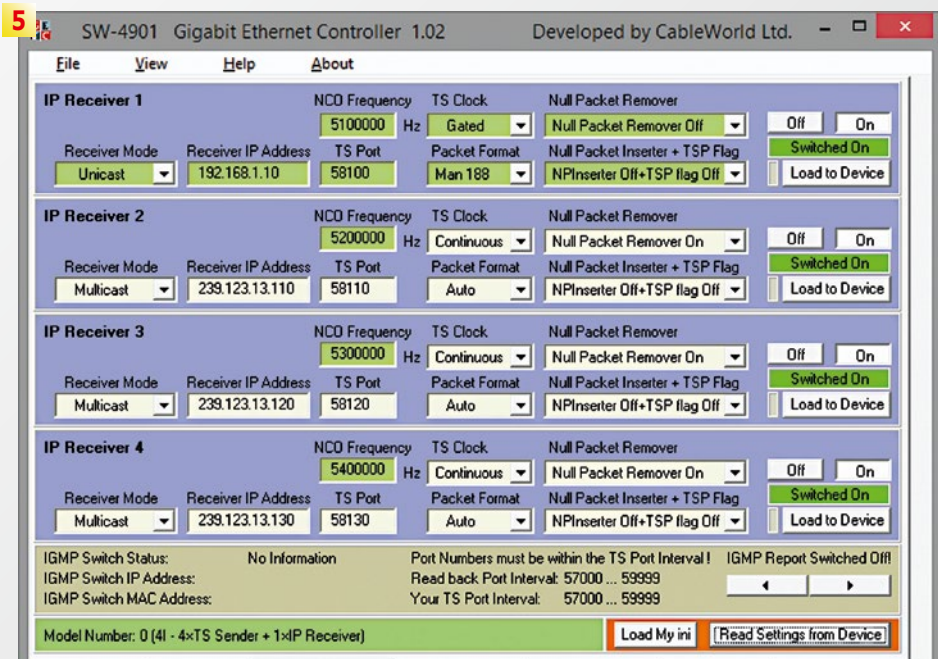
Then we proceeded with feeding a number of different signals to the CW-4412, ranging from analog camcorder to rarely used HDMI resolutions, only to find out that the encoder willingly accepted and processed anything we threw at it. To honest, this device was a challenge for the TELE-audiovision test team, not the other way round. It simply works flawlessly, does exactly what you want it to do and, in addition, is extremely easy to operate. Others might have decided to cut short the test and go for a coffee – but not us!

We looked at all features and options and fed any type of source signal we could find or create. The range of settings for creating an MPEG-4 stream that meets bespoke requirements is impressive; there's simply no better word for it. What's more, the CW-4412 reacts to all commands and adjustments with breath-taking speed. You change a parameter and the next second the created MPEG-4 stream reflects that change. This gives technician the option of making adjustments on-the-fly, and all that viewers will notice is a very short signal interruption.

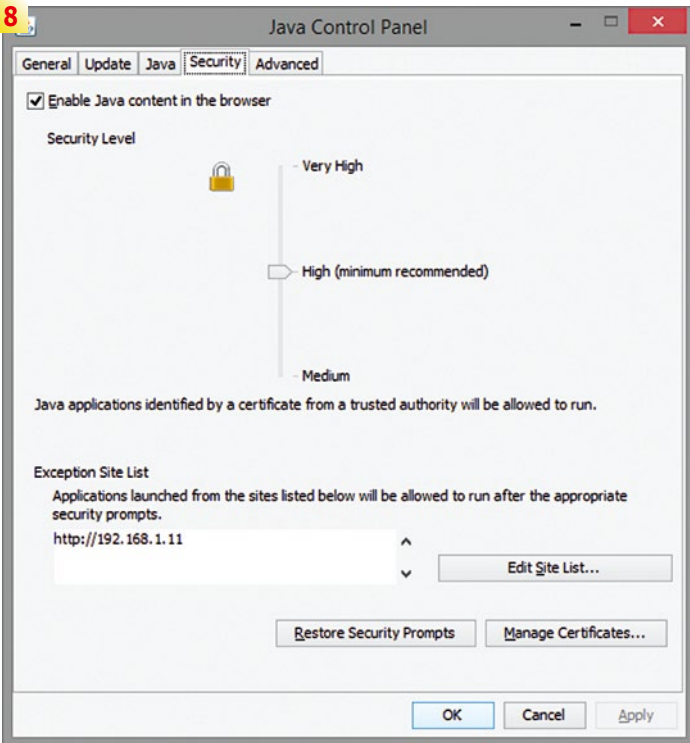
CBR & VBR

Depending on area of application and available bandwidth, the CW-4412 can create an encoded stream with either constant bit rate (CBR) or variable bit rate (VBR). With CBR the encoder will compress the signal more or less highly in order to constantly reach the pre-defined target bit rate. This means a sequence with little changes in the video will be subject to hardly any compression, while sudden changes in the video (such as movements or new objects) will require high compression in order not to exceed the target bit rate.

What are the benefits and drawbacks of CBR? For one thing, it is much easier to calculate the required bandwidth or overall bit rate of a transponder if it carries CBR signals, for obvious reasons. In addition, virtually all receivers can handle CBR signals. But where there's



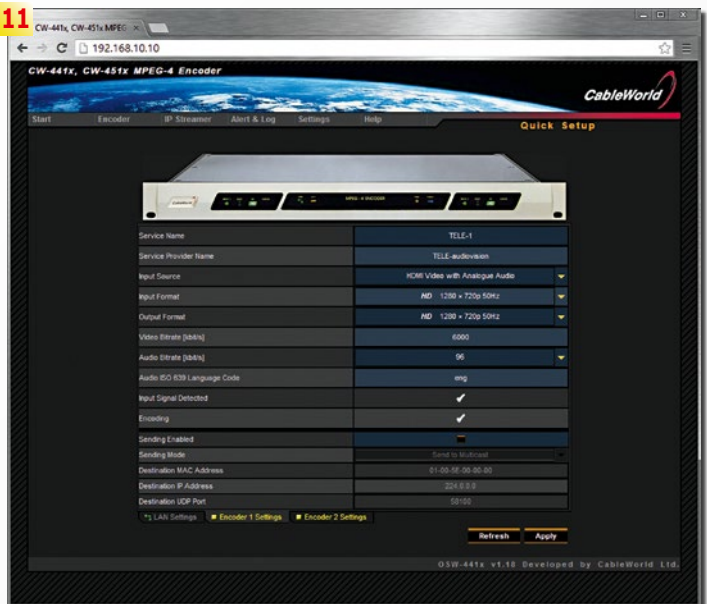
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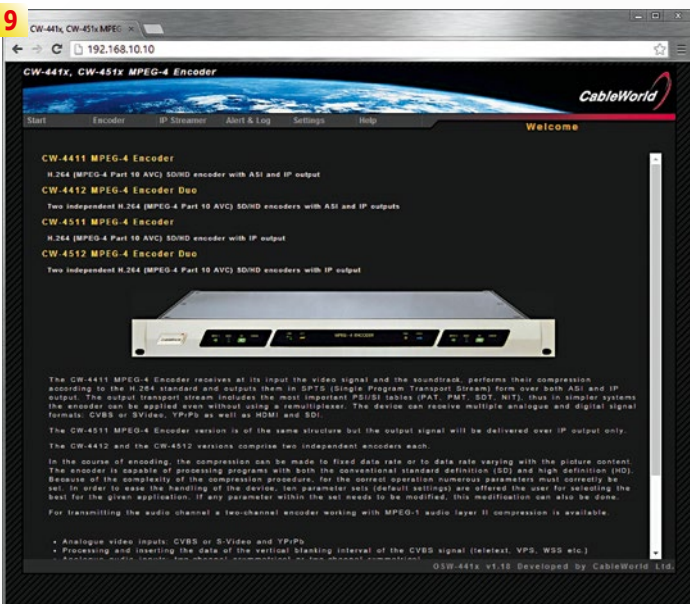
Web Frontend

8. The web frontend on the CW-4412 is based on Java. This has the advantage of a quick and user friendly interface, but comes with a price to pay: you need to authorize the IP address of the CW-4412 in the exception site list, otherwise the recommended security settings

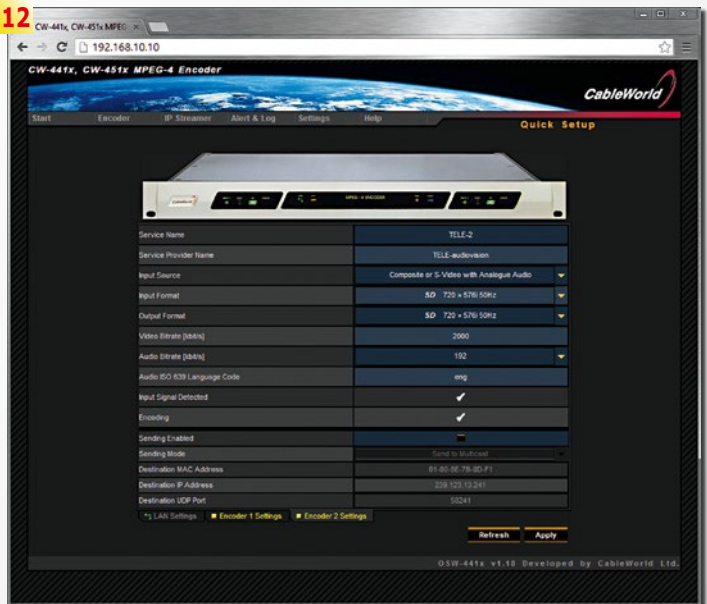
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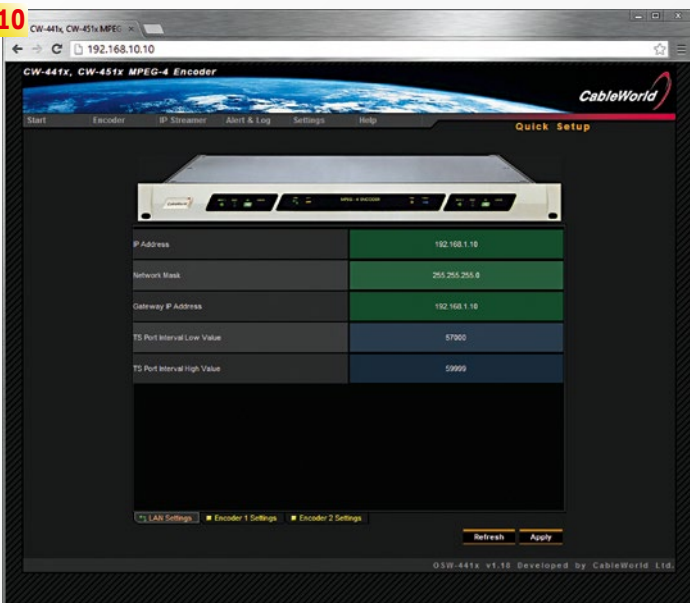
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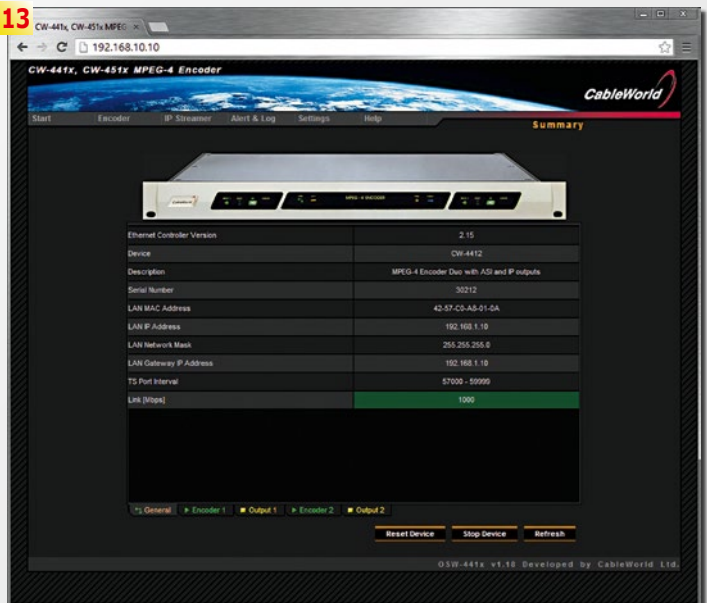
12



10



13



will obviously block the execution. Unfortunately, the fact that the web frontend relies on Java means that common Android or iOS devices cannot be used to configure the CW-4412.

9. START – WELCOME: A welcome screen is always nice. CableWorld uses this space to give a description of the device. This may seem unnecessary, but in a crowded head-end with lots of different devices you will quickly benefit from getting such a welcome screen, since you will immediately know, which device you just connected to.

10. START – QUICK SETUP: Here you can set up all relevant parameters in three tabs, which correspond to the CW-4112's block diagram: it is composed of a LAN interface and two separate encoders. The only possible confusion should be avoided at this point: the LAN Settings refer to the IPTV output settings, not the IP of the web-frontend.

11. The quick setup screen for encoder 1. Here you can specify the input source and input format, as well as the output format. Notice that the CW-4412 can down-convert a resolution, but obviously it cannot up-convert a low resolution to a higher one: just use a high enough bandwidth for best image quality and you make viewers happy.

12. The setup screen of encoder 2 is naturally exactly the same as the previous, as both encoders have equal characteristics. Notice that the web-frontend will indicate if an input signal is preset, if the encoder is doing its job and if IP streaming is activated.

13. START – SUMMARY: These pages give you a full insight on the CW-4412's configuration and status. Organized in several tabs, the first one gives all information relative to the network configuration.

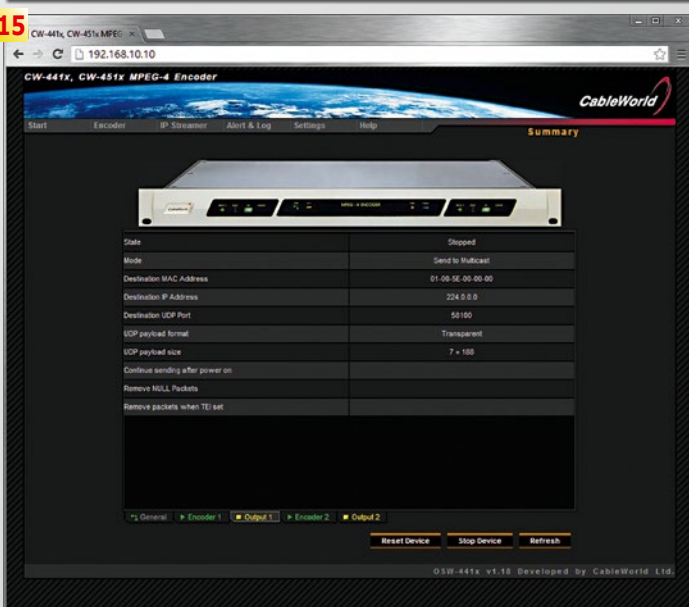
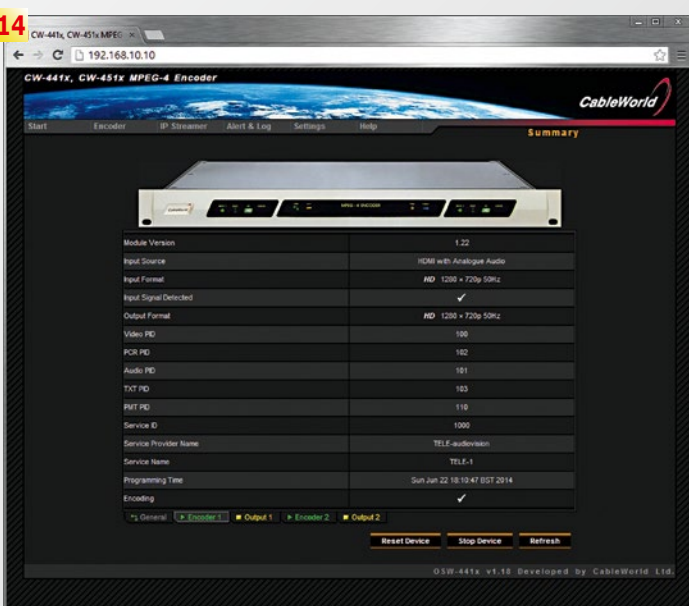
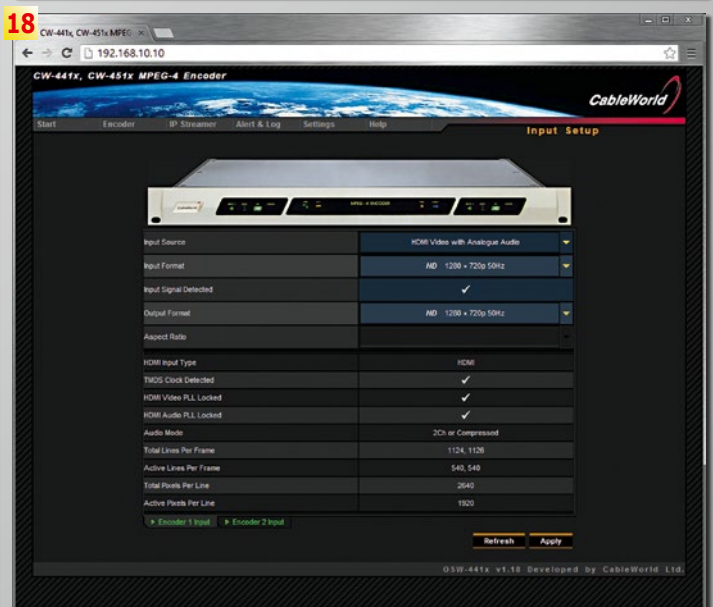
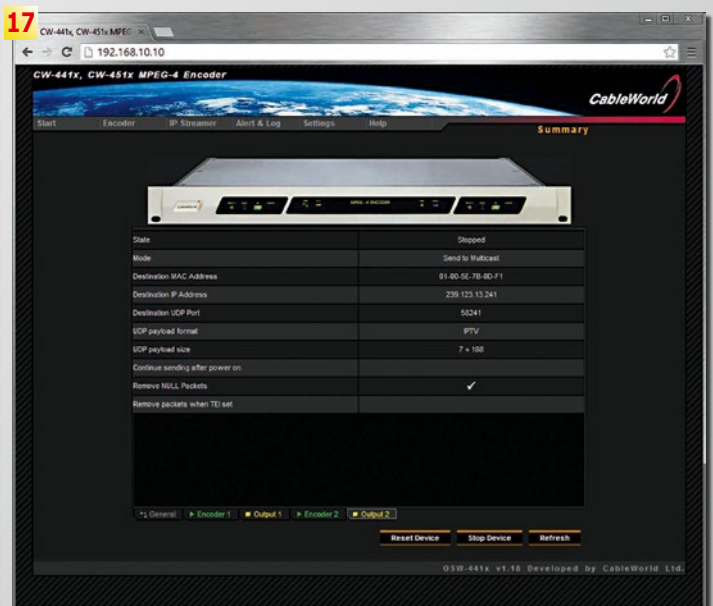
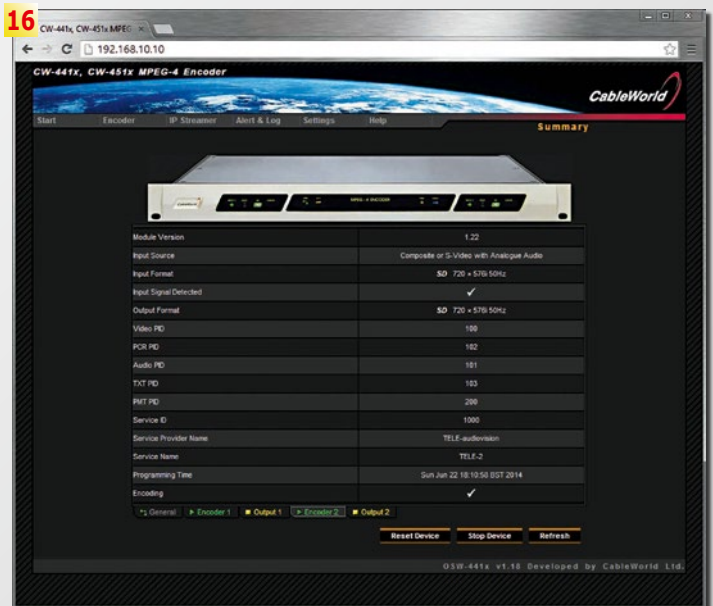
14. Next is the tab of the first encoder. Check marks tell immediately if everything is OK.

15. This tab shows information regarding the network output of encoder 1. Notice the first line in the picture: in this case, the encoder was not configured to output anything over the network. Also, you can see that the configured mode was Multicast, rather than Unicast.

16. The information tab of the second encoder, everything was OK.

17. But I also had not activated the streaming output over the network, when this picture was taken.

18. ENCODER – INPUT SETUP: Two tabs allow the independent configuration of each encoder. Just tell what signal input should be used and if you require to down-convert a resolution, you can configure that too: imagine you want to read a Full HD resolution on the HDMI input, but only generate a MPEG-4 stream with a SD resolution: no problem for the CW-4412.



light, there's also shadow, and in the case of CBR easy calculation comes at the expense of changing video quality. The bit rate requirements of fast camera movements or dynamic video content may easily exceed the pre-set constant bitrate (unless it equals the maximum bit rate, which generally is not the case and would waste valuable resources whenever more static con-

tent is transmitted), causing the dreaded block artefacts none of us likes to see.

This is where VBR kicks in: Whenever video content does not change much, the required bit rate decreases because only few image details need to be compressed. And when all of a sudden dynamic changes in the video content occur the bit rate increases alongside so that the intended video quality after

compression can be maintained. On average, the bit rate with VBR is lower than with CBR.

And there's another benefit with VBR: The chance that several variable bit rates within a single transport stream all peak at the very same time is rather low, which means that the overall bandwidth of a transponder's transport stream with VBR signals can be smaller,

while the video quality of the individual signals is higher.

Sounds perfect, right? Yes, in theory. In the real world, however, VBR comes with some strings attached. For example, the encoder has to know the low and high bit rate limits that must not be exceeded. Those limits, however, depend entirely on the average bit rate. This means the encoder must analyse the video signal based

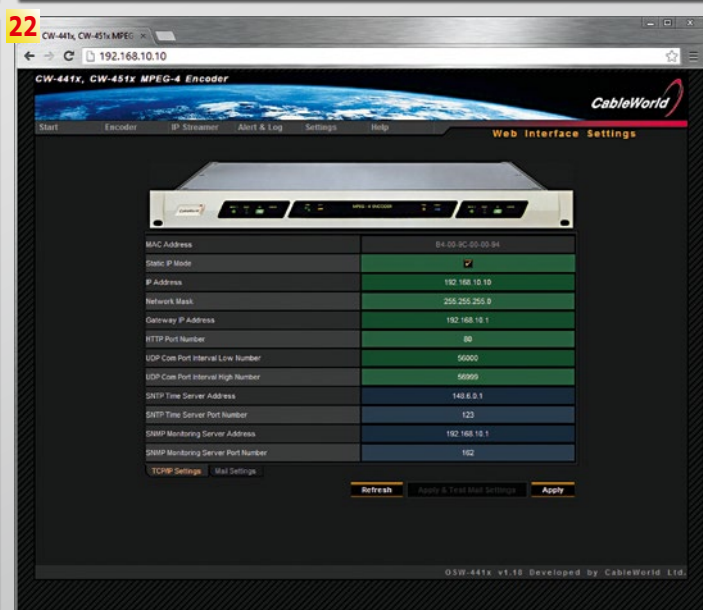
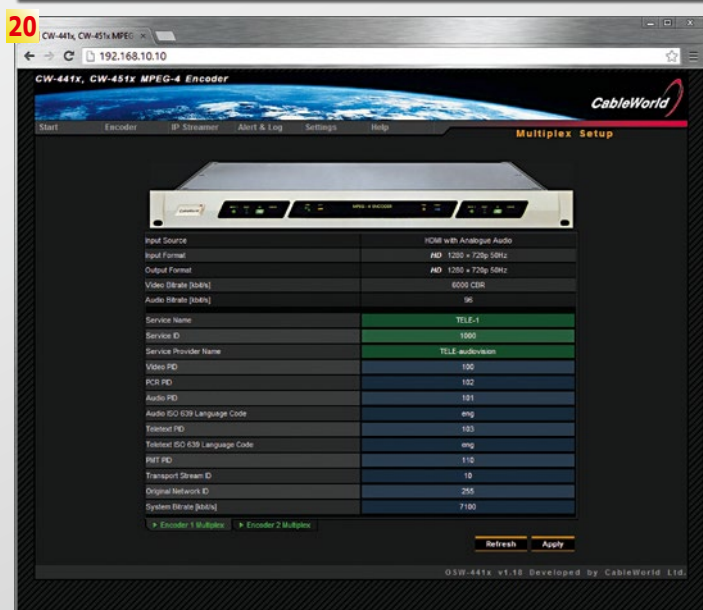
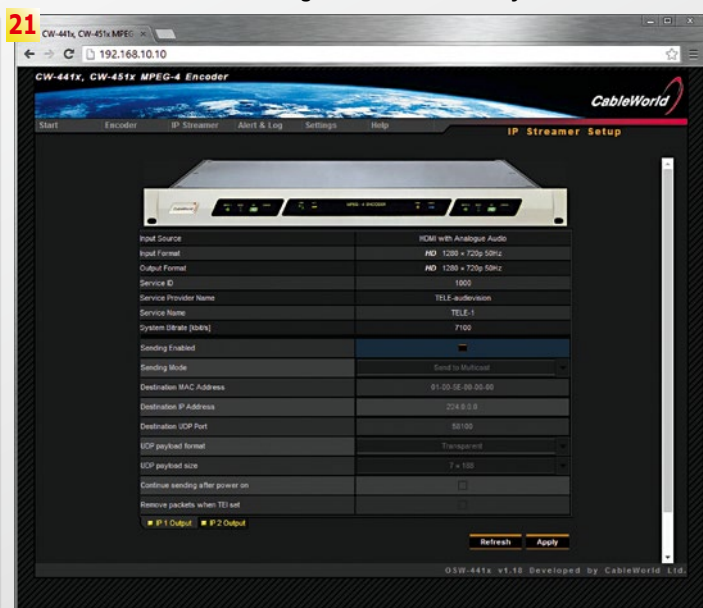
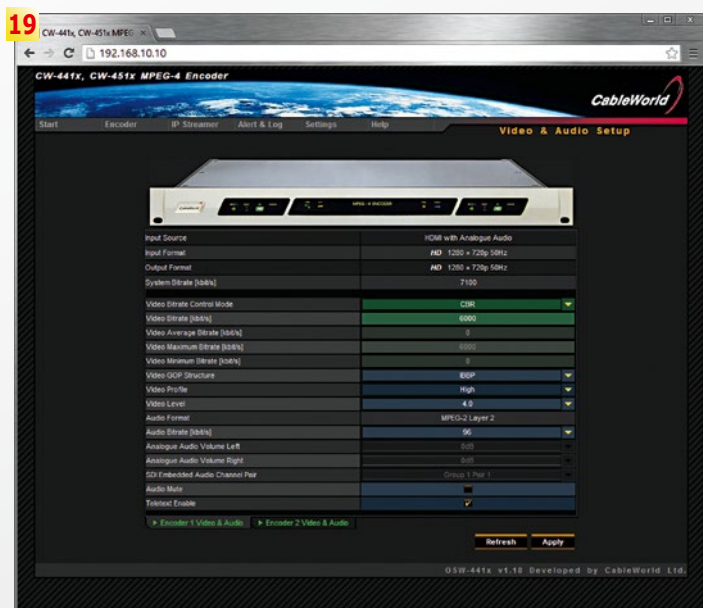
Web Frontend

19. ENCODER – VIDEO & AUDIO SETUP: This menu option allows to independently configure the output signal. You can select between a constant bitrate (CBR) or a variable bitrate (VBR). Also, you can change other relevant MPEG-4 parameters.

20. ENCODER – MULTIPLEX SETUP: Here you can select the required PIDs for the output stream. This comes very handy, as you can avoid problems with multiplexers, if you configure the PIDs correctly at this stage. Being able to input the desired service name and service provider name is just perfect.

21. IP STREAMER – IP STREAMER SETUP: Next you can configure the IP streaming, again independently for each encoder. Just select the mode (Multicast or Unicast) and specify the relevant IP and port and you are set.

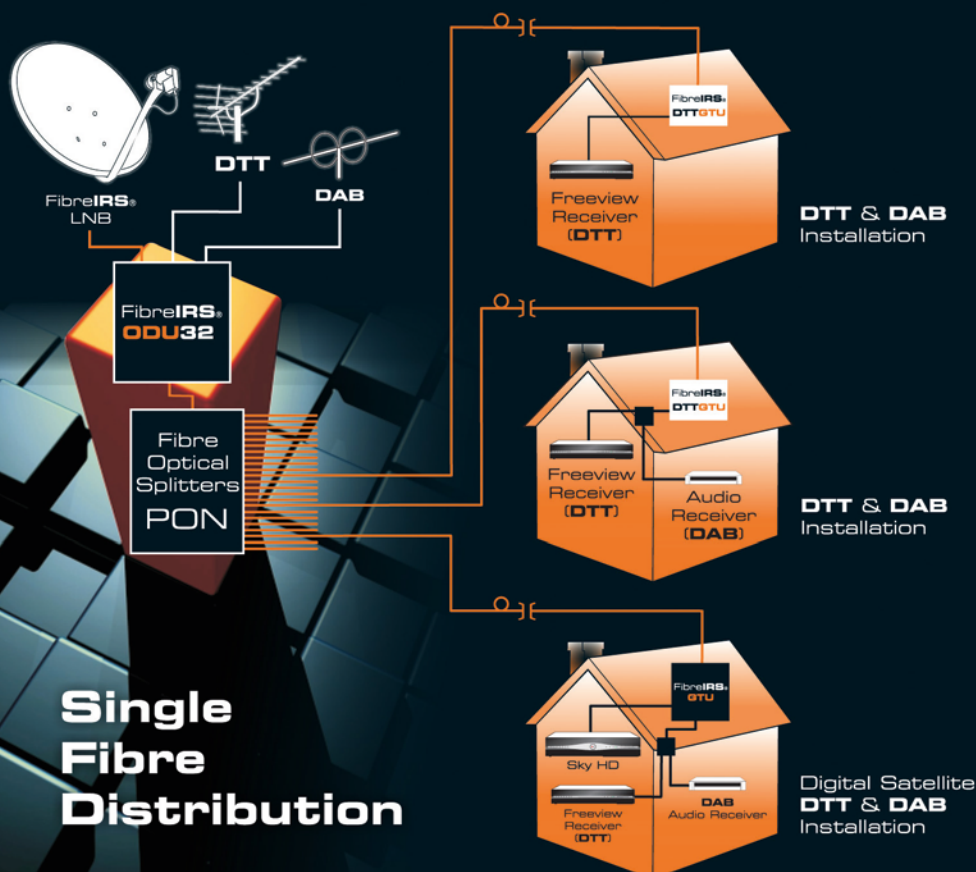
22. SETTINGS – WEB INTERFACE SETTINGS: This option lets you configure the network settings for the web interface. The CW-4412 can be controlled through a browser or by means of free applications provided by CableWorld. Both use independent networking configurations, which is actually very convenient. If you cannot access one network, for whatever reason, you can still communicate with the CW-4412 through the alternative way.





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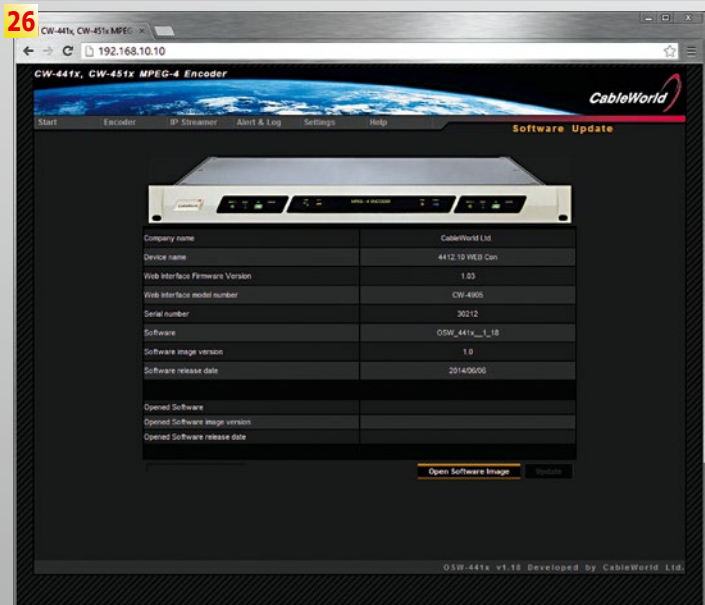
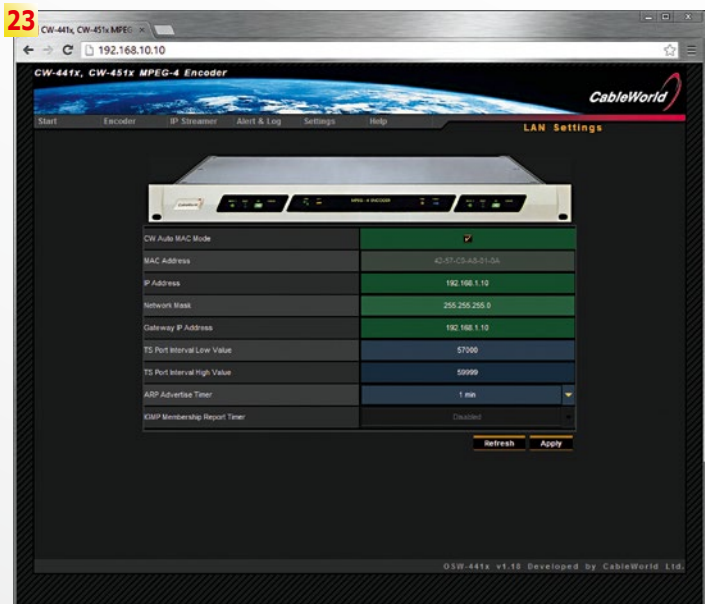
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on these parameters and then compress the signal accordingly. This is a hugely complex process, and the fact that it frequently has to happen in real-time doesn't help either.

CableWorld does a great job for easing that situation: For one thing, the CW-4412 does not accept incorrect or impossible parameters in the first place. And for another, it shows the formulae required to calculate meaningful parameters:

video bit rate $\geq$ max. video bit rate
 video bit rate $\geq$ avg. video bit rate
 $1.5 \times \text{avg. video bit rate} \leq \text{max. video bit rate}$
 $2 \times \text{avg. video bit rate} \geq \text{max. video bit rate}$
 $0 < \text{min. video bit rate} \leq 0.75 \times \text{avg. video bit rate}$
 In addition, it provides recommended settings:
 max. video bit rate = $2 \times \text{avg. video bit rate}$
 max. video bit rate + 2 Mbps $\leq$ video bit rate
 max. video bit rate + 4 Mbps $\geq$ video bit rate

If all input parameters are correct, one of the two encoders of the CW-4412 will accept them and start to compress the stream according to those specifications.

We tried out several different configurations on-the-fly and – believe it or not – the compression process did not have to be interrupted at all. Even on the receiver end we only noticed short dropouts. This is a remarkable achievement and we have to commend CableWorld for that, since it al-

Web Frontend

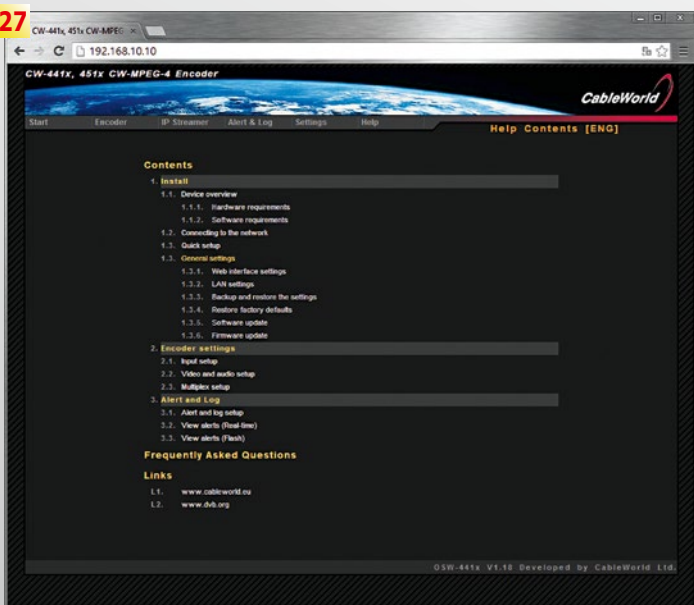
23. SETTINGS – LAN SETTINGS: The LAN settings refer to the CableWorld applications that allow controlling the CW-4412. While you do need a Windows based PC, the application is very robust and simple to use. Actually, I found both user interfaces useful and actually quickly preferred to execute different tasks on one or the other.

24. SETTINGS – BACKUP & RESTORE: Being able to save and load settings is mandatory for every professional device. CableWorld has not let me down and provided this functionality in an easy to access manner. This means that you can replicate a configuration on different device or recover the configuration after a reset.

25. SETTINGS – FACTORY DEFAULTS: While I had no reason to make use of the factory reset function, it is good to have it, should you really end messing up completely the configuration of the device or, more frequently, if you want to assign a new task to the encoder: it is always best to start from scratch.

26. SETTINGS – SOFTWARE UPDATE: The firmware can naturally be updated through the web-frontent.

27. HELP – HELP CONTENTS [ENG]: There it is. While the included manual was just limited to two sheets of paper, explaining how to open the web-frontent and where to load the PC applications from, a full and extensive user manual is actually available on the CW-4412's web-frontent. This is clever, because it is exactly here, where you actually need it.



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lows technicians to intervene whenever it is necessary to adjust the bit rate to specific or unexpected scenarios – even right in the middle of a broadcast. Thumbs up for that!

Latency

Advanced Settings

28. To configure the encoder, you start by selecting the correct input source. Sources with embedded audio can be configured to use an alternative analog audio source, which can make life a lot easier. Small features like this make the CW-4412 a joy to work with.

29. In order to avoid any mistake or problem, you should manually specify the input format. I would not want to trust an automatic format recognition – problems could arise when you least expect them.

30. Depending on the selected input format, you can toggle between different output formats. The rule is simple: you can down convert a resolution, but you cannot upscale, which would require completely different hardware and has dubious results, anyway. But the fact that the CW-4412 is able to down convert, makes all the difference: how else would you handle for instance an HDMI video signal in Full HD from a PC, which is to be broadcasted as a SD channel?

31. Though MPEG-4 Part 10 is an established format, which should be supported by any decoder, it is sometimes necessary to fine tune the video GOP structure, video profile and video level to obtain best results for certain MPEG-4 decoder chipsets. Again, CableWorld did not make any compromise and allows these configurations to match the installed receiver platform. This makes the CW-4412 a versatile professional equipment.

32. Audio is naturally compressed according to MPEG-1 Layer 2 and as expected the CW-4412 allows a wide selection of all common audio bitrates. It also supports AAC.

33. Now here is another amazing feature: if you are using the SDI video input with separate analog audio input, then you can adjust the audio volume – separately for the left and right audio channel.

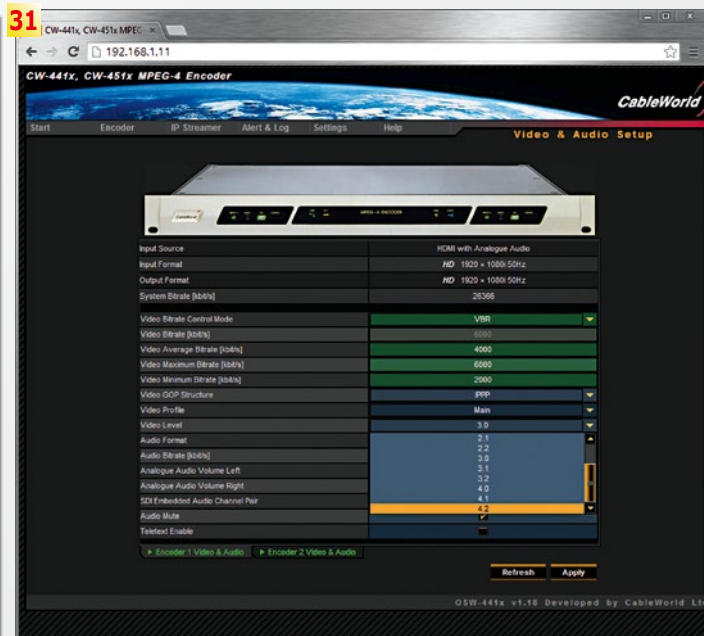
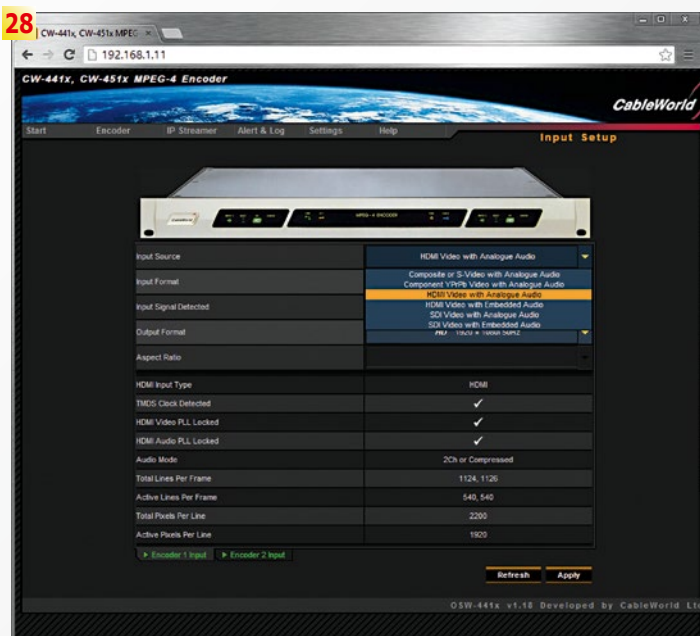
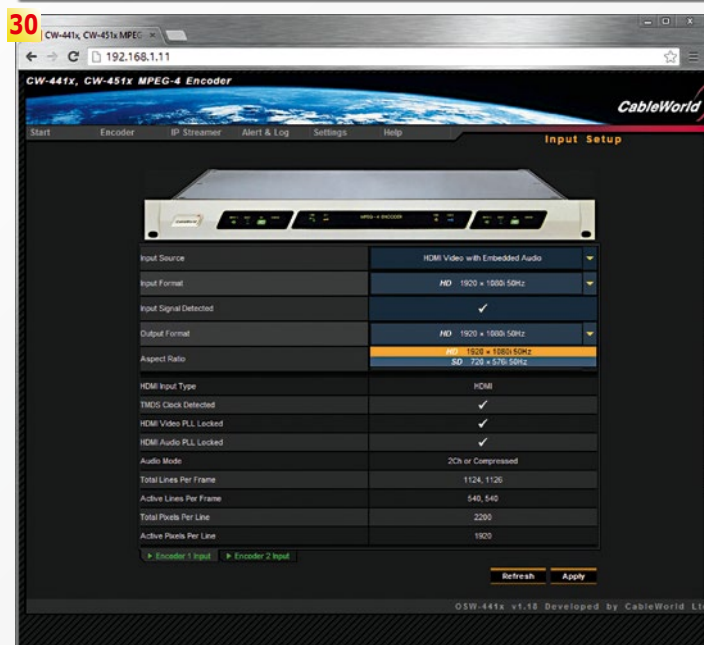
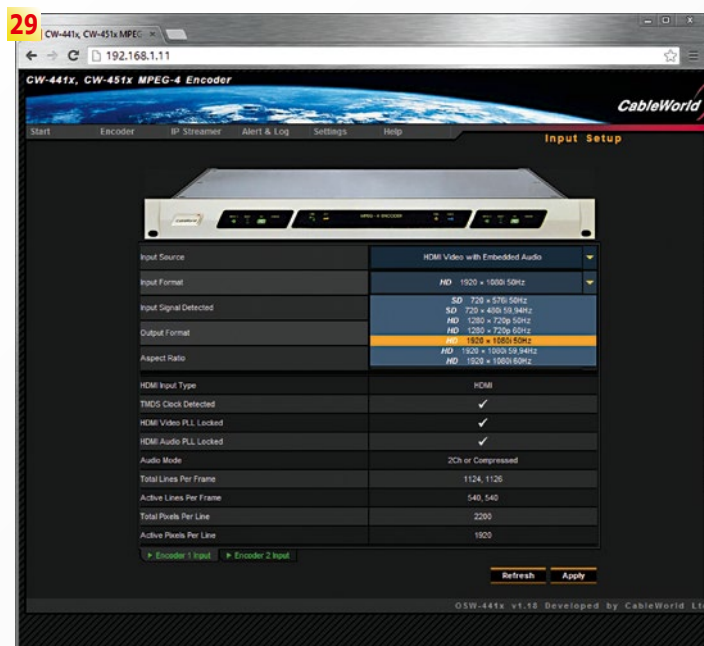
34. Setting up the IP streaming functionality offers the complete range of modes: Broadcast, Unicast and Multicast. Additionally, you can select the stream to a specific MAC address.

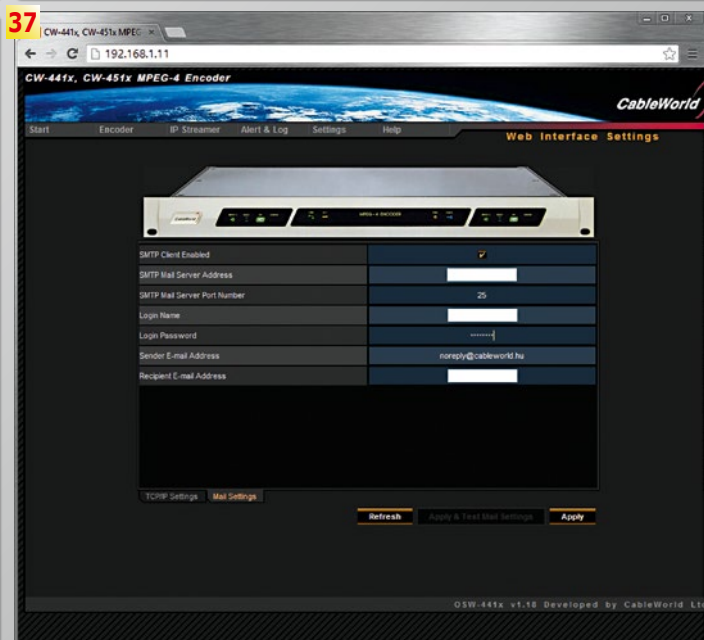
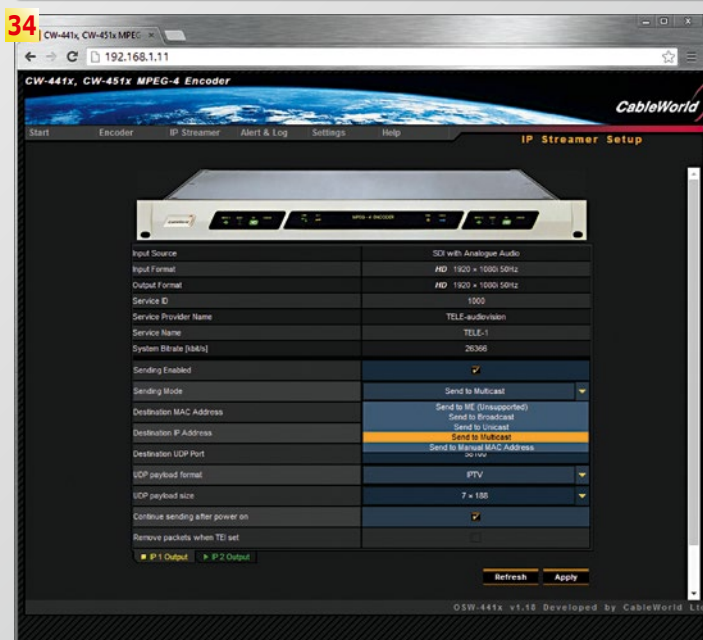
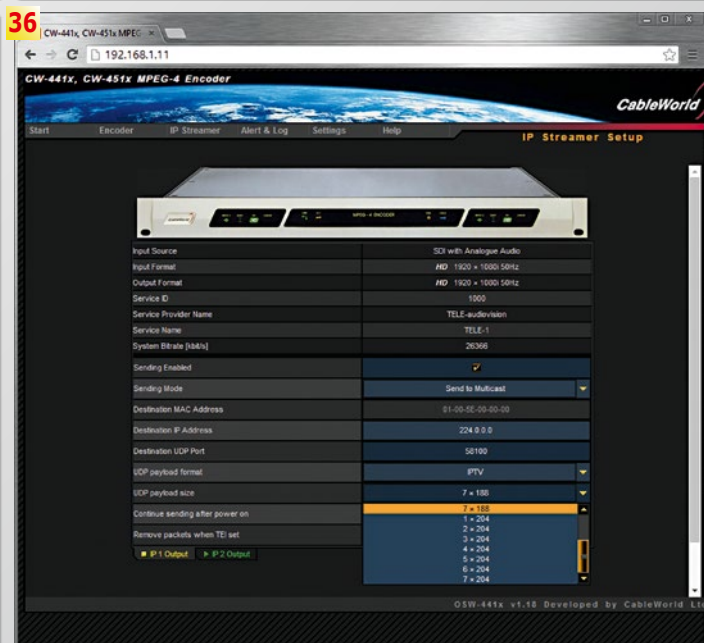
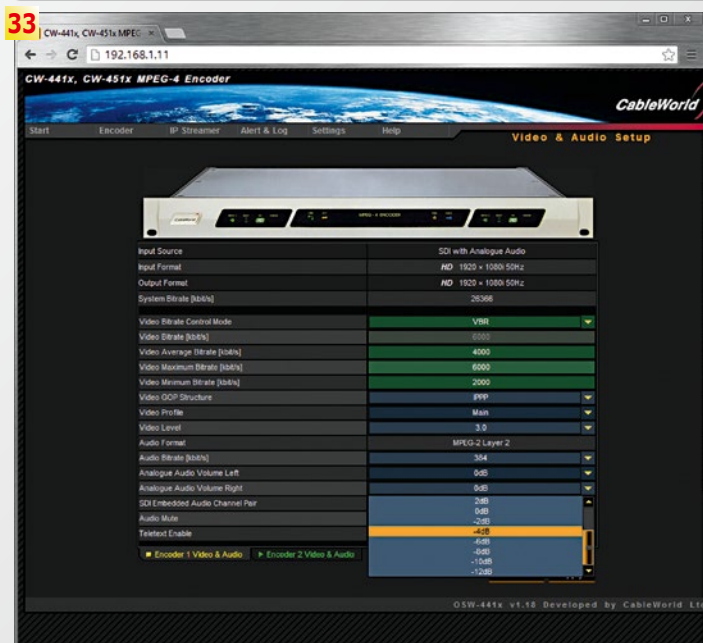
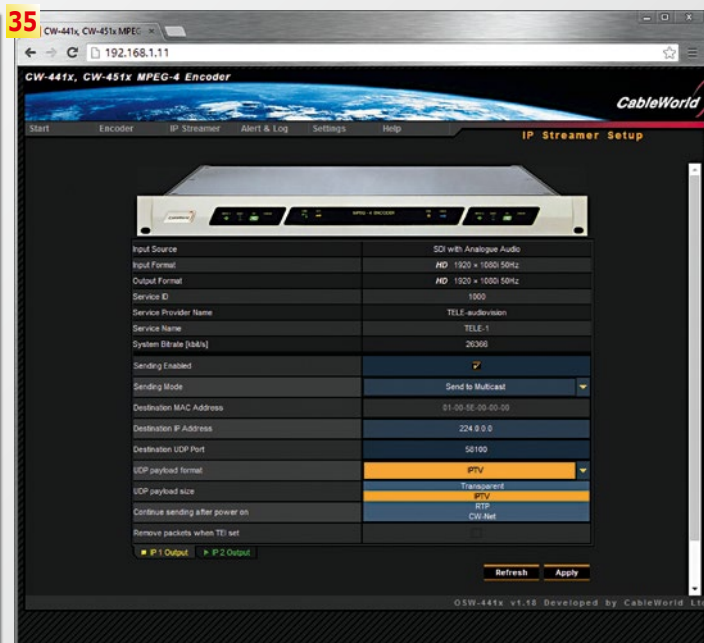
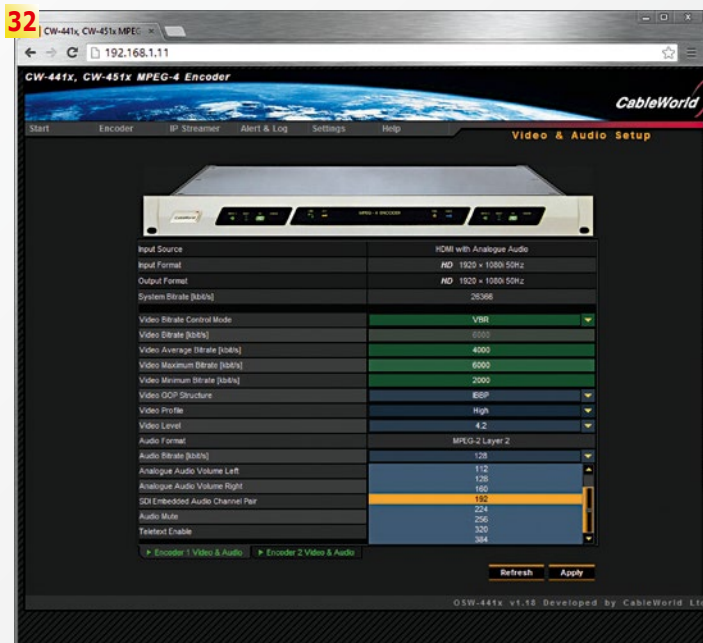
35. No compromise in the UDP payload format: all options are available.

36. And you can configure the UDP payload size to your exact requirement.

37. You want to spend your time with other tasks and therefore you would like to receive an automatic e-mail from the CW-4412 in case something happens? No problem - just setup the relevant data.

If an MPEG encoder is used for continuous operation to process a signal in real-time the achieved video quality is one deciding factor, but the other major aspect is the time delay that is caused by the compression process. It goes without saying that





compressing a video and audio signal and then converting it into a transport stream that is finally provided through the encoder's ASI output or via IPTV takes a little time. For pre-recorded transmissions that can be prepared in MPEG-4 beforehand this is not much of an issue, but what about time-critical transmissions such as the current time that is shown before the evening news begins, or live broadcasts? Here, a delay of a few seconds makes a lot of difference. Just think of it: Both you and your neighbour are watching a soccer match. Your neighbour is still on analog cable and whenever the team he supports scores a goal you hear him scream out while your DVB-C receiver still only shows the ball being passed from centre forward to forward. Takes a lot of fun out of the match, doesn't it?

We created the following test environment to measure the latency caused by the CW-4412: A test PC with two video outputs plays back a test pattern with an exact timer (30 frames per second). One output is connected to a standard monitor, while the second output is led to one of the two HDMI inputs of the CW-4412. We chose 1280 x 720 pixels as test resolution to tread on a middle course between 1080p and SD, which seemed reasonable and economical to us.

Next, we connected one of our reference signal meters to the CW-4412's ASI output, while a second reference meter with integrated IPTV analyser was used to also receive and look at the IPTV transport stream simultaneously.

The result was genuinely breathtaking: The CW-4412 provided the compressed MPEG-4 transport stream through its ASI output less than one second after the source signal had been fed to the encoder. What a treat! What's more, the measured delay already includes the time required by the meter to demodulate and process the transport stream, which adds even more shine to the CW-4412's performance.

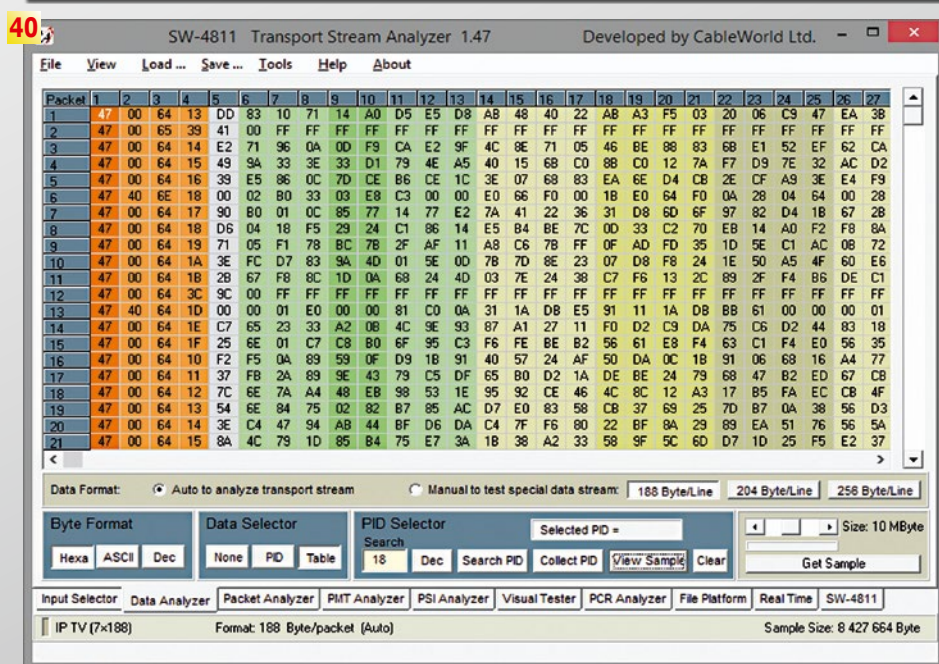
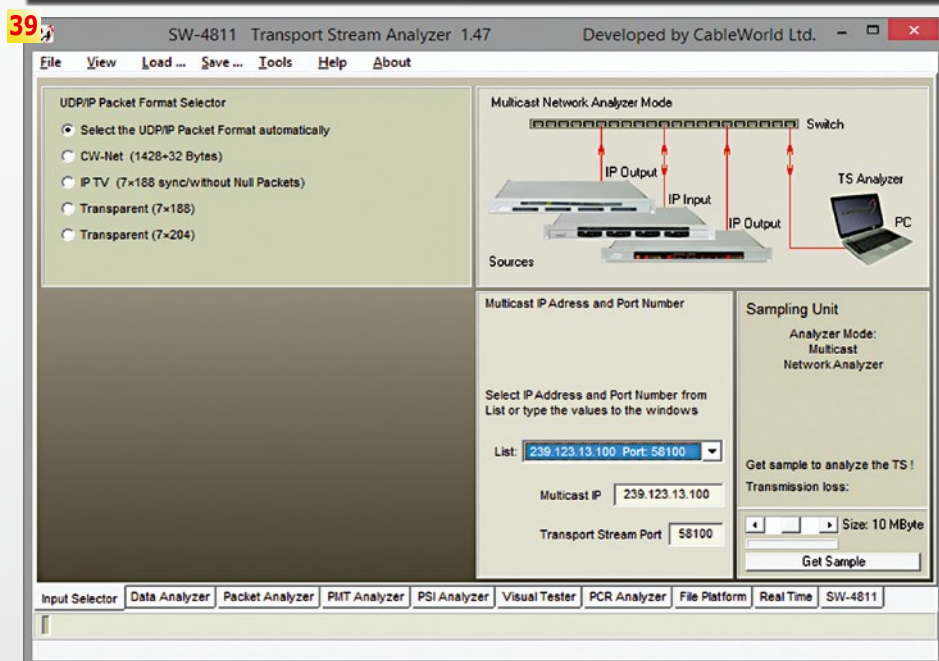
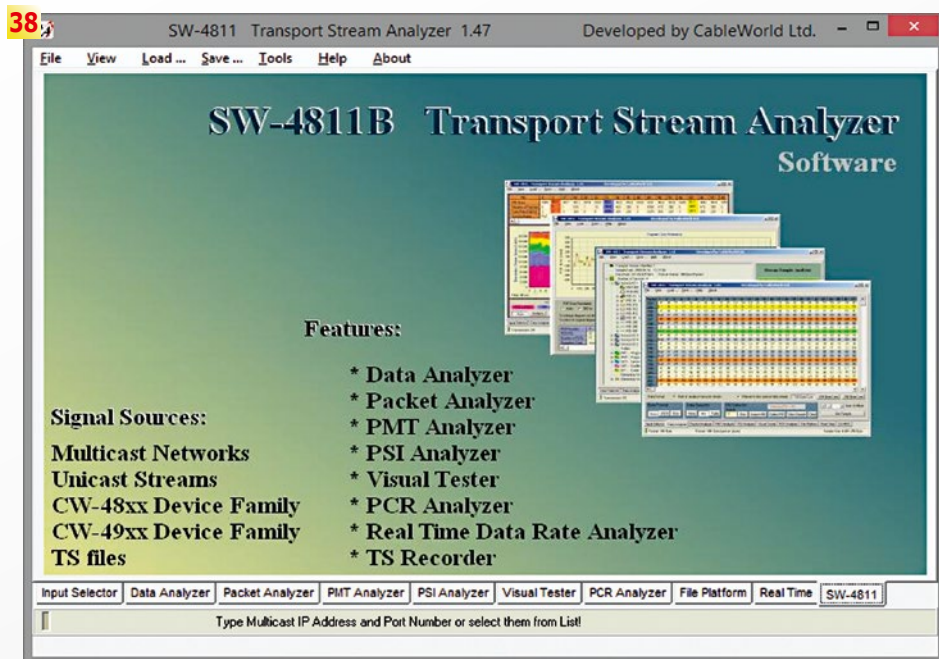
As far as IPTV is concerned, we measured a delay of approximately four seconds. Keep in mind, though, that this is by no means the encoder's fault but lies in the nature of using a physi-

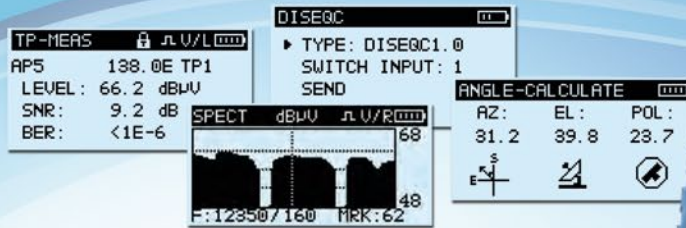
SW-4811

38. CableWorld offers a free Transport Stream Analyzer software! Yes, you did read it correctly: the software is free and does not require any CableWorld specific hardware. Visit the CableWorld website right now!

39. As usual with CableWorld software the application is very structured and organized in several tabs. The first tab allows to select the IP address of the multicast source.

40. The Data Analyzer tab. If you can read and understand the contents of plain packets, this is for you.





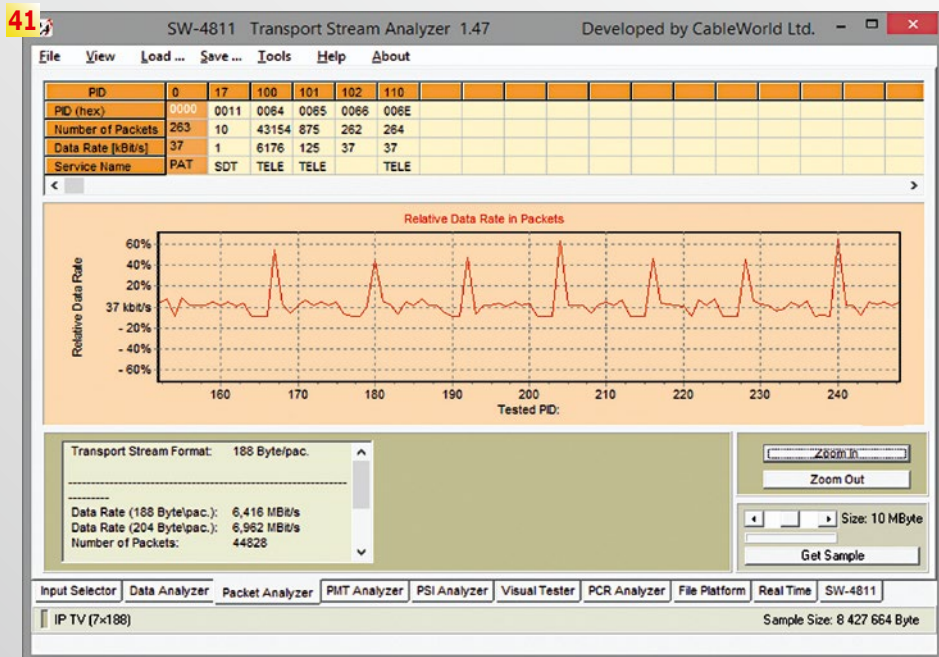
S30✓ Satellite Meter

- Supports DVB-S/S2
- C, Ku, Ka or L band
- MER and BER
- Spectrum function
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- Signal level and quality display together
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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
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- DSP Technology to support different Video decoding: MPEG-2, MPEG-4 and H.264 for 1080i, 720p and 576i, support PAL/NTSC/SECAM color system
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- Easy to use
- High resolution 7" TFT LCD with bright display for indoors and outdoors use
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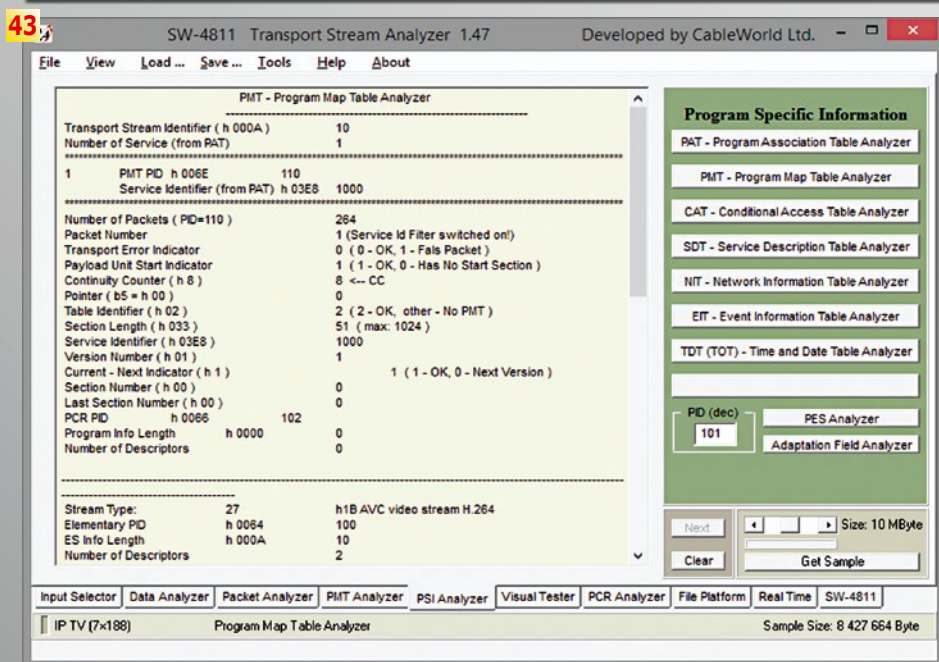
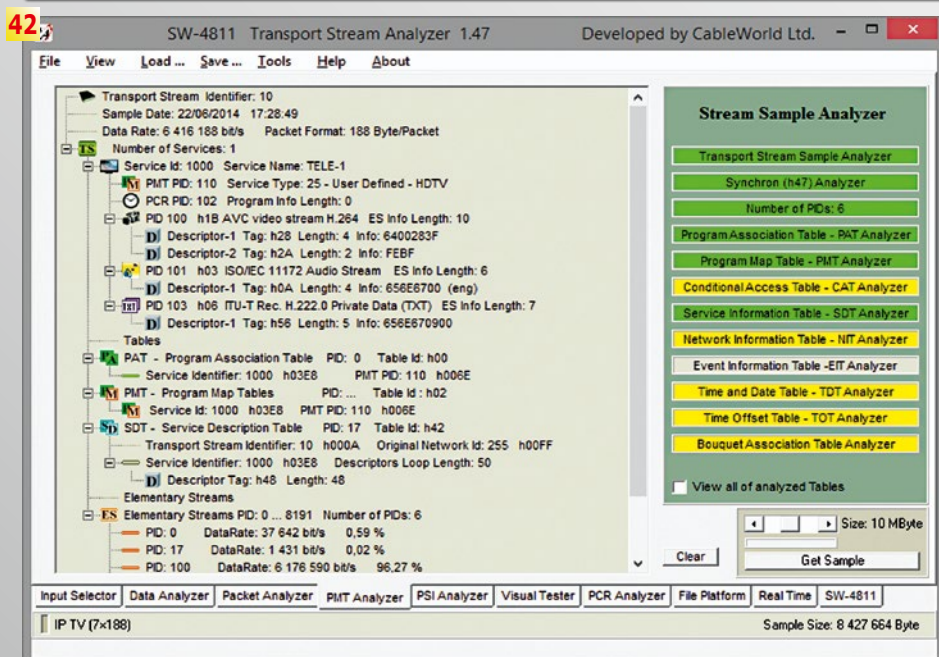


SW-4811

41. Perhaps more interesting is the Packet Analyzer tab, showing a graph that relates the data rate with time.

42. The PMT Analyzer tab shows the complete PMT tree with all relevant information.

43. Next comes the PSI Analyzer, showing the program specific information.



cal network for distribution. Overall, we never expected latency to be so low.

Compatibility of the MPEG-4 encoder

We found out so far that the CW-4412 did an excellent job with whatever task we demanded from it. But how about devices on the receiving end of created MPEG-4 Part 10 transport streams? Would they just as happily

accept the signals provided by the encoder? There's only one way to find out – giving it a try! To that end, we modulated the transport stream provided through the ASI output into various signal types: DVB-T, DVB-C

and DVB-S2. Then we took standard consumer receivers to process those signals.

All receivers we tested processed and presented the MPEG-4 Part 10 transport stream created by the CW-4412 with almost the same



video quality than the video signal prior to MPEG-4 compression. DVB-T, DVB-C or DVB-S2 receiver – you name it. Playback without artefacts or interruption was a given at all times.

Conclusion

The CW-4412 always does exactly what it is supposed to: It compresses different video and audio signals from various inputs (composite video, component video, SDI und HDMI) to the two discrete encoders and creates an MPEG-4 Part 10 transport stream. All this is done in real-time without significant latency. The compressed transport stream is made available via ASI and IPTV at the same time.

We put the encoder to the acid test over a course of six weeks and even though we never spare time or effort, we could not prompt the CW-4412 into any faulty behaviour. If power supply is interrupted the device gets back to business in less than three seconds and with all previously set parameters still in place. Manual intervention is not required.

The user interface is self-explanatory and can be accessed from any web browser. This way the CW-4412 is very easy to set up and control. The new web-based front-end does not only allow access from different operating system, it also adds a high level of user-friendliness to the whole process.

Added to that are a lot of small tricks and treats such as tailoring the MPEG-4 format right down to the last detail, or triggering an e-mail alert in case something goes wrong.

We can wholeheartedly recommend the CW-4412. CableWorld has truly whizzed up a remarkable treat. Whenever real-time video compression into MPEG is the order of the day, the CW-4412 (or any other member of the CW-4XXX family for that matter) is the encoder of choice.

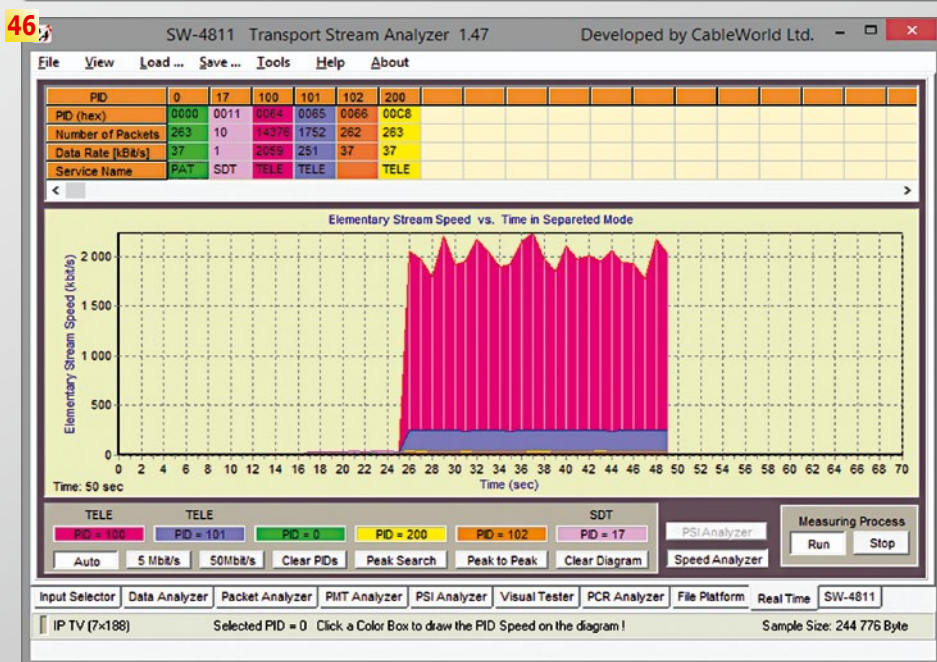
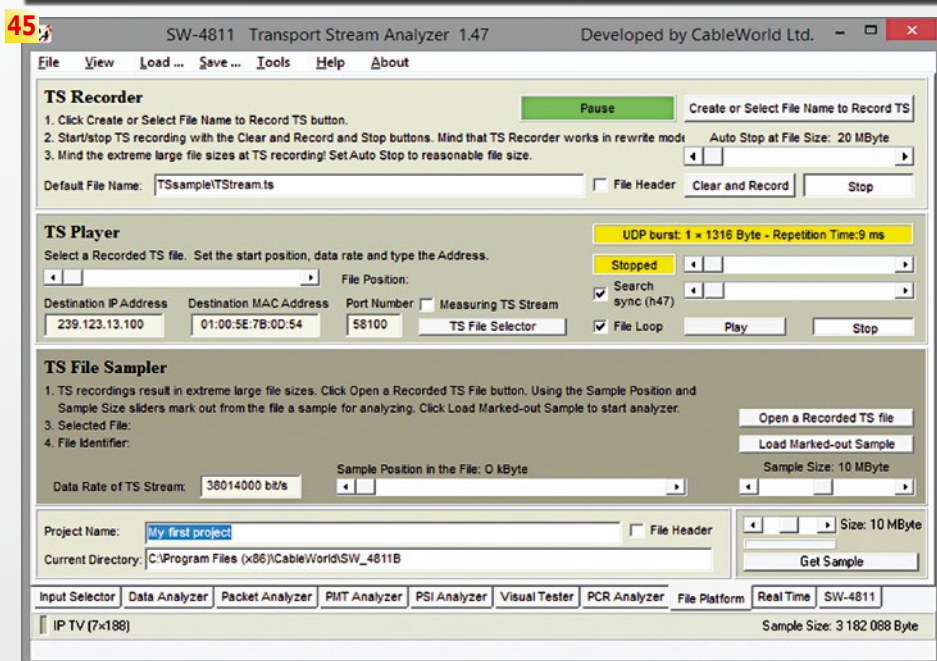
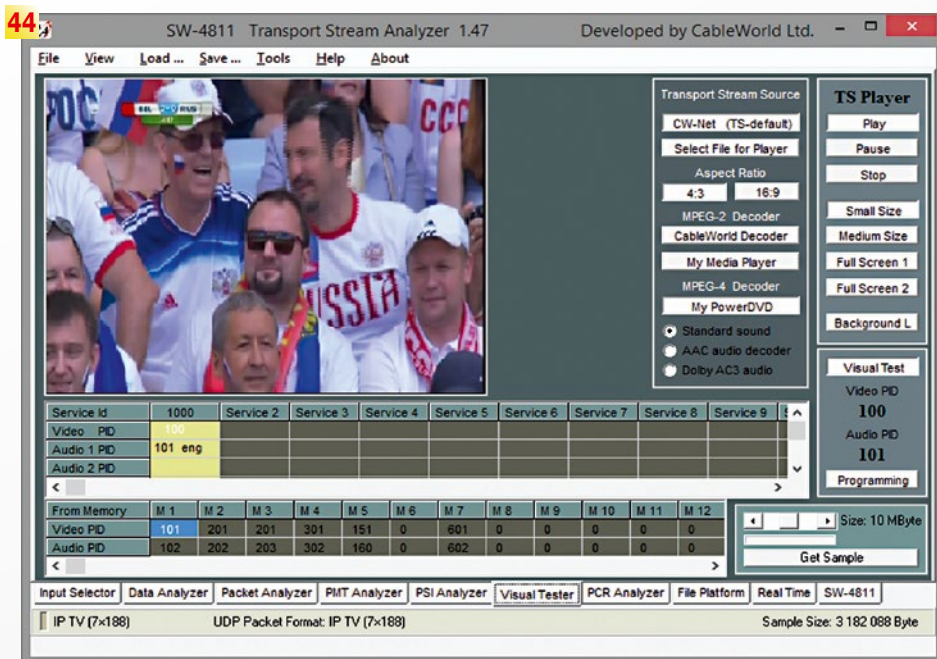
Great to know: Even if you don't (yet) own a CableWorld product, it's still a smart idea to download the TS Analyser SW-4811B application. It doesn't cost a thing, yet is priceless when it comes to thoroughly analysing transport streams.

SW-4811

44. The Visual Tester tab will render the actual video and audio. In case of MPEG-4 you need to provide your own CODEC, though. Here I was testing the MPEG-4 output of the CW-4412 which was fed with the composite video signal of a professional MPEG-2 IRD.

45. The SW-4811 application includes a TS Recorder and TS Player tab, allowing to record and manage Transport Streams.

46. Finally, the Real Time tab allows to render a graph relating the bit rates of the streams over time.



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◦ Universal Ku Band LNB:

available colors:



Single: **MX-16, MX-26**
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Twin: **MX-KT22CL**
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Quad: **MX-100GL**
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◦ Multi grade dual Ku Band LNB:

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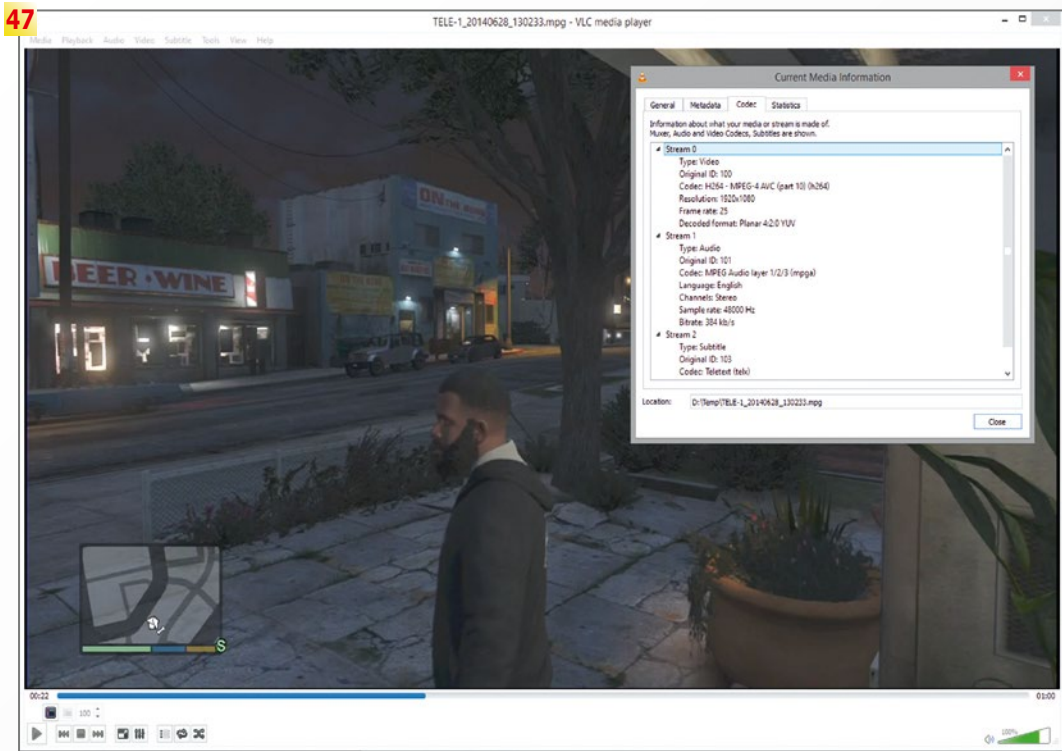
MPEG-4 Analysis

47. To analyze the resulting MPEG-4 signal I hooked up an Xbox 360 console using the HDMI connector and started my favorite game. VLC was used to get a first idea of the image quality and to know more about the used video and audio CODECs. As can be seen on the picture, the CW-4412 produces a perfectly regular H264 – MPEG-4 AVC (part 10) stream.

48. Trying to understand the consequences of the bitrate upon the video quality, I selected a scene in the game and toggled the bitrate. Here is the maximum picture quality, using a whopping 24000 kbps. Even with a big zoom on the plant there are virtually no visible artefacts.

49. Now the same scene with the lowest recommended bitrate for a Full HD stream: 6000 kbps. If you look closely, you will notice some artefacts, mainly around edges with high contrast. But still, the image quality is fabulous – much better than MPEG-2 using the same bitrate.

50. What can be achieved with variable bitrate (VBR)? These pictures use an average bit rate of just 4000 kbps. However, the video quality is practically as good as the previous pictures using a constant bitrate (CBR) of 6000 kbps. Yet, this means a 25% saving on the bandwidth



and it was no rocket science to set it up correctly, either. Where is your excuse to use VBR?

51. Next I wanted to know how well the CW-4412 manages to maintain the specified bitrate. Here we see the CW-4412 working in VBR mode. From the

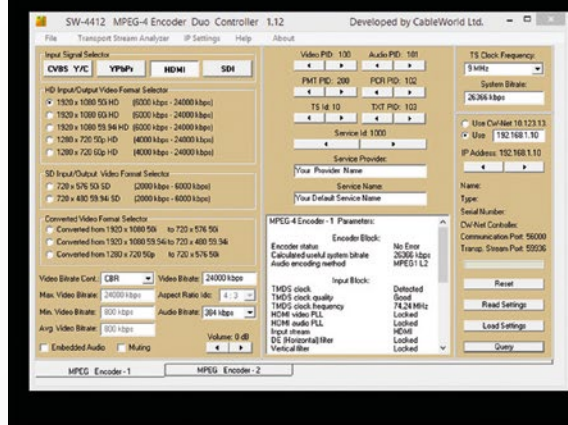
graph it is easy to spot that the encoder could easily maintain the minimum bit rate of just 4000 kbps, having to increase the bandwidth only when required.

52. Operating the CW-4412 in CBR mode at a bit rate of 6000

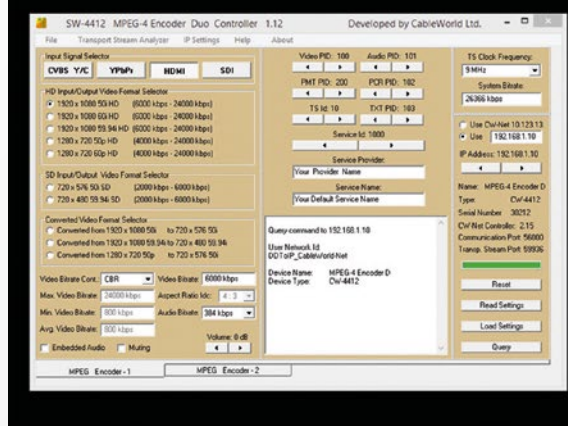
kbps. The video bitrate is not 100% constant, but the variation is relatively small.

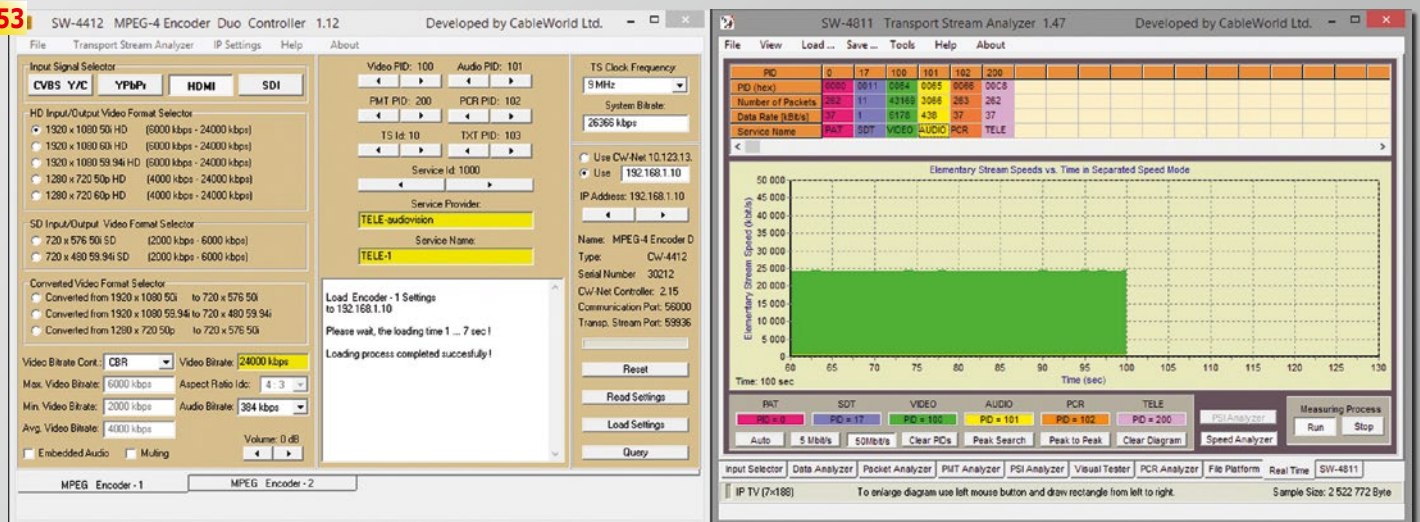
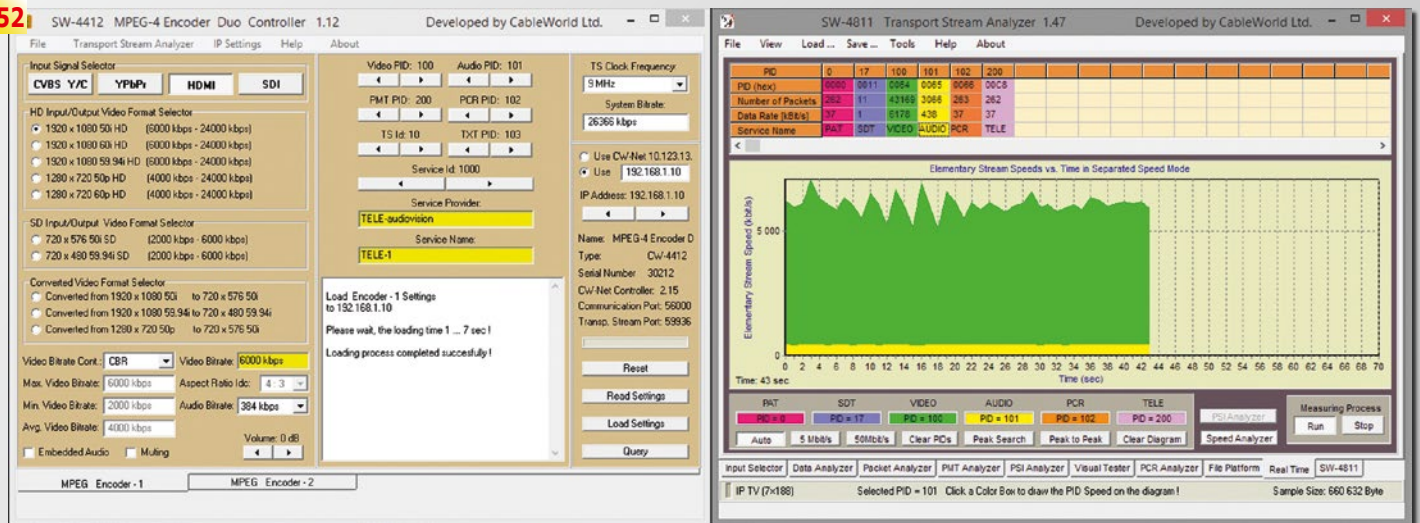
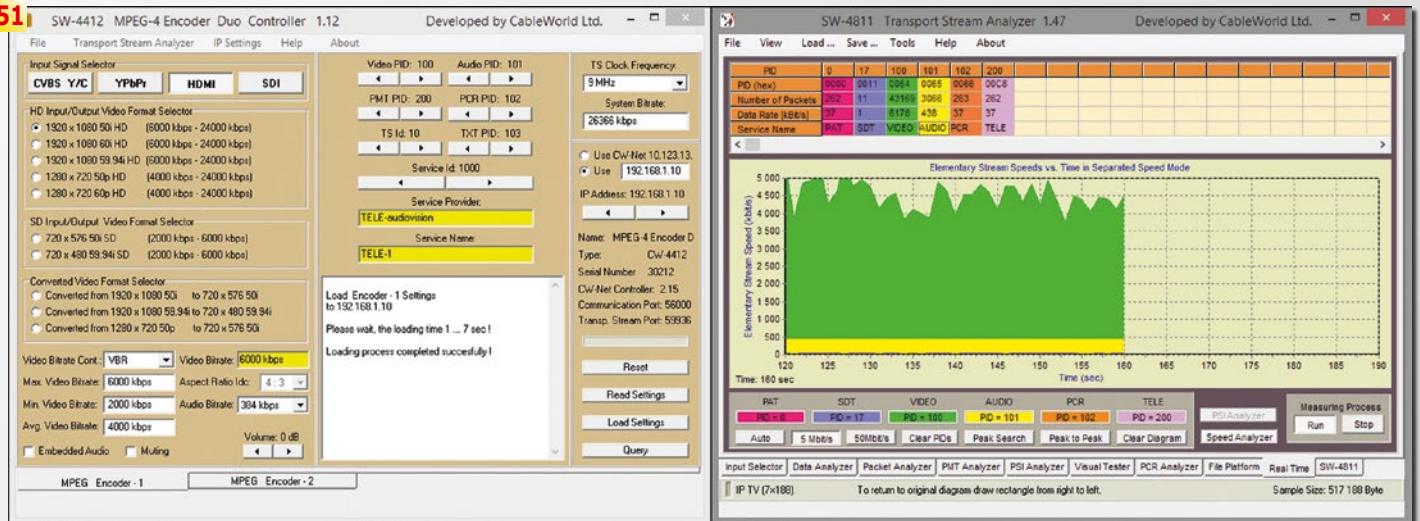
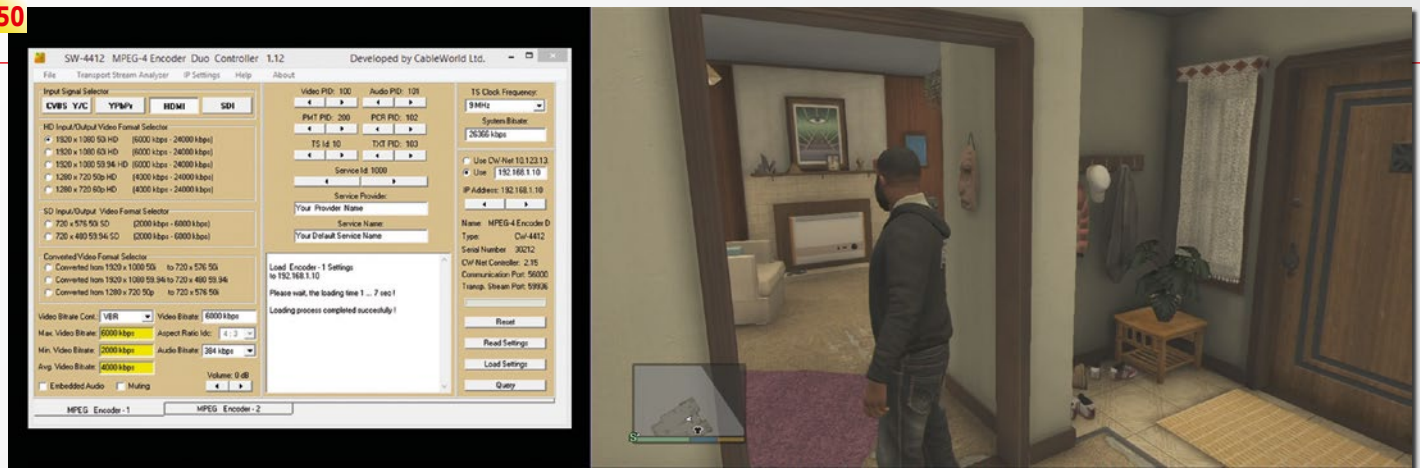
53. The same at the maximum bitrate of 24000kbps. No matter what was happening on the Xbox 360 game, the graph was steady.

48

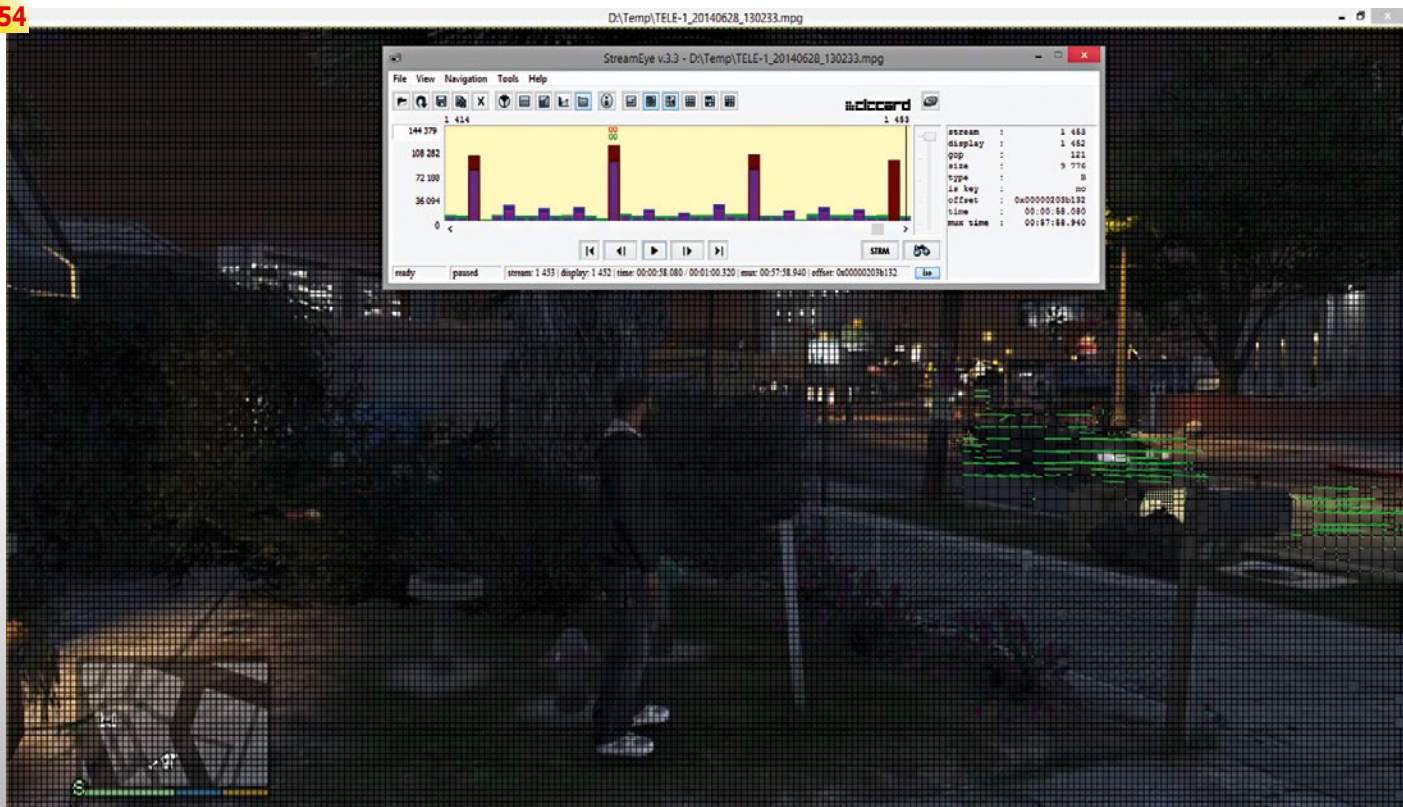


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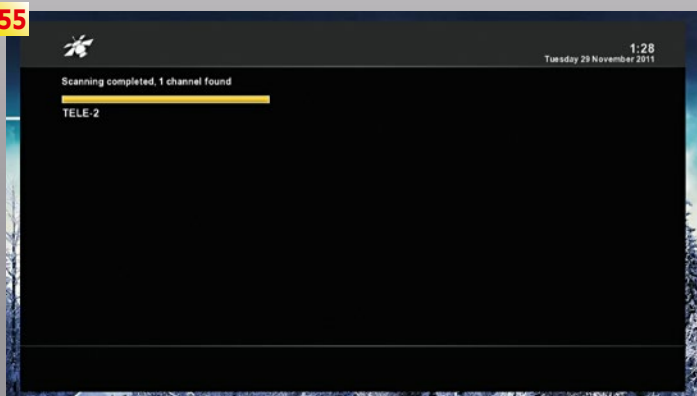




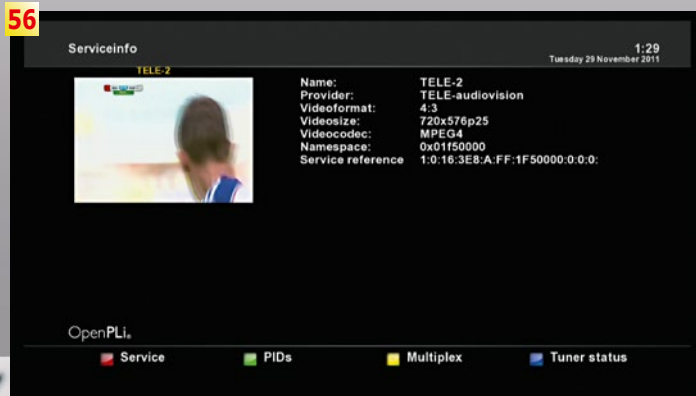
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55



56



MPEG-4 Analysis

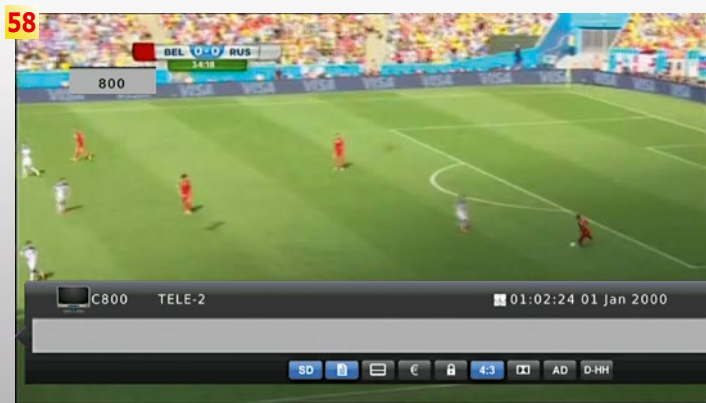
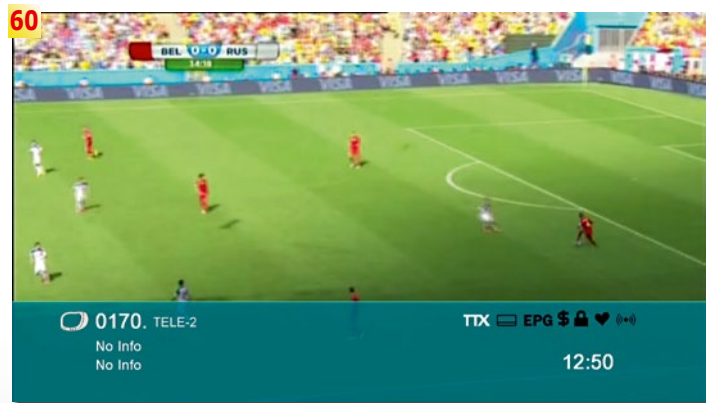
54. Analyzing the stream with Elecard's StreamEye application revealed a perfect MPEG-4 compression without any errors.

55. The resulting MPEG-4 stream was modulated to DVB-S2, DVB-C and DVB-T to

test the compatibility with several receivers. In this case an older AZBox UltraHD had no problem recognizing the transponder.

56. The Service Name and Service Provider Name were configured on the CW-4412 and correctly displayed by the receiver. The





**EXPERT
OPINION**

CableWorld CW-4412
MPEG-4 Encoder Duo



TELE-audiovision
THE WORLD'S LEADING DIGITAL TV INDUSTRY PUBLICATION

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- Simple to use device
- Made for 24/7 usage
- Very low latency
- Fully compatible H-264/MPEG-4 Part 10 AVC compression with many configurable parameters
- Can downconvert HD to SD
- ASI and IP output
- Controlled comfortably through PC software or web-frontend

-

- Web-Frontend relies on JAVA, hence tablets or smartphones are not supported

MPEG4 stream was correctly reproduced. Just perfect.

57. The same stream, in this case modulated as a DVB-T signal and received by one of the two DVB-T receivers.

58. Picture was perfect for the specified SD resolution and relatively low bitrate. The

receiver had no problem reproducing the stream.

59. A second DVB-T receiver recognized the Service Name as well.

60. ...and had no trouble rendering the MPEG-4 stream.





- *Receives all of today's satellite standards*
 - *Highlight is the ability to receive MIS*
 - *Can be used with a large variety of reception software*
 - *Extremely sensitive tuner*
 - *Efficient Blind Scan finds all transponders*
-



TBS QBOX 5925

USB DVB-S2 Receiver for Multi Input Streams

It wasn't too long ago when we introduced to you here in TELE-audiovision a solution for the reception of MIS (Multi Input Stream) frequencies in the form of a PCI card from Tenow for a PC (see TELE-satellite issue 12-01/2012). Now Tenow has developed another device that can be used to receive MIS: the TBS QBOX 5925 is the first USB compatible MIS box.

The QBOX is about the size of a pack of cigarettes and is enclosed in a high-quality metal housing. On one side of the box you'll find the USB

port for connection to a PC, an IR receiver as well as two status LEDs. On the other side there's the tuner input with looped-through output plus the connection for the external 12V power supply. The remote control included by the manufacturer is very practical and impressed us just as much as the box itself with its high-quality workmanship.

The tuner in the TBS QBOX 5925 can receive signals in the 950-2150 MHz frequency range with an input signal level from -69 to -23dBm. It can work with symbol-



The New Flexible MIS Transmission Technology

■ TELE-audiovision first presented the new MIS technology in issue 12-01/2012. Read the full report here:
<http://www.tele-audiovision.com/TELE-satellite-1201/eng/tenow-TBS6925.pdf>



rates from 0.2 to 45 Ms/s in both DVB-S and DVB-S2 modes and also supports all the popular demodulation modes, namely 8PSK, QPSK, 16APSK and 32 APSK. The TBS QBOX does not place any extreme requirements on the PC it will be connected to; for DVB-S reception a 1 GHz Pentium III CPU with 256 MB of memory is good enough. For DVB-S2 reception a machine with a 3 GHz Pentium IV CPU and 1GB of memory is recommended. A free USB port is also necessary and shouldn't present



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Quality Antennas for the Global Market

- Fully automatic quality control system
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- International standards production process
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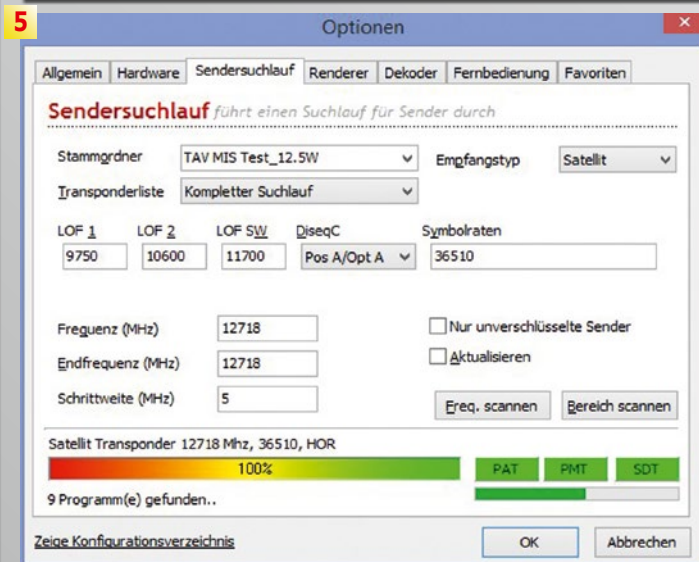
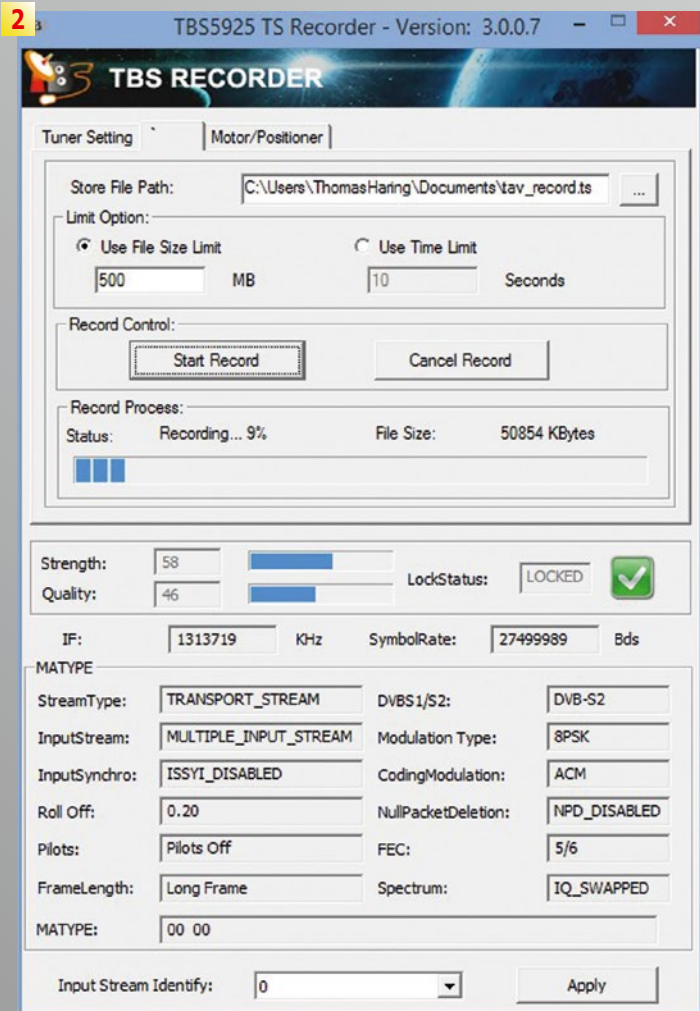
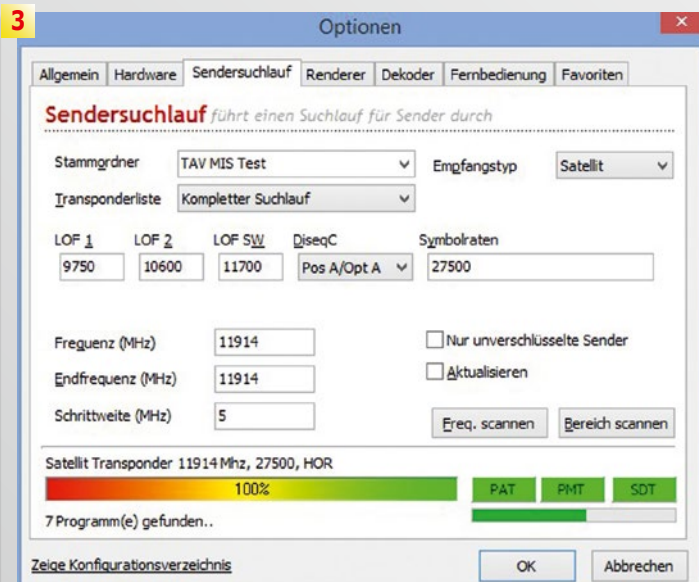
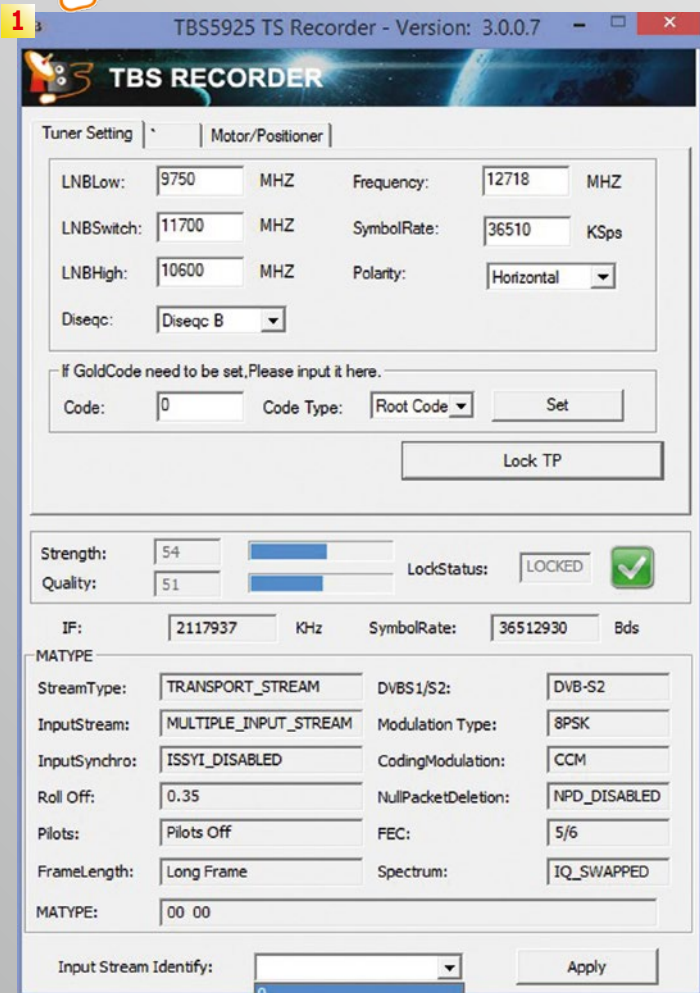
Beijing Tianditong Information Technology Co., LTD

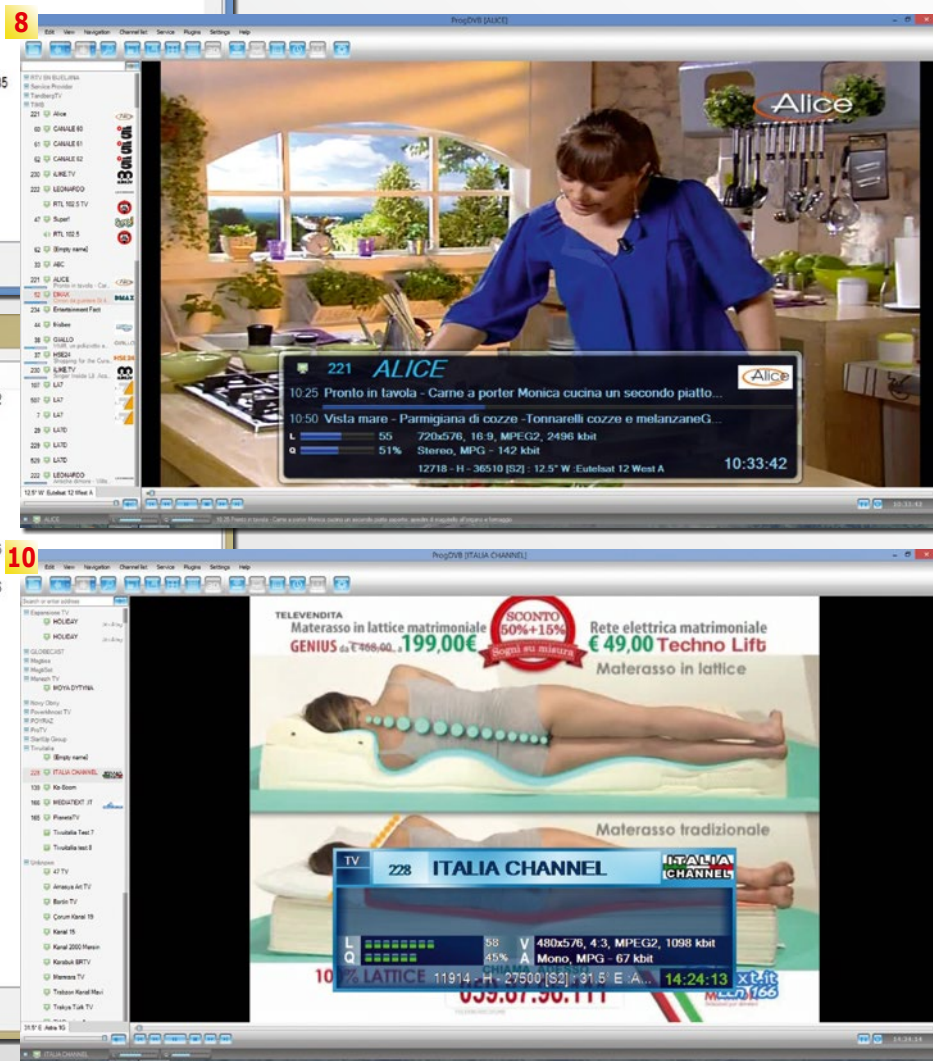
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No. 25 Landianchang South Road

Haidian District, Beijing China

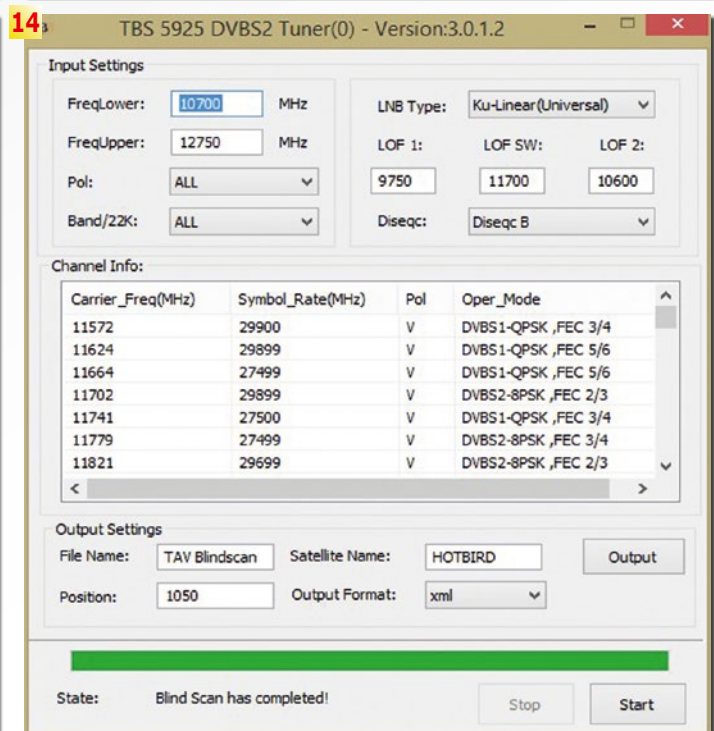
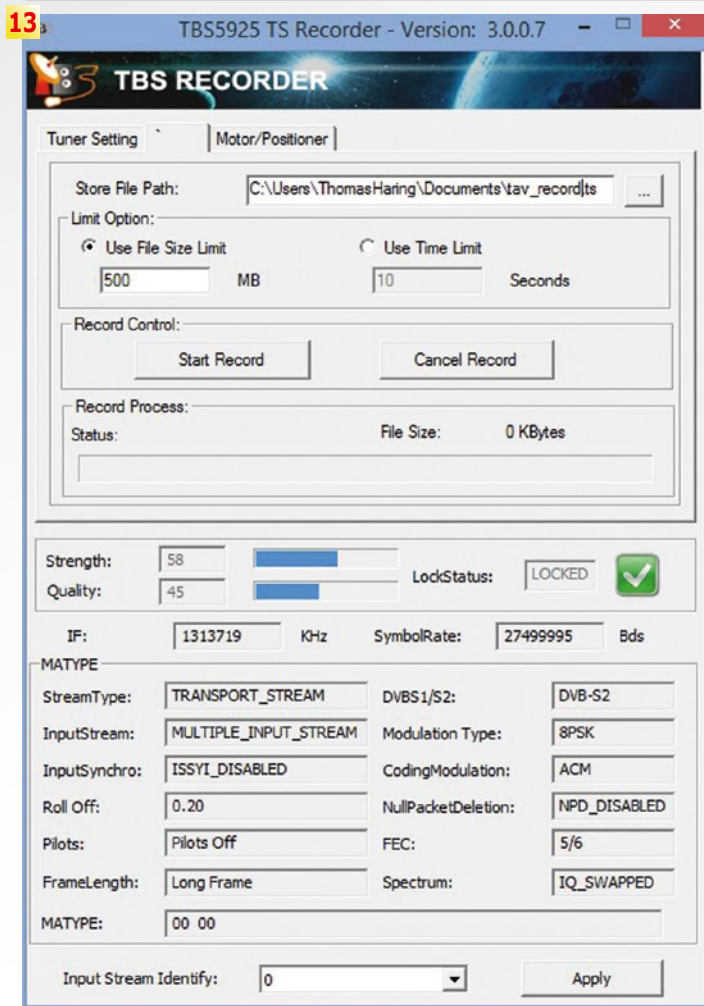
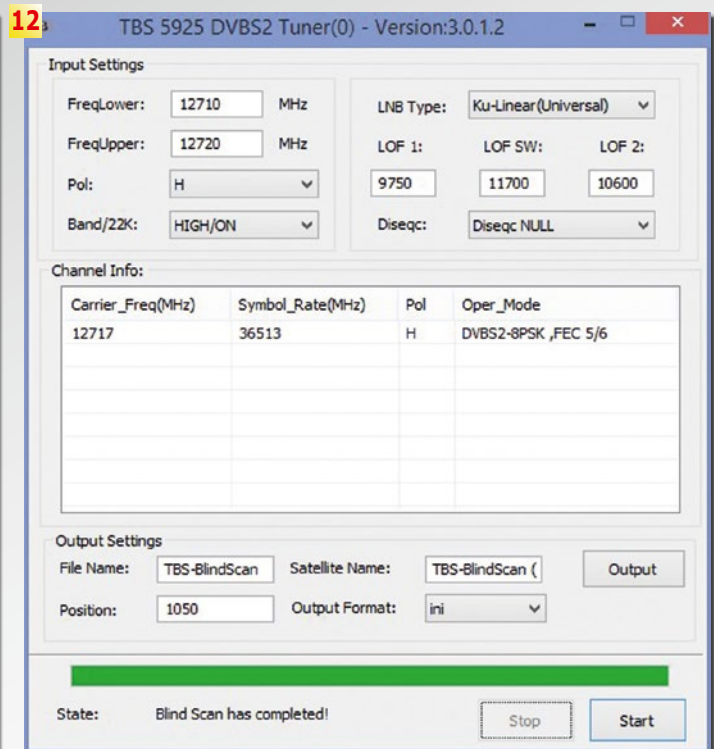
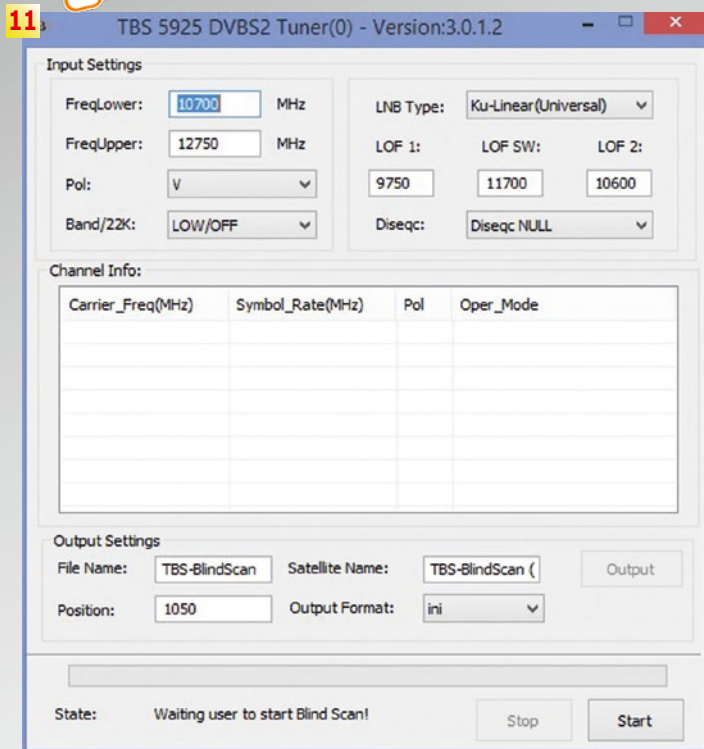
Tel: +86-10-88400438





1. The user can select the desired MIS stream with the help of the TS Recorder
2. Storing an MIS stream
3. Scan of an MIS frequency with TBSViewer
4. Reception of channels on an MIS frequency with TBSViewer
5. Scan of an MIS frequency with TBSViewer
6. Reception of channels on an MIS frequency with TBSViewer
7. Scan of an MIS frequency with ProgDVB
8. Reception of channels on an MIS frequency with ProgDVB
9. Scan of an MIS frequency with ProgDVB
10. Reception of channels on an MIS frequency with ProgDVB

There are several ways to transmit the data of a transponder via satellite. The standard that has been used thus far and the technology that is used by all the other standard receivers is called CCM (Constant Coding and Modulation). With this



Blindscan

11. Blindscan Tool for the TBS QBOX 5925

12. The BlindScan tool can recognize transponders with very low as well as very high symbolrates. Even MIS transponders were instantly recognized.

13. TS Recorder can store the selected transponder stream in a TS file on the hard drive of a PC.

14. Results of a BlindScan of HOTBIRD at 13° east. A total of 120 active transponders were found.

standard a satellite channel is transmitted with a fixed modulation mode and error correction code. In other words, all of the receivers wherever they may be in the footprint of the satellite

receive the same signal and process it identically.

At first glance this technology appears to be logical and correct but if you look again you'll recognize the disadvantage: since they are all

receiving the same signal, the receivers cannot react the same way to especially strong signals in a satellite's primary footprint as they can with especially weaker signals in the outer edges

of the same satellite's footprint. With stronger signals a smaller error correction is required and a more efficient modulation would suffice but with weaker signals it's the other way around: a



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Transmit Reject
Receive Reject
Single Channel Bandpass



WiMAX & Radar Eliminator



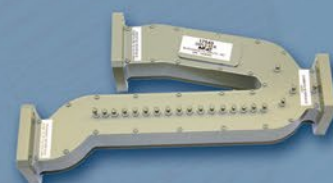
Transmit Reject

Ku-Band (All Bands - Worldwide)

Transmit Reject & Receive Reject
Multi-band Reject
Diplexers



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



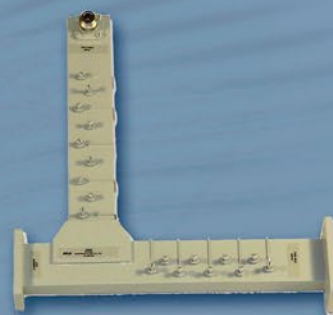
Receive Reject

Broadcast (DTV & FM)

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



DTV Transmit Mask



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

Auxiliary Services (Broadcast)

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

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

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www.microwavefilter.com



more complex error correction would be needed as well as a less efficient modulation mode in order to be able to receive a good-enough signal.

That's why VCM/ACM was developed. The strategy behind VCM/ACM (Variable Coding and Modulation/Adaptive Coding and Modulation) is that the entire bandwidth of a transponder is split into multiple parts and by employing various modulation and error correction methods the resulting bandwidth sections can now be occupied with different programming content that corresponds to the available bandwidth.

An example of this would be the transmission of an HD channel in a satellite's primary

footprint and an SD channel at the outer edges.

The receivers used in the satellite's primary footprint can have very small error correction along with an efficient modulation such that high data rates can be transmitted. But at the same time, the lower the received signal level as you move towards the outer edges of the footprint, a better error correction and more reliable modulation would be needed.

This all takes place within a transponder, in other words, with VCM the same transponder transmits using different modulations and error correction methods. In this case we are talking about MIS (Multiple Input Streams). This means that

the receiver can receive multiple transponder streams from one transponder that were transmitted completely independent of each other and therefore could have different modulation and error correction methods in use.

From the large number of transponder streams, an MIS-compatible receiver looks for those streams that can be received with sufficient quality. In the satellite's primary footprint this would be those streams carrying HD channels while at the outer edges of the footprint, it would be those streams with SD channels. But we're not quite there yet; the desired streams must still be selected manually - as long as an MIS-compatible receiver is used. These streams can not (yet) be received with today's normal DVB-S2 receivers.

VCM was developed with the normal TV viewer in mind since in this case the individual streams are transmitted with constant values. ACM, on the other hand, was developed with professional applications in mind, such as for feeds. Here the reception quality can be sent back to the broadcaster through a return channel so that the modulation and error correction can be adapted as needed.

One of the few boxes available that can receive this kind of technology is the QBOX. The included TBSViewer

from Tenow and most of the other available DVB reception tools are currently not able to correctly process MIS frequencies.

That's why Tenow has made available for download a small tool that goes by the name of TS Recorder; with the help of the tuner box, it will let you dial in the desired MIS stream so that a matching signal can be made available to the DVB reception software. But there's a certain procedure to follow if you want to change MIS streams: first you have to exit out of the DVB reception software and then start TS Recorder. From there you would select the desired new stream and then switch back to the DVB reception software.

The TS Recorder can be individually adapted to the available reception system whereby the local oscillator frequencies (LOFs), the switching point between low and high band as well as the DiSEqC 1.0 parameters can be entered individually. The user then simply needs to select the desired reception frequency, polarization and symbolrate of the MIS transponder. Once this is all taken care of, all that's needed is a click of the „Lock TP“ button after which the software will read in the desired transponder.

More information on the selected transponder can be found near the bottom of the



window as well as the „Input Stream Identify“ field with a choice of one or more numbers that indicate each of the existing transport streams from that transponder. Here you simply choose on one of the choices and then click on one of the entries. At this point you can exit out of TS Recorder and a scan of the desired MIS frequency in the DVB reception software results in the desired stream. This procedure can be repeated as often as necessary until all of the streams shown in the „Input Stream Identify“ field have been selected and processed. And there you have it! With each newly selected stream, the DVB reception software recognizes completely different channels all on the same frequency.

Another more comfortable option to use is ProgDVB (www.progdvb.com), that in its current version can work with MIS frequencies without any extra help or external tools; even the free standard version can do it.

For our actual tests we used the 12718 MHz transponder on EUTELSAT 12 WEST A at 12.5° west on which there are four transponder streams that are totally independent from each other. We had no trou-

ble accessing the completely different channels on each individual transport stream as well as switching between the streams. Naturally, all of the features you're used to seeing, such as EPG and language selection, are all available with MIS reception except that now multiple transport streams can be received on one and the same frequency. It was also worth checking out the 11914H transponder on ASTRA 1G at 31.5° east where there are a total of three different transponder streams carried on a single frequency. Here too our test of MIS reception using the TBS QBOX 5925 worked perfectly. And the relatively high symbolrate of 35610 Ks/s used on EUTELSAT 12 WEST A's 12718 MHz transponder did not create any problems.

In addition to MIS reception, Tenow also developed a BlindScan tool for the TBS QBOX 5925's tuner that proved itself quite capable in our tests. Just about eight minutes was needed to identify 120 active transponders on the HOTBIRD satellite at 13° east; that's a few more than you might find in many frequency lists.

The BlindScan tool can be customized by the user to his specific needs. Whether

you want to search a specific frequency range, one polarization or just a single band, you'll find all of the necessary settings capabilities presented in an easy to understand format. The results of a BlindScan can be easily exported to a file which can then be imported and utilized by, for example, DVBViewer or ProgDVB. In our tests the TBS QBOX 5925 showed us that with its BlindScan it was quite capable of correctly and reliably recognizing and processing transponders with very low

symbolrates as well as those transponders that were very close to each other.

The TBS QBOX 5925 is a many-faceted and practical DVB-S2 receiver for the PC and thanks to its exceptional tuner can easily handle weak or narrowband signals. MIS reception with VCM/ACM is a feature that for now is really only important to satellite enthusiasts but, because of its significant cost savings potential, will without a doubt also become interesting for everyday users in the future.

EXPERT OPINION

TBS QBOX 5925
USB Receiver for MIS



**RECOMMENDED
PRODUCT BY** ▼



Thomas Haring
Test Center
Austria

TELE-audiovision
THE WORLD'S LEADING DIGITAL TV INDUSTRY PUBLICATION

VIP
CARD

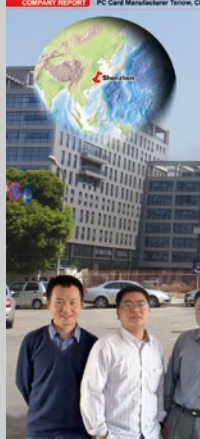
TELE-audiovision
www.TELE-audiovision.com

- +**
 - Excellent workmanship
 - Powerful tuner
 - Manufacturer's own tools to optimize all of the TBS QBOX 5925's functions
 - Perfect MIS reception with the help of the free ProgDVB version
- - None

MORE ABOUT THIS COMPANY

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

COMPANY REPORT PC Card Manufacturer Tenow, China

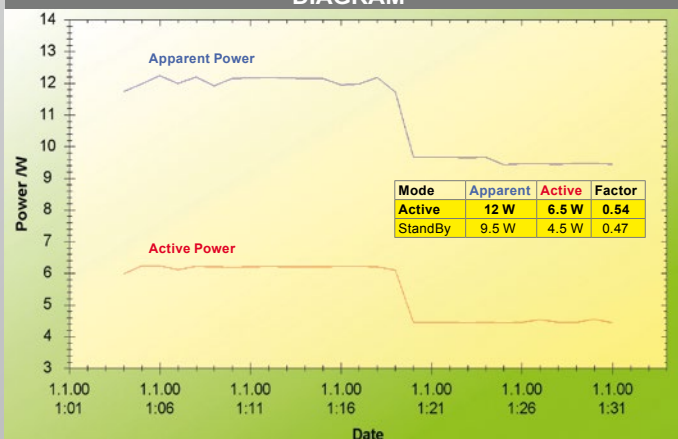


Innovative PC Cards from China

One company that is fully concentrated on the development of their products is the young firm Tenow from Shenzhen, China. PC cards are manufactured although the actual production process is outsourced allowing Tenow to focus their efforts on Development and Marketing. Also interesting to note about Tenow: the company is run by four partners and all four of them work together as a team to further expand their young company. Tenow is in the process of setting up a new office in Shenzhen's large High-Tech Park. When we paid them a visit, we went to their old office located directly next to the Shen De Metro Station on route 1.

Top of the Tenow building, Shenzhen, China. Right: Tenow, who is also involved with the development of their products is the young firm Tenow from Shenzhen, China. PC cards are manufactured although the actual production process is outsourced allowing Tenow to focus their efforts on Development and Marketing. Also interesting to note about Tenow: the company is run by four partners and all four of them work together as a team to further expand their young company. Tenow is in the process of setting up a new office in Shenzhen's large High-Tech Park. When we paid them a visit, we went to their old office located directly next to the Shen De Metro Station on route 1.

ENERGY DIAGRAM



The first 15 minutes active operation with signal reception, the second 15 minutes standby



MX-OCS12 of Maxing



- *receives two sub bands in the Ku band and transmits them in one cable*
- *perfect for use with existing tv cablings, replacing terrestrial tv with satellite tv*
- *restricts the number of possible channels to the ones transmitting in the two sub bands of the Ku band*
- *no hassle with switching between two bands*

What Is a One Cable LNB?

The universal LNB for Ku-Band has become something so standard that many of us think that nothing else is offered on the market. That is not true. There are other products available. And one of such non-standard LNB for Ku-Band is the MX-OCS12 of Maxing. The manufacturer calls it "one cable LNB" and this needs some explanation.

The MX-OCS12 converts two specific sub bands of the lower part of the Ku-Band to the L-Band. These sub bands are: 10.7~11.2 GHz at vertical polarization and 11.45~11.7 GHz at horizontal polarization. Because its local oscillator works at the typical frequency of 9.75 GHz, the two sub bands are shifted into the following frequency ranges in L-Band:

0.95~1.45 GHz and 1.7~1.95 GHz. Now, the trick is that you can connect more than one satellite receiver to the output: if only one of the receivers supplies the MX-OCS12 LNB with d.c. voltage (in the range of 11.5~19 volts) all the other receivers in the chain may have their LNB power switched off. Now the question is: how many receivers can then be connected to that one LNB? Well, this depends on the sockets you will use. The sockets have splitters that may differ in insertion and tap losses. With typical sockets, you should be able to connect 8~10 receivers to the output of the MX-OCS12 LNB and all of them will be able to tune into the above mentioned two sub bands.

From the outset the MX-

OCS12 LNB looks as a typical product for Ku-Band. Quality of workmanship is excellent but as we have noted before, Maxing uses labels printed on paper. Whilst this would not concern us much with any regular LNB in this case with such a special LNB it might be good to be able to read the specifications also after the LNB is exposed to the outdoor world being mounted on a dish.

Of course, the type of label on a LNB is not at all critical. What really counts is the product performance. For our TELE-audiovision test we selected the HOTBIRD on 13° East as our source of signal and a modern universal LNB as our reference LNB. Our measurements revealed

that the MX-OCS12 LNB performed very well in its vertical sub band (10.7~11.2 GHz). It generated stronger signals than the reference LNB without compromising signal quality. MER was practically identical with the reference LNB. Moreover, it was able to work even at 11.279 GHz so the vertical sub band was slightly wider than promised.

Output signal for the horizontal sub band was a little bit weaker than our reference. Also signal quality was somewhat poorer. MER was by 0.5~1.5 dB lower than our reference. However, MER=12 dB still guarantees very solid reception even in terrible weather conditions. So, if the MX-OCS12 LNB is used for a similarly strong satellite as HOTBIRD then its slightly weaker performance in horizontal sub band will be unnoticeable.

The MX-OCS12 LNB by Maxing is a unique solution to some special situations, mainly when only the transponders on the two sub bands, which the MX-OCS12 LNB supports, need to be received. In such a case the MX-OCS12 LNB allows for a very simple chain installation, as normally used in regular terrestrial tv dis-



Model: MX-OCS12
One Cable Solution Ku LNB
Output: 1200~1950MHz
L.O.: 9.75GHz
Conversion Gain: 62dB
Noise Figure: 0.1dB

VIP

Card

Tested & Recommended Product by
TELE-audiovision Magazine
The World's Leading Digital TV Industry Publication



TELE

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AWARD

11-12/2014

MAXING MX-OCS12
Perfect for using with existing tv cabling

www.TELE-audiovision.com/14/11/maxing

Horizon Digital Meters

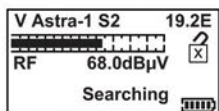
Satellite • Terrestrial • Cable



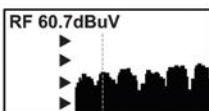
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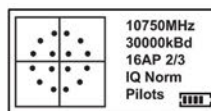
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Satellite signal display



Spectrum display



Constellation Diagram*

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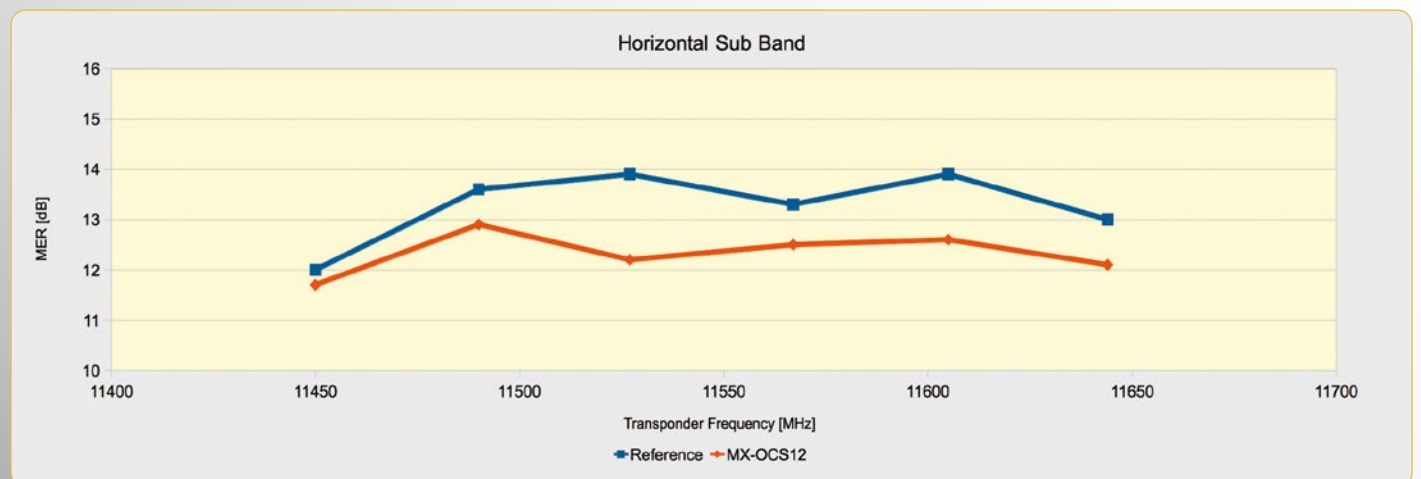
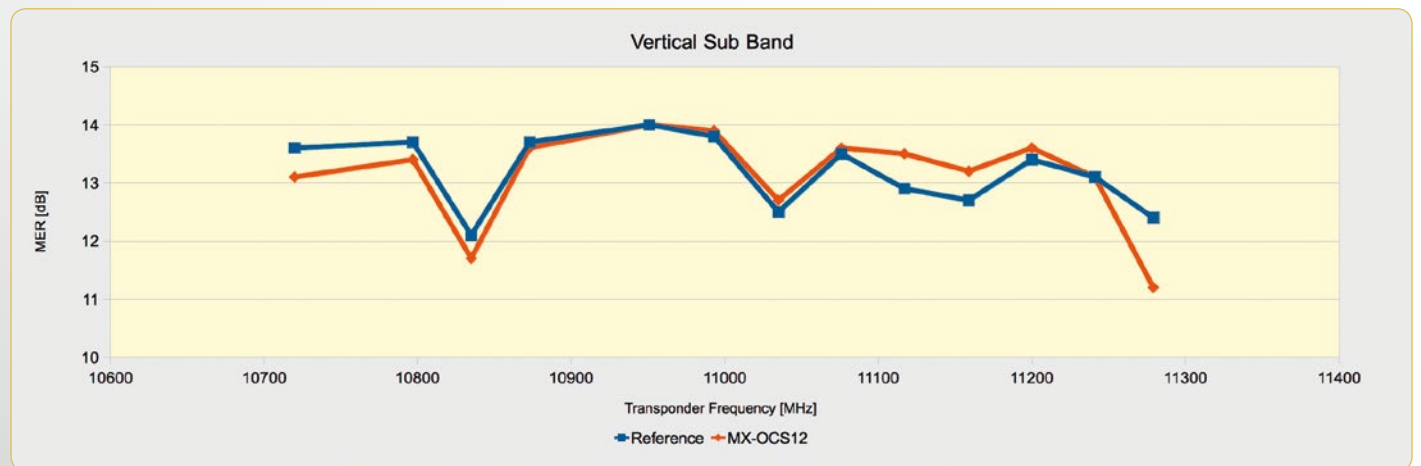
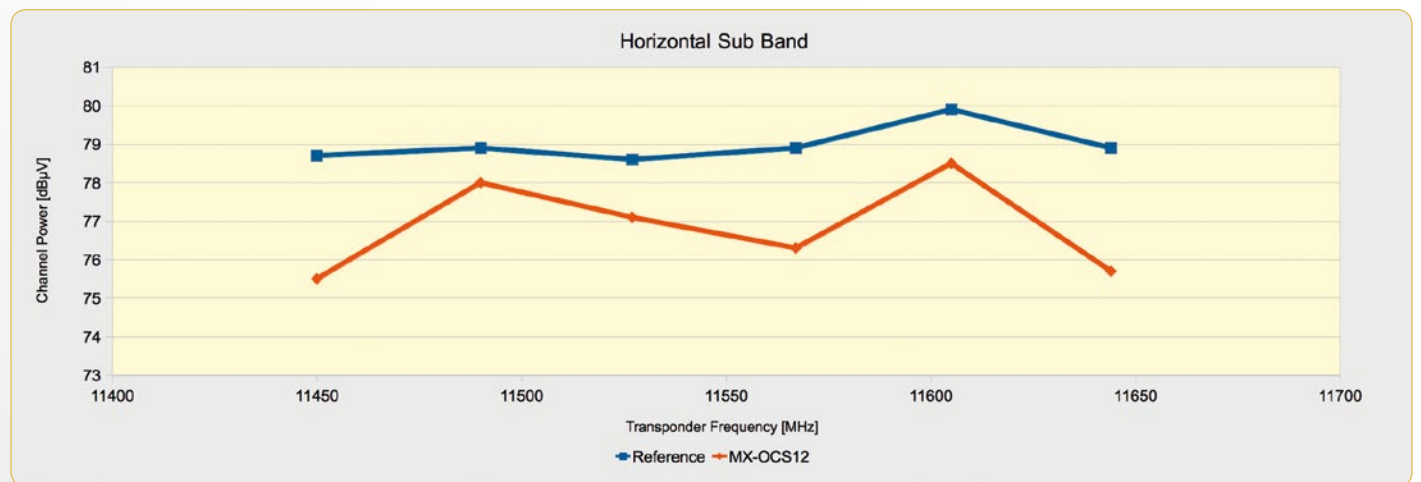
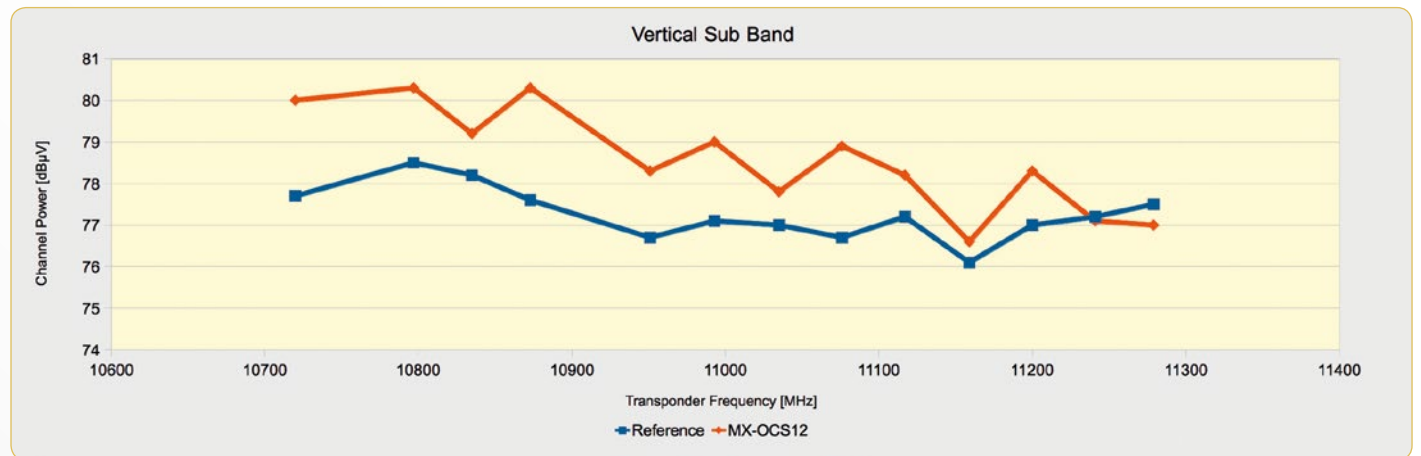
Email: sales@the-imcgroup.com



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

• Satellite • Terrestrial • Cable







tribution systems. The MX-OCS12 LNB is thus a perfect solution to replace a terrestrial antenna with a satellite dish and leaving the existing cabling intact - provided the satellite in question offers the desired tv channels

in the two sub bands. This of course depends on each users preference and each satellites channel allocation. At any rate, the MX-OCS12 LNB is an elegant and easy to install option well worth to consider in such situations.

EXPERT OPINION

MAXING MX-OCS12
One Cable LNB

RECOMMENDED
PRODUCT BY ▼



TELE-audiovision
THE WORLD'S LEADING DIGITAL TV INDUSTRY PUBLICATION



Jacek Pawlowski
Test Center
Poland

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- Very good performance in the vertical sub band
- One cable LNB simplifies distribution network as no multi-switches are needed but just sockets and a number of receivers can be connected to the same cable
- The One cable solution limits the number of transponders that one is able to receive; you should check first if all the channels of interest are indeed located within the two sub bands this LNB is able to receive

TEST REPORT LNB with DiSEqC

Maxing MB04

Universal LNB with built-in DiSEqC switch

- perfect weather protection of the built-in DiSEqC switch
- easier cabling and installation work
- excellent reception results
- any LNB can be connected to second input

■ TELE-audiovision already tested the MB04, a LNB with integrated DiSEqC switch
<http://www.tele-audiovision.com/TELE-audiovision-1407/eng/maxing.pdf>

TEST REPORT Ku band LNBs

MX LNBs of

Maxing Electronic Technology

- Single and Quad LNBs excellent for receiving weak satellites
- Twin LNB ideal solution for strong satellites and extensive distribution systems
- excellent workmanship
- performance equal to other best quality LNBs on the market

■ Maxing is an innovative manufacturer of LNBs. TELE-audiovision has presented other LNBs models: Single, Twin and Quad
<http://www.tele-audiovision.com/TELE-audiovision-1409/eng/maxing.pdf>

Triax TSS400





- ***Simple way to stream satellite channels to Smartphones and Tablets***
- ***Comfortable menu operation***
- ***Compatible with HDTV***
- ***Its four tuners make it compatible with all four polarization levels***
- ***Multiple users can watch programs at the same time***

TV & Radio Distributed Throughout the Entire House Using Your Own Network



A new and especially innovative solution for distributing satellite signals is the Triax TSS400 satellite-IP converter. It converts satellite signals in such a way that they can be carried via a network. The metal housing is very durable and suitable for installation in the attic or basement. It is not water resistant and therefore should not be mounted outside. It should also be installed in a location where the surrounding temperature will be between 0°C and 40°C (32°F and 104°F).

There are a total of four colored LNB ports available for connection to a Quad or Quattro LNB. In this way the maximum of four users will all have access to all the transponders of a satellite at the same time. The TSS400 is connected to the local network through an RS-45 network interface (Gigabit) plus there is also a USB port on the converter for software

updates as well as a jack for the external power supply and a main power switch. Two LEDs on the top of the converter provide current operational status information.

The TSS400 can be configured and controlled through an integrated web server. Since in the basic settings it gets its IP address from the router via DHCP, you initially have to locate the IP address. For this purpose Triax recommends the free software „Developer Tools for UPnP Technologies“ that can be downloaded via the Internet from here: <http://opentools.homeip.net/dev-tools-for-upnp>.

Once the IP address has been identified, it merely needs to be entered into the PC's web browser and just like that you end up in the password-protected TSS400 web server. After entering „satip_admin“ (the password can, of course, be personal-

ized later on), the options Network Settings, Software Upgrade, LNB Settings, Diagnose and System Status all become available. Now, for example, the TSS400's IP data can be modified. In the LNB Settings the local oscillator frequency (LOF) for the low and high band can be manually entered. Even the switching frequency (from low to high band) can be entered here. Those of you that have SCR single cable solutions will be happy to know

that this is also supported by the TSS400. In the Diagnose section a static frequency can be set up on each of the four tuners which can then be transmitted through the local network as an IPTV stream via freely selectable Multicast addresses and individual ports. This will also help to solve the problem of so many different PIDs on one transponder; the user can individually determine which PIDs should be carried and which should not. If a



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- DVB-S, DVB-C and DVB-T digital receivers
- modulators and measuring equipment
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- MPEG encoders and decoders

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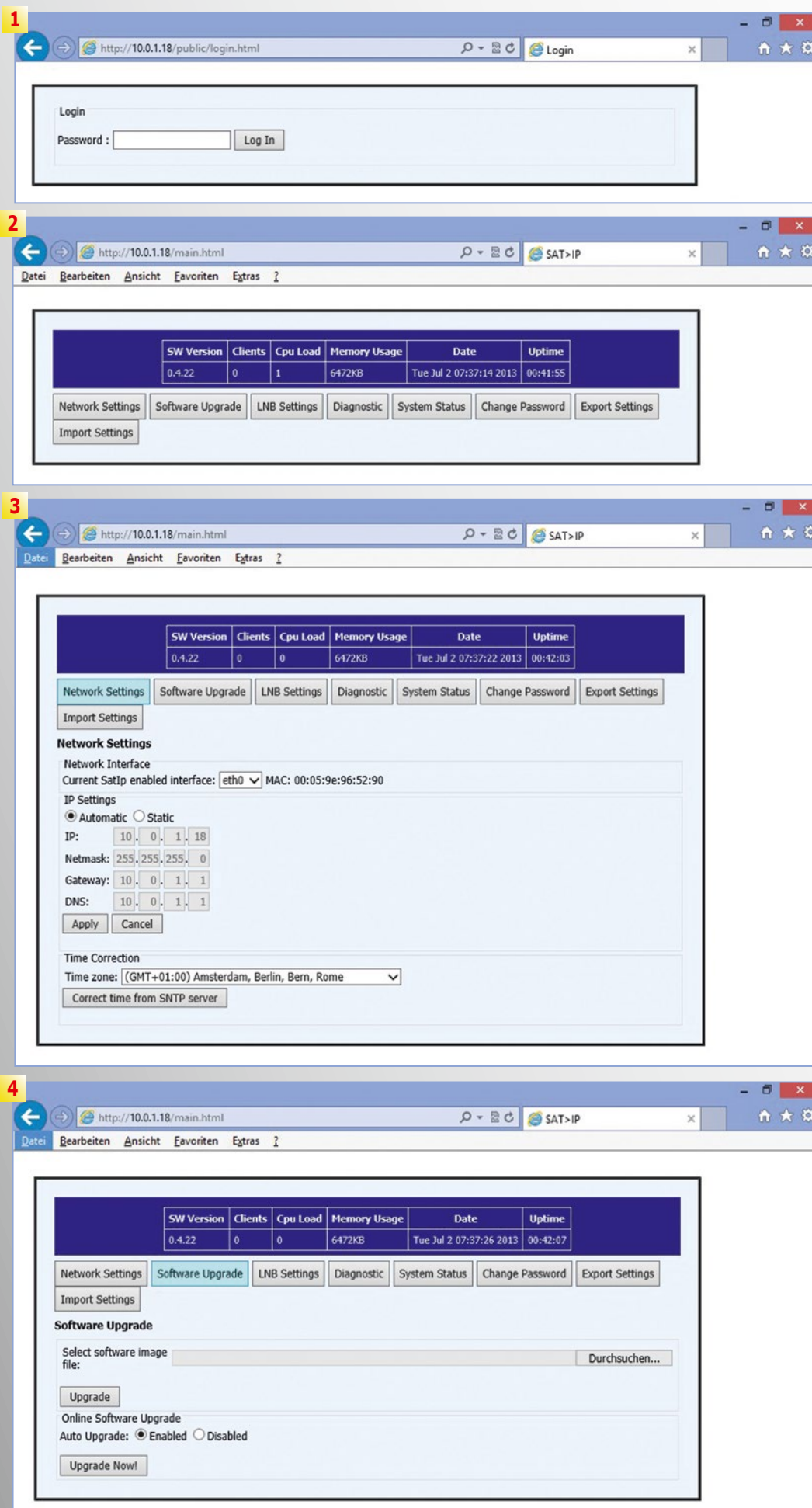


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The CW-4412 MPEG-4 Encoder with two independent H.264 (MPEG-4 Part 10 AVC) SD/HD encoders with ASI and IP outputs is an ideal choice for small and medium size cable and IP networks

- Analogue video inputs: CVBS or S-Video and YPrPb
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- Analogue audio inputs: two-channel asymmetrical or two-channel symmetrical
- Digital video inputs: HDMI, SD/HD-SDI (with embedded audio)
- Ten parameter sets (default settings) with one-button selection, with individual modification possibility
- SD (720 × 576 50i, 720 × 480 60i) and HD resolution (max. 1920 × 1080 50i, 1920 × 1080 60i)
- Resolution conversion from HD to SD
- Automatic 100Base-T and 1000Base-T network recognition and display, full-duplex mode
- Programming and inspecting via separate management port from web interface or through gigabit Ethernet network



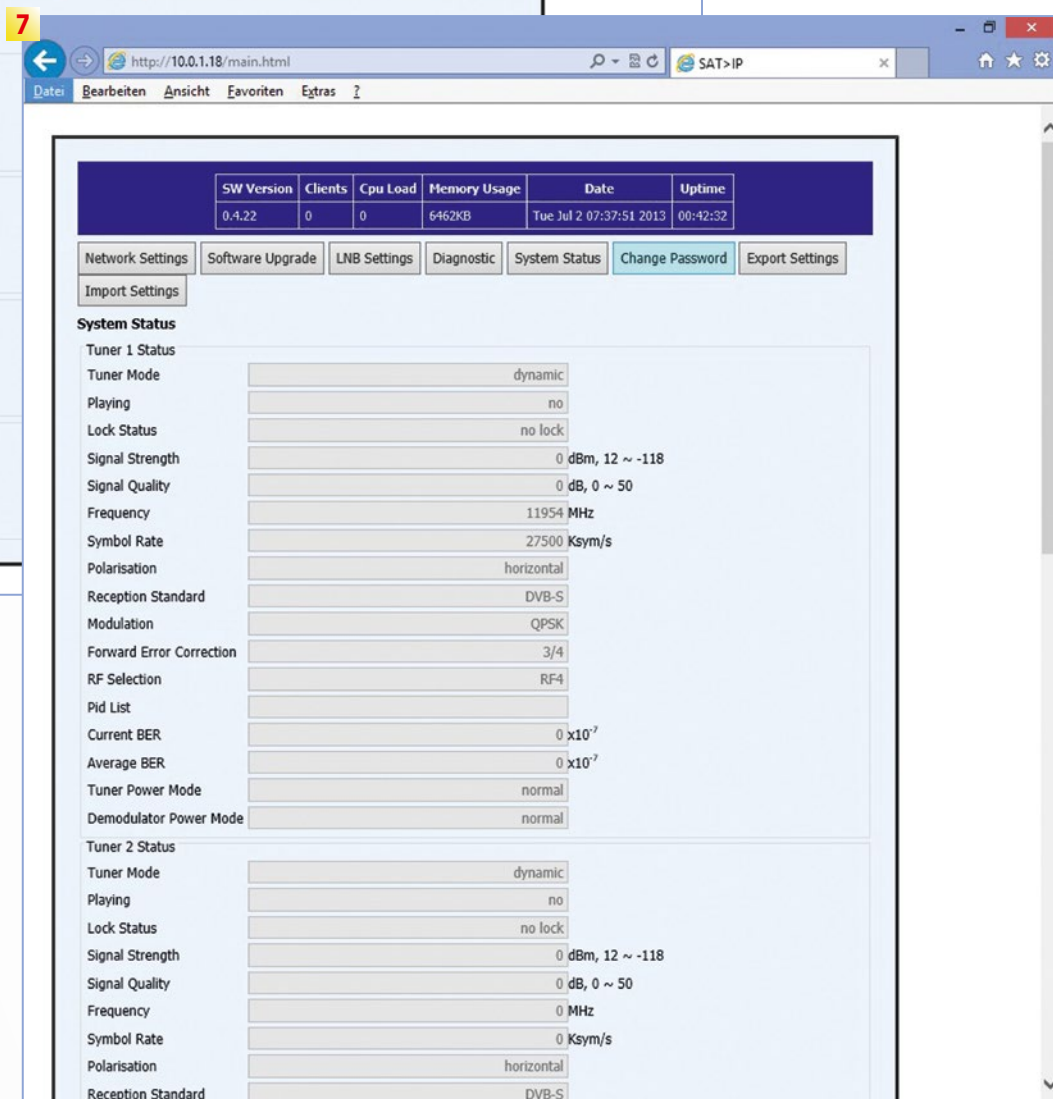
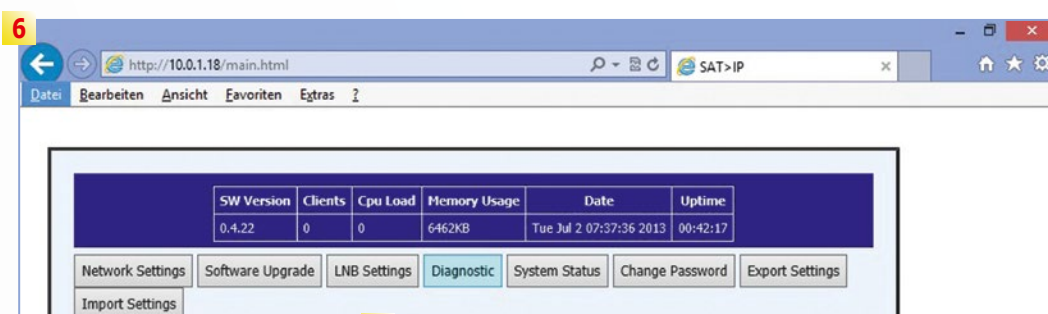
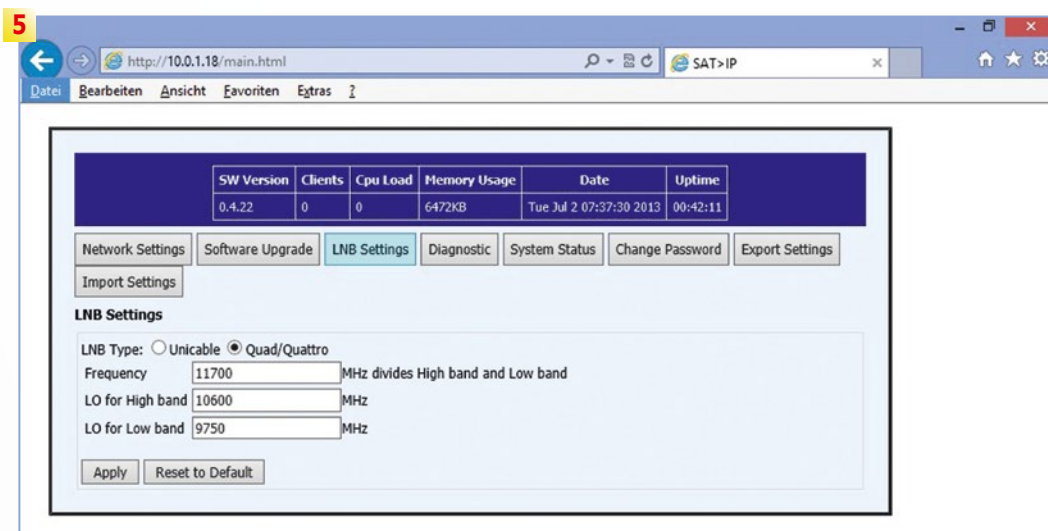


tuner is occupied with a pre-defined transponder it is no longer available for individual reception via Smartphone, Tablet, PC or IPTV receiver. This option is therefore especially suitable for presentation applications or IPTV receivers that will always show the same channel.

In the status menu the user will get an overview of the signal levels for all four tuners and it will be listed in detail which transponder is currently active. Once all of the settings have been individually taken care of, exporting the settings to a recovery file would be a practical move. In this way it would only take a few mouse clicks to return the system to a functional configuration.

Since the Triax TSS400 doesn't have its own audio/video outputs, the display of the TV signal would have to take place via a compatible device. This could be, for example, an IPTV receiver but at this point we aren't going to go into any more detail about that. We're far more interested in the possibility of receiving TV signals via Smartphone, Tablet or even laptop or PC and for this purpose the TSS400 offers a variety of capabilities. For around 0.89 Euros you can download the „Elgato Sat>IP“ App for an iPhone or iPad from the iTunes store. This would convert your iOS device into a fully functional TV. This App is also available for download for An-

1. The Triax TSS400 Webserver
2. Many of the TSS400's functions and settings can be set up directly via the web browser
3. Network settings
4. Software Upgrade via USB Stick
5. LNB settings - even SCR single cable solutions are supported
6. The four TSS400 tuners can be fed with static transponders in the Diagnose menu
7. TSS400 System Status



list of 200 entries available to choose from but the data itself is not all that up-to-date. But we really don't want to be too critical here; in the end hardly anyone would consider using the TSS400 for satellite DXing and with the classic DTH positions the software actually has a very different function, and that would be the download of preconfigured and very up-to-date channel lists from the Internet. In this way the user not only saves time by not running a channel scan, the user also instantly gets a channel list with the most popular channels all in one place. Naturally, the channel order is not fixed; the user can change the order of the channels in the list at any time. A total of four satellites can be set up and shown in

droid devices in the Google Play store for 0.99 Euros. In general, the manufacturer recommends using a 5 GHz router to communicate with the mobile device although in our tests we had no problems using a more typical 2.4 GHz model.

When the App is started for the first time, you have to tell it in what country you are located and also what satellite the TSS400 is receiving. There's a preprogrammed

the channel list.

The App's Main Menu includes the headings Live TV, Recordings, Guide and Settings. Under Live TV you'll find the complete chan-

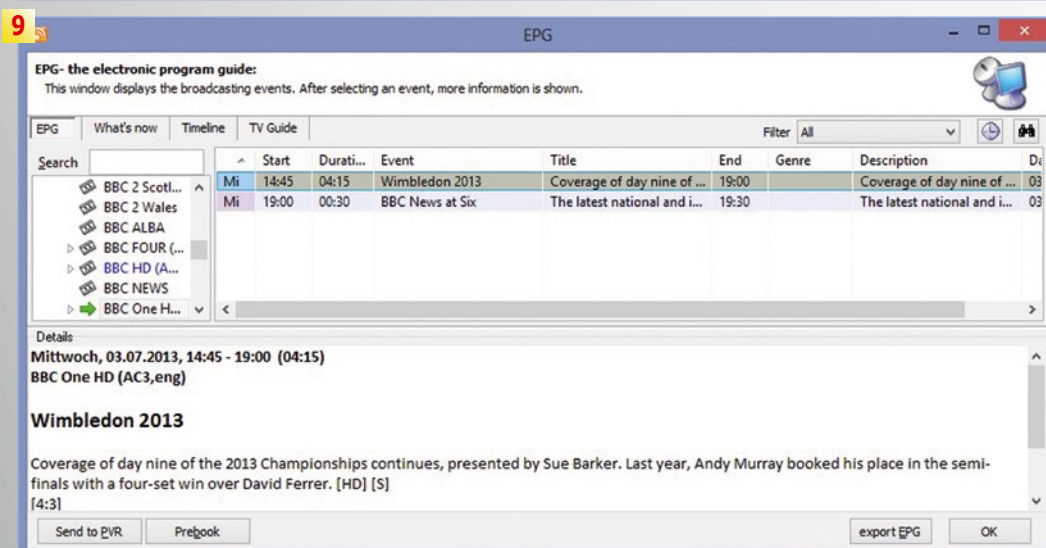
nel list and, if it was loaded from the Internet, it would include the broadcaster logos and also, if available, the EPG information for the current program. A gentle

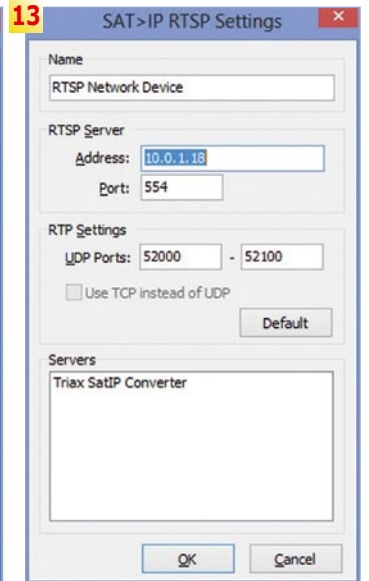
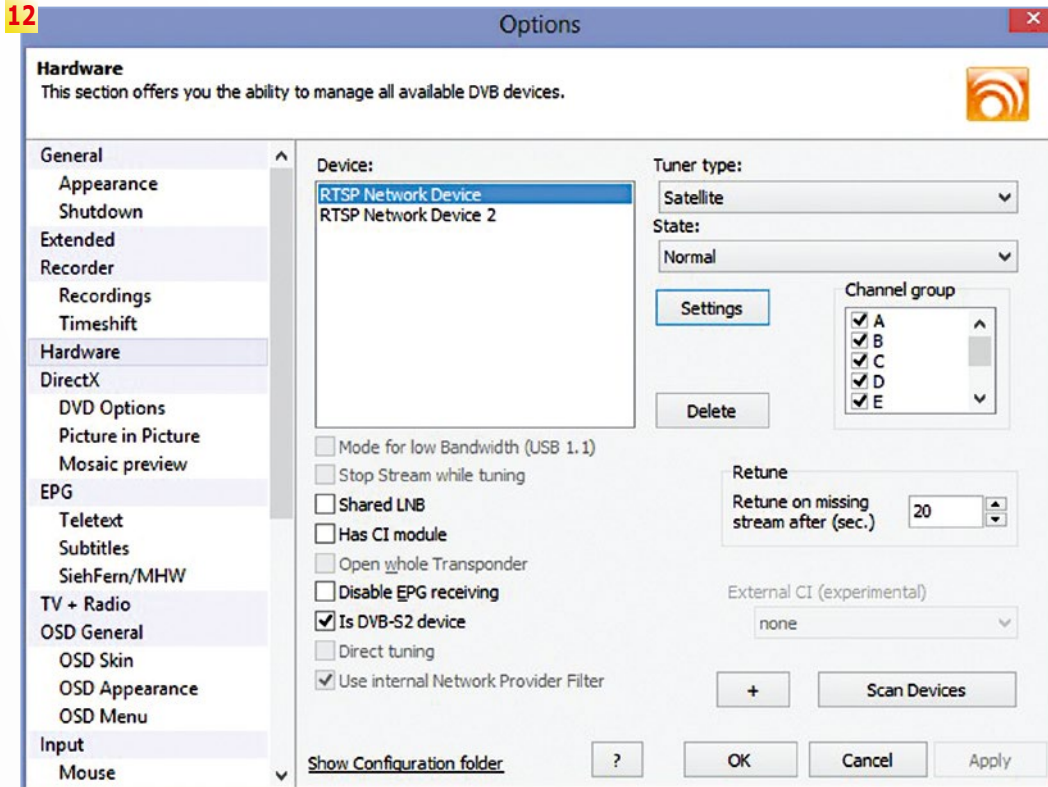
touch on the touchscreen is all that's needed for the App to start streaming the selected channel. The Infobar at the bottom of the screen appears after each channel

change and shows the title of the current and upcoming program as well as whether or not the current channel can be recorded.

Interesting were the buttons for social networks like Facebook and Twitter; they can be used by users to tell their friends about the program they are currently watching. If available, the user can also select between different audio tracks and he can also set up the video display to his personal tastes. Thanks to the Timeshift function the program that is currently being watched can be paused at any time and then restarted when needed. It turns out though that the amount of space that can be used by the Timeshift function in the initial settings is only about 100 MB and this corresponds to about four minutes of recording time in SD mode. Depending on the available memory in the end device, this space can naturally be increased.

We really liked the EPG function in our tests; it can be found behind the menu heading Guide and proved itself to be very practical. The App displays the programming information for up to 12 different channels for the next seven days. And again, just a single push of a button provides more detailed information on a specific program. And just like before, the same social network

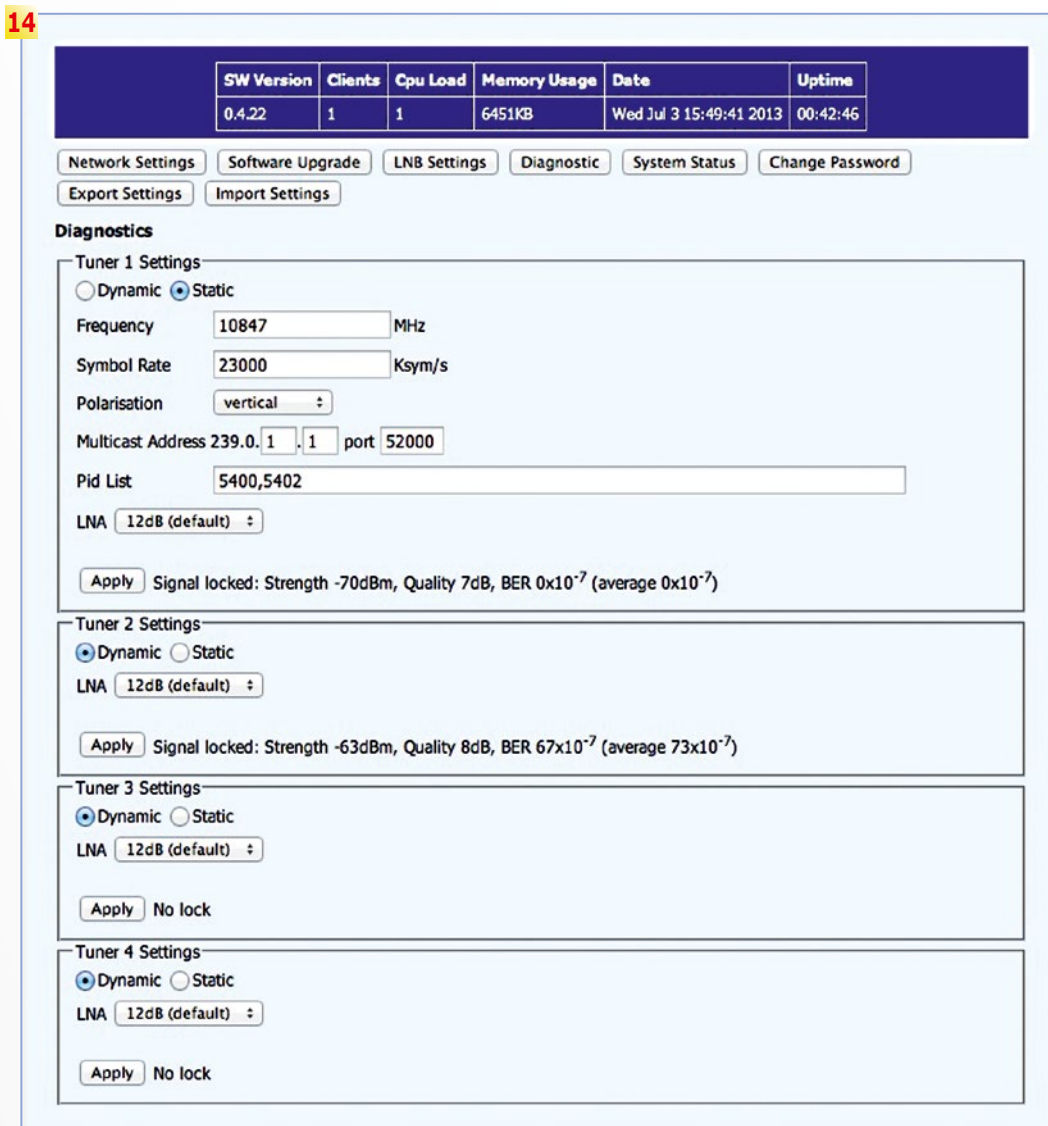




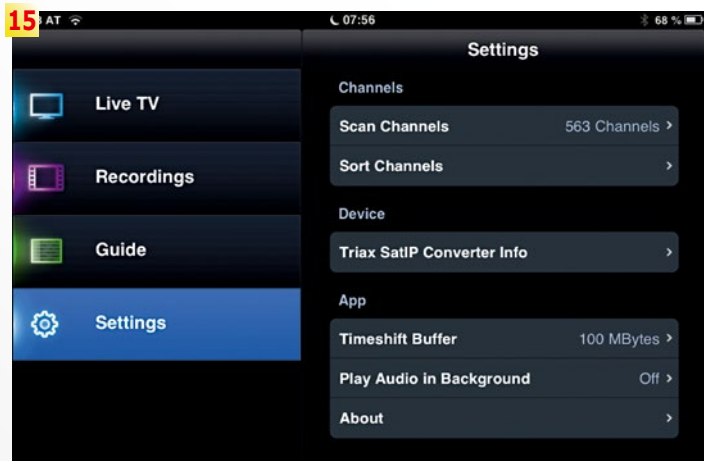
buttons are available here as well so that you can post interesting programs on Facebook or Twitter.

And lastly there's the Recordings section from which the user can access the previously recorded content on his mobile device. It's important to note here that these recordings are stored locally and are therefore not available to other devices via the network.

During our tests we really enjoyed being able to sit on a couch with an iPad and have access to our favorite TV channels through our WiFi network. All of the channels were played back without any problems and there was no noticeable in-



8. HDTV on a PC via DVBViewer
9. EPG data is routed from the TSS400 to the end device
10. Insert upper right: recording of multiple broadcasts in HD or SD is possible on a PC
11. Since more than one TSS400 tuner can be simultaneously accessed, you can use DVBViewer to record one program while recording or watching another program live
12. Thanks to the detailed instructions on the Triax web site it is very easy to configure the DVBViewer software to work in conjunction with the TSS400
13. The DVBViewer automatically recognizes the TSS400 address
14. Tuner 1 was connected to a fixed transponder while the three other tuners were controlled variably by the end devices



15. Settings for the Elgato Sat>IP Software

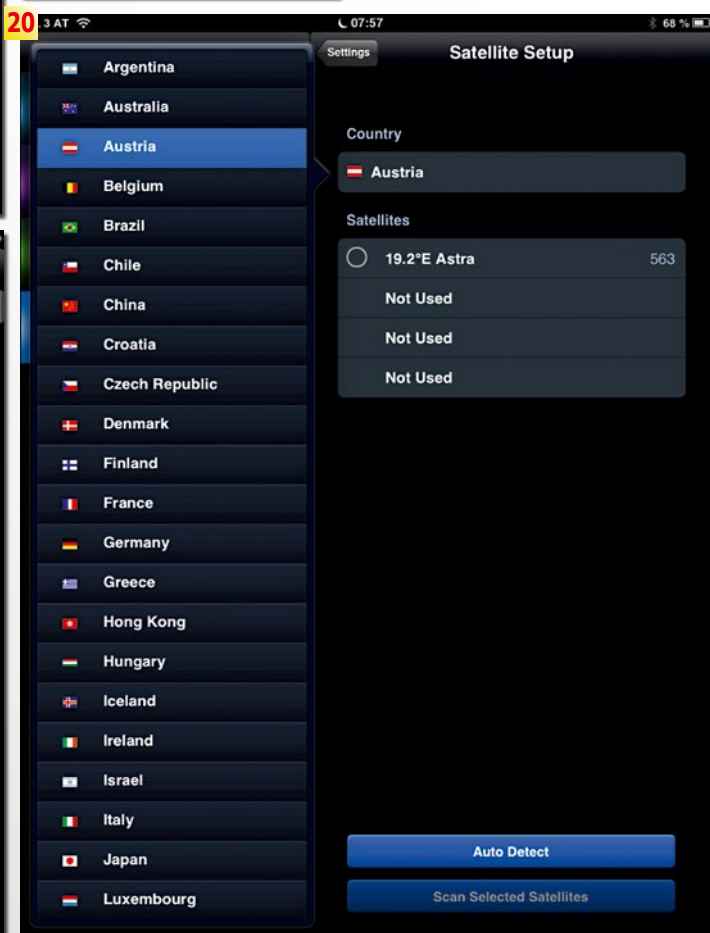
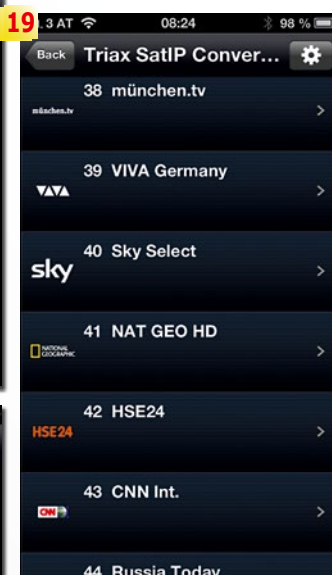
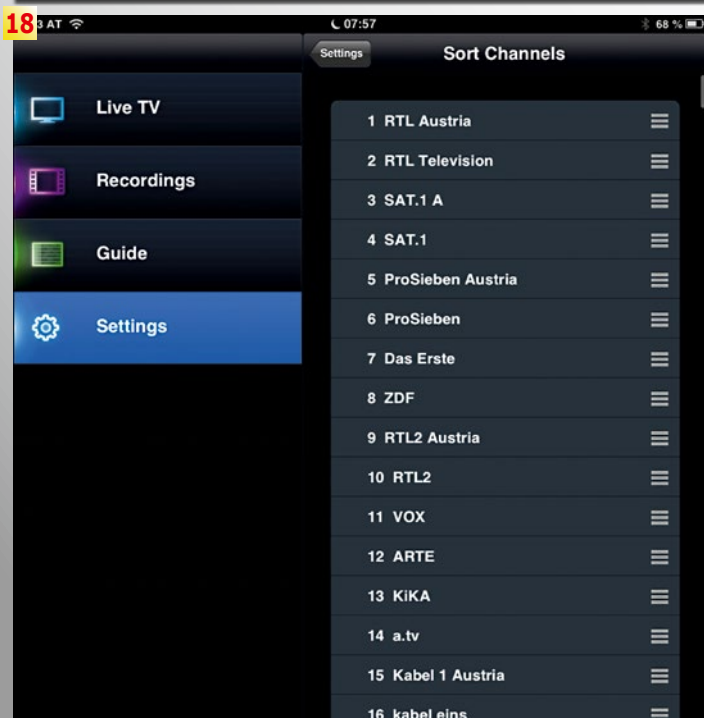
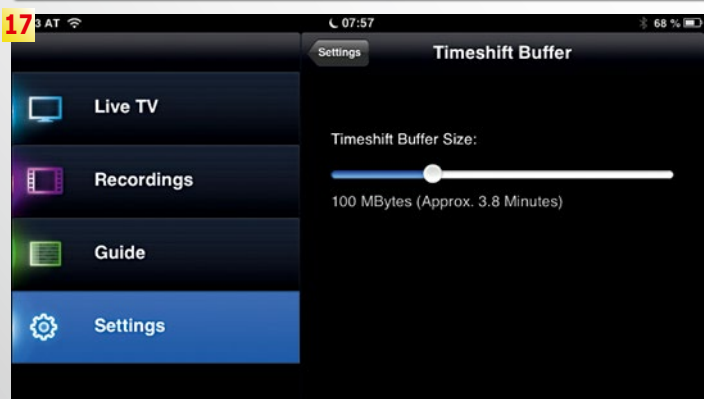
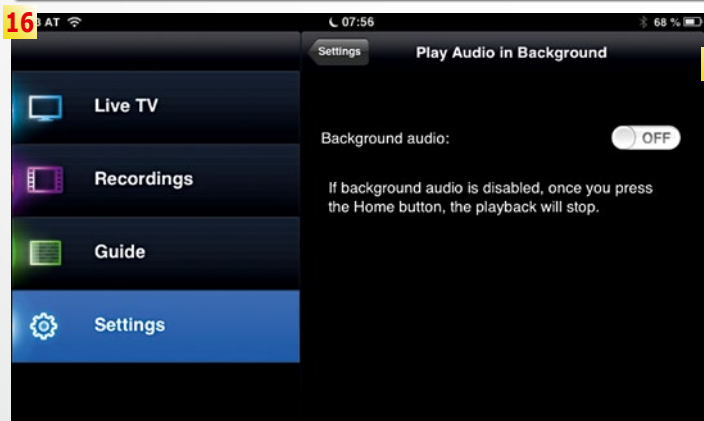
16. The audio from the current channel can continue to play in the background while other Apps are being used

17. The size of the Timeshift cache memory can be set as needed

18. The channel list downloaded from the Internet can be modified to your personal tastes

19. If the prepared channel list is used, then many of the broadcaster logos will also be displayed

20. Country selection in the Elgato Sat>IP software



interference or any other kind of interruptions. Only when we performed a really heavy load test using an iPhone and an iPad while simultaneously running two recordings on a PC were we able to detect some sporadic interference, but they weren't really bothersome.

And regarding a PC: naturally you can also access the four Triax TSS400 tuners via a PC using, for example, the DVBViewer software. Thanks to the freely accessible instructions available on the Triax website it is extremely easy to correctly set up all the necessary parameters. And, of course, it doesn't matter if you're dealing with HD or SD content plus there's features like EPG or multiple recordings at the same time. Thanks to the practical DVBViewer's PVR functions, the user has the ability to store his favorite programs directly on the PC. Converting them to DVD or Blue-Ray

G
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S



NEW ITEM

fast processor with 1GB DDR3 RAM
large color TFT display
2 x PnP DVB-C2/S2/T2 ready
2 x card reader
1000Mbps Ethernet

DVB-T2/C2/S2

eSATA
HISPEED

HDMI
HIGH DEFINITION MULTIMEDIA INTERFACE

HD
TV

USB
UNIVERSAL SERIAL BUS



WiFi



GigaBlue HD UE Plus

GigaBlue HD SE Plus

GigaBlue WLAN

GigaBlue Gbit LAN

GigaBlue keyboard remote

Many ways leads to us

XING

facebook



Impex-Sat GmbH & Co.KG

Beim Gießhaus 7
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Germany

Phone : +49 4124 937 262

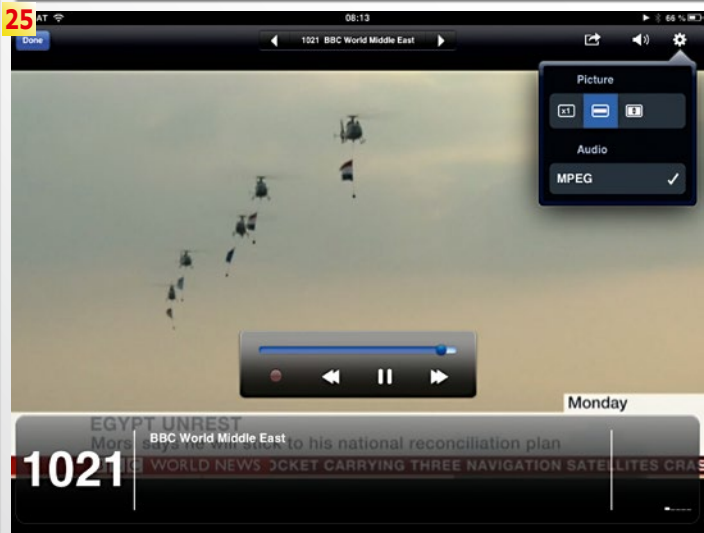
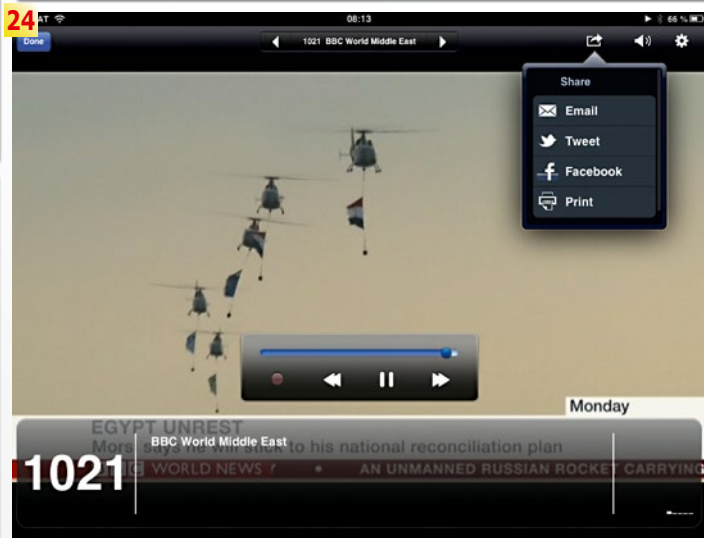
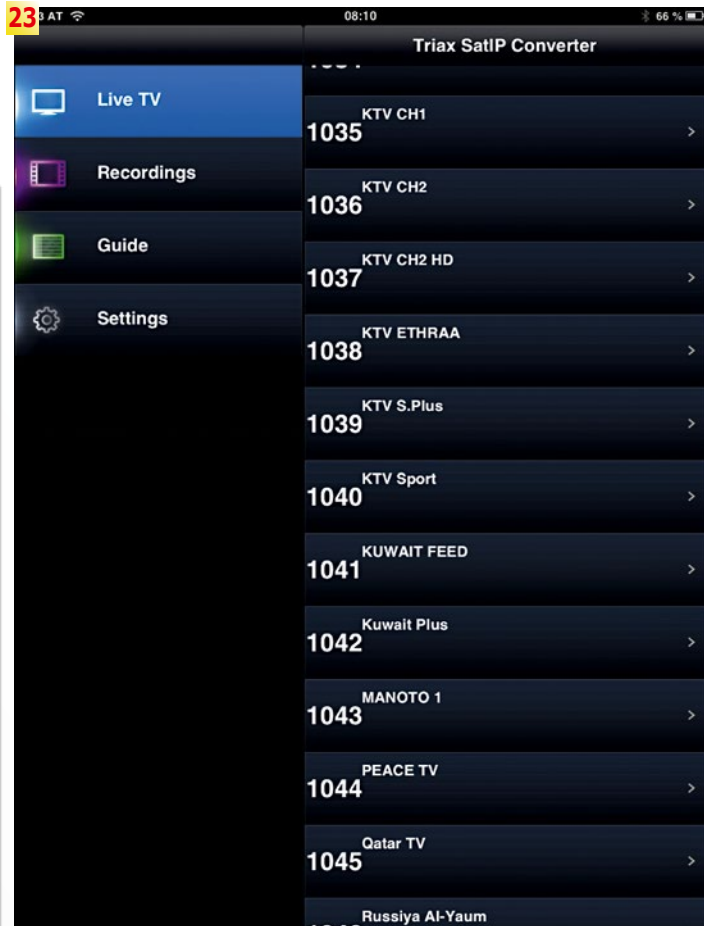
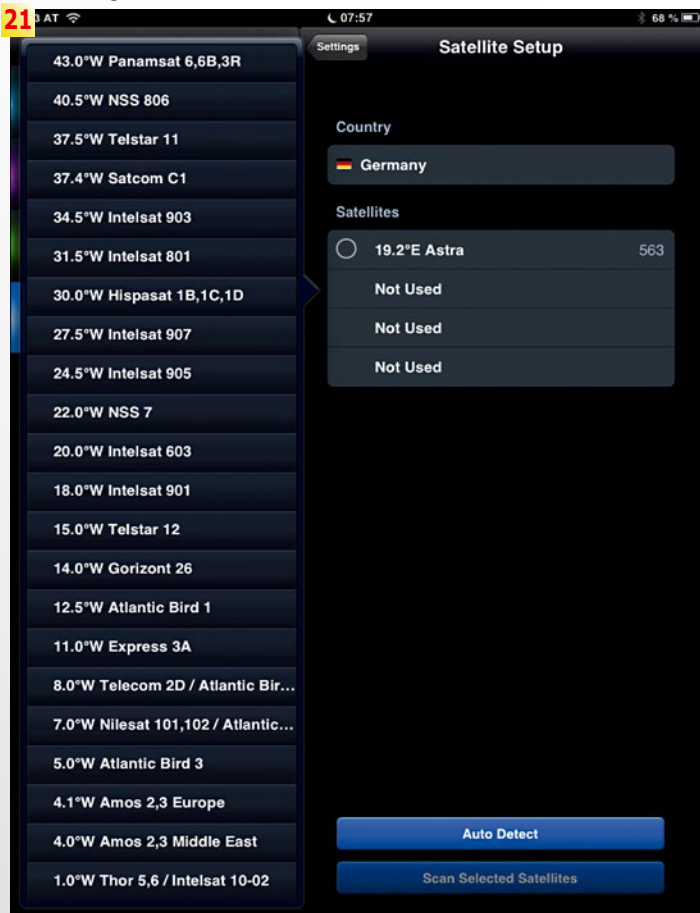
Fax : +49 4124 937 266

Email: sales@gigabluebox.de

Web: www.gigablue.de

21. Over 200 preprogrammed satellite entries are available to choose from
 22. An automatic channel scan of the desired satellites is also available
 23. The Elgato Sat>IP software's

channel list
 24. Thanks to the integration of social networks, you can keep your friends up to date about interesting programs
 25. Video and audio settings



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



DTU-215-GOLD

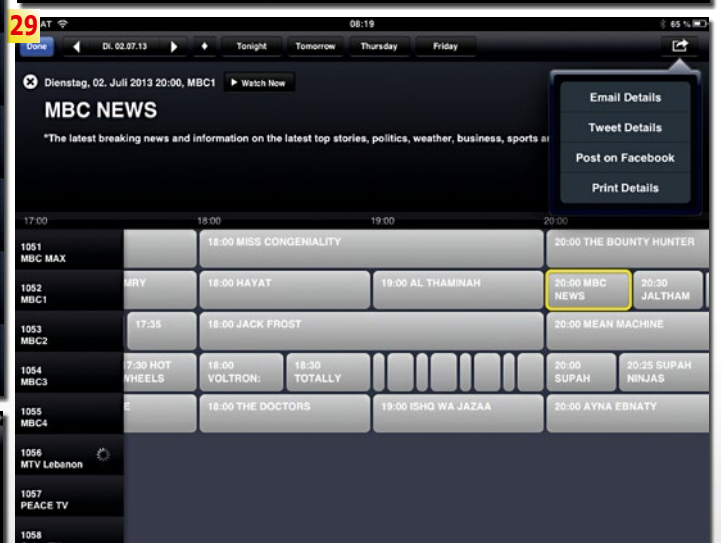
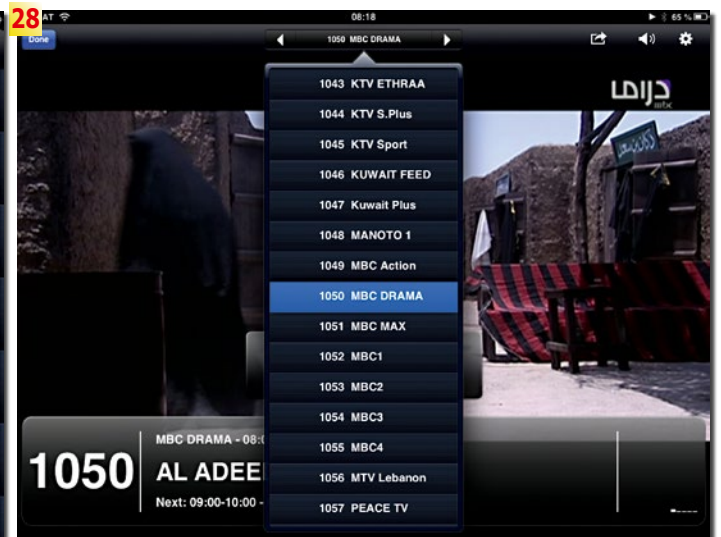
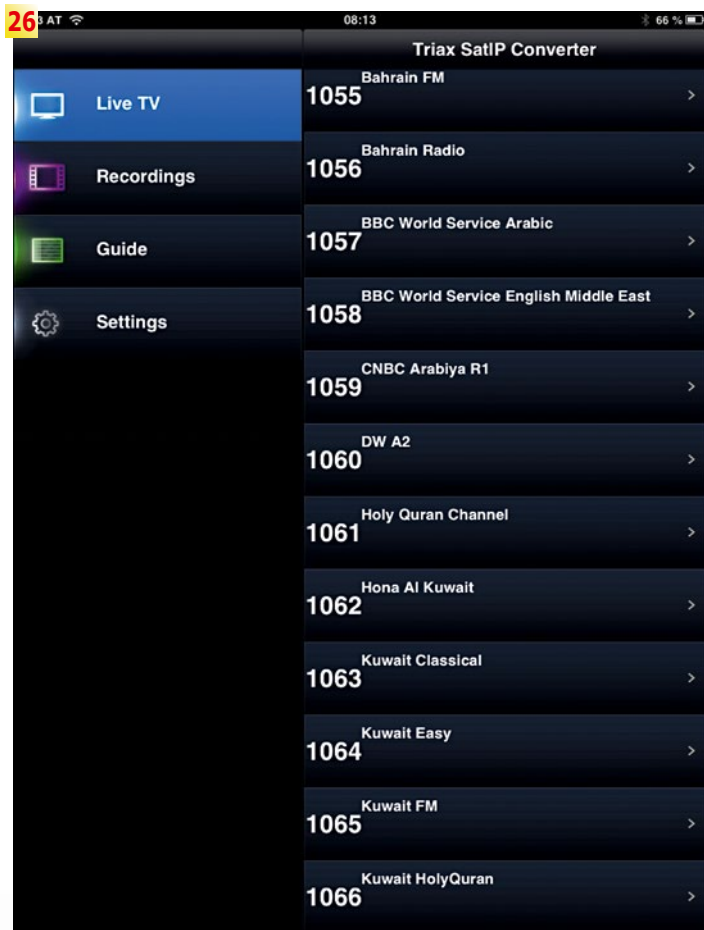
**Connect to your PC...
and test drive any
cable or terrestrial
digital-TV receiver**

**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

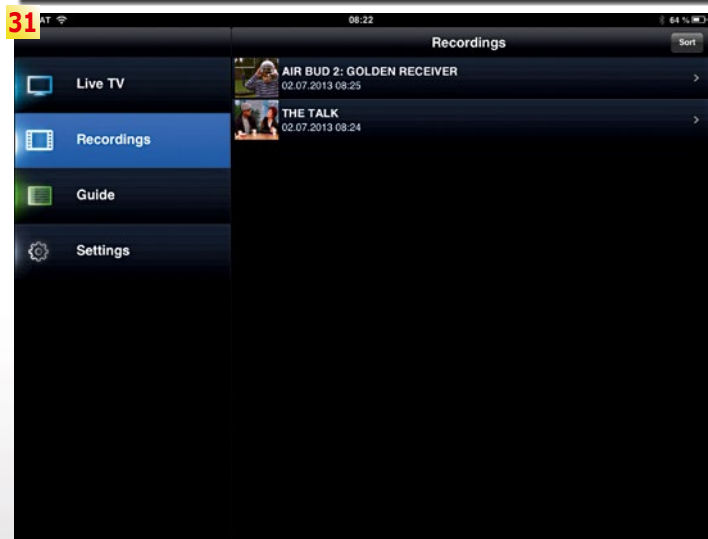


would then not be a problem at all and you save the extra work of transferring the recordings from the receiver to the PC.

So, what's the final word? The TSS400 is an interesting alternative to a classic satellite receiver. However, because of the required four satellite connections, installing it in a living room

environment might not be the best solution. But if you have connections available for your local network near the LNBs or your multiswitches then the TSS400 would give you many practical and easy-to-use features for mobile TV and radio reception throughout the house. But keep in mind the TSS400 does not come with





a CI slot or internal card reader so reception of PayTV programming is not possible. And one other thing, HD channels can only be received via PC or laptop, not via mobile devices (iOS or Android).

26. Of course, radio channels are also available

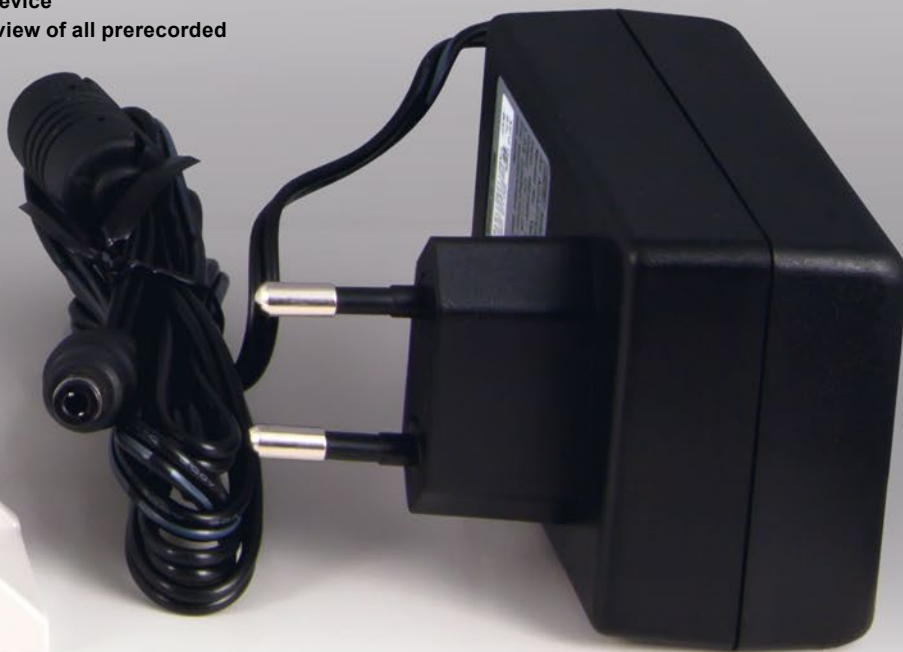
27. Info bar with the titles of the current and upcoming programs

28. Channel selection while watching a program

29. Expanded EPG information and links to social networks

30. Thanks to recording functions, the current program can be stored directly on the mobile device

31. Overview of all prerecorded content



EXPERT OPINION

Triax TSS400
SAT>IP Converter

RECOMMENDED
PRODUCT BY



TELE-audiovision
THE WORLD'S LEADING DIGITAL TV INDUSTRY PUBLICATION



Thomas Haring
Test Center
Austria

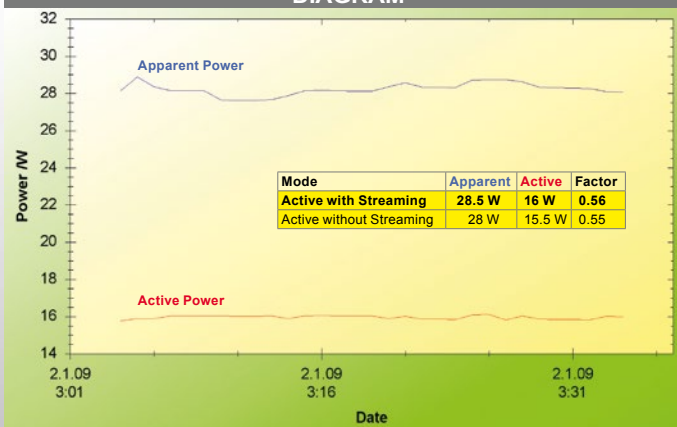
VIP
CARD

TELE
audiovision
www.TELE-audiovision.com

• Up to four devices can be used at the same time. Thanks to the four DVB-S2 compatible tuners, all the transponders of a satellite are available in parallel. It has no problems handling HD and SD channels and it's very easy to put into operation thanks to the prepared channel lists.

• There's no CI slot or card reader so PayTV reception is not possible. HD channels can only be viewed on PCs or laptops.

ENERGY DIAGRAM



The first 15 minutes active streaming operation, the second 15 minutes no streams were accessed

AWARD WINNING

**DIGITAL
RECEIVERS OF
21ST CENTURY**

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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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International
Magazine

Expert Opinion

www.TELE-audiovision.com/14/11/tenow
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TENOW



Manufacturer	Amiko
Website	www.amikostb.com
Function	Android PVR receiver with full Internet capability
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
WIFI/LAN	• / •
PVR	yes
CVBS/HDMI	— / •
USB/SD Card	• / •
Scart/Digital Audio	— / •



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www.TELE-audiovision.com/14/09/amiko
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AMIKO

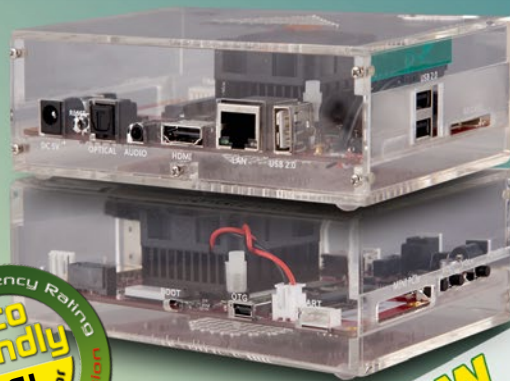
Manufacturer	TBS Tenow
Website	www.tbsdtv.com
Function	Mini PC for web/IPTV and live TV
DiSeqC	1.0 / 1.1 / 1.2
WiFi/LAN	• / •
Internal Storage	no
CVBS/HDMI	— / •
USB/SD Card	• / •
Scart/Digital Audio	— / •



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www.TELE-audiovision.com/14/07/matrix
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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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www.TELE-audiovision.com/14/05/gigablue
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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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PANODIC



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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MKTECH

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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Expert Opinion

www.TELE-audiovision.com/13/07/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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Manufacturer	Changhong
Website	www.changhong.com
Function	DVB Receiver, Mediaplayer, Android Apps
DVB/S2/LAN	— / •
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	— / •



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Expert Opinion

www.TELE-audiovision.com/13/05/changhong
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Manufacturer	Panodic
Website	www.panodic.com
Function	DVB-T / DVB-T2 Receiver
DVB-T2/LAN	• / —
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	• / —



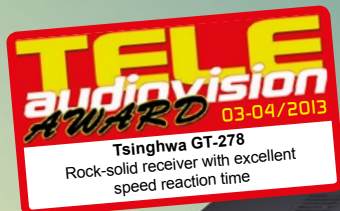
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Manufacturer	Tsinghua
Function	DTMB Receiver
LAN	—
PVR	•
S-Video/HDMI	— / •
Scart/Digital Audio	— / •



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**Expert
Opinion**

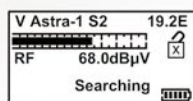
www.TELE-audiovision.com/13/03/tsinghua
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Horizon Digital Meters

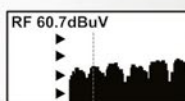
FEATURING THE HD-S2

An easy-to-use, affordable solution to fast and accurate satellite installation

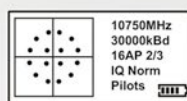
- High definition broadcasts in DVB-S, DSS and DVB-S2
- Storage of up to 256 transponders
- 16 user customisable selections for on-site unique carriers
- Precise and accurate installation
- Built-in, long life, high output rechargeable battery pack



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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21ST CENTURY**

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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-C Signal Analyzer
Frequency Range	5 ~ 2500 MHz
Video Output	HDMI
Built-in Monitor	640 × 480 TFT display



TELE
audiovision
AWARD 03-04/2014

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



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Expert Opinion

www.TELE-audiovision.com/14/01/deviser
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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



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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-T Signals
Frequency Range	51 ~ 858 MHz
Video Output	—
Built-in Monitor	LCD display



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AWARD 09-10/2013

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



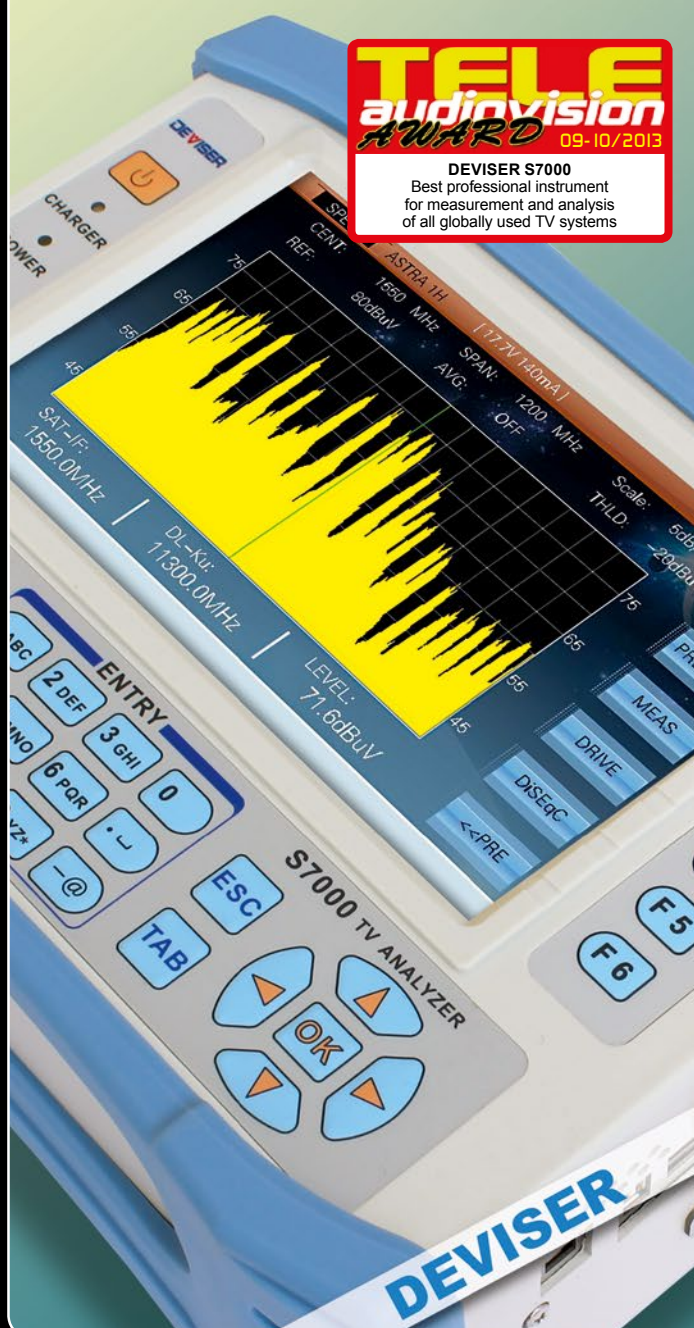
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International
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Expert Opinion

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



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AWARD 09-10/2013

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



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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



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



HORIZON Nano-S2

Very easy to use instrument
for quick installation of satellite
for HDTV reception



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International
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Expert Opinion

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



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Expert Opinion

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



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



TELE
audiovision
AWARD 11-12/2012
DEVISER AE 120
Optical Power Meter
Extremely simple to use but
at same time very accurate

DEVISER



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www.TELE-audiovision.com/12/05/spaun
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Manufacturer	SPAUN Electronic
Website	www.spaun.com
Function	DVB-S / DVB-S2 and DSS Signal Analyzer
Frequency Range	950-2150 MHz
Video Output	—
Built-in Monitor	4.3" TFT LCD display (16:9)

TELE
audiovision
AWARD 04-05/2012
SPAROS SAT HD
Very useful meter for setting up critical
satellite systems



SPAUN

DVR-Studio HD 3





- **Professionally designed menus for self-created discs**
- **Supports a large selection of receivers**
- **Integrated disc burning function**
- **Preliminary calculation of required storage space is a plus**
- **Can generate MPEG and ISO files in addition to Discs**

TV signals into Your PC, Digital TV Out of Your PC: Ready-to-go Blu-Ray Discs or DVDs

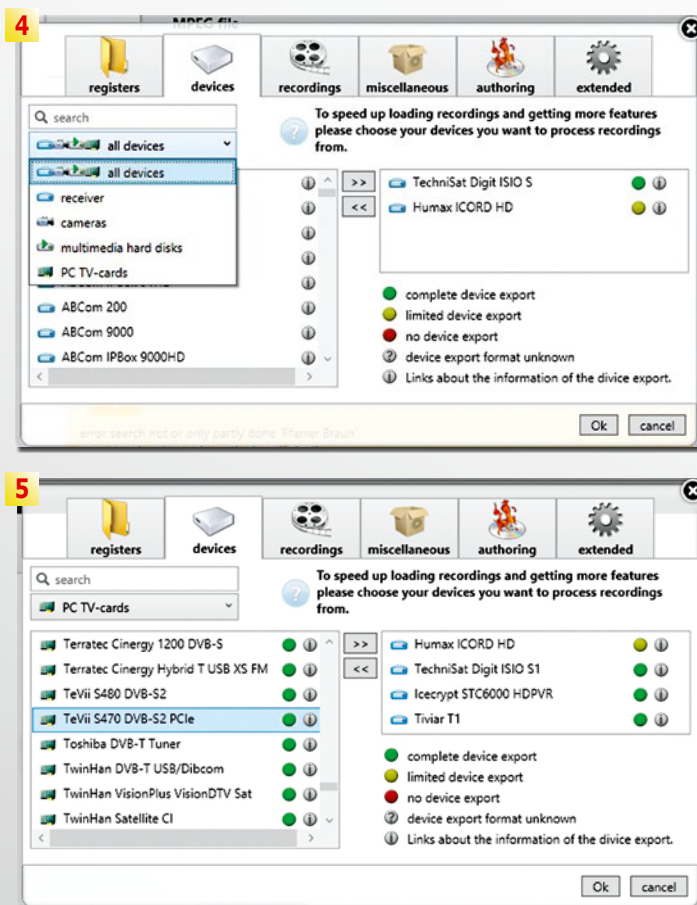
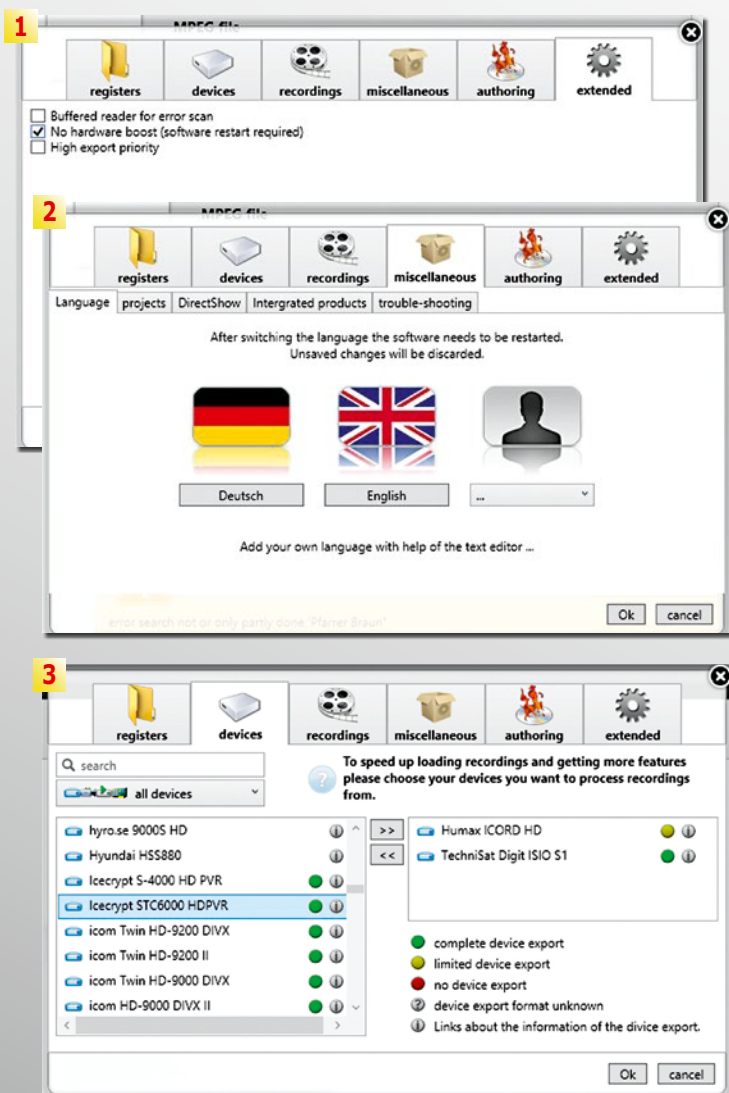
A software program that we here at TELE-audiovision have enjoyed using for years is DVR-Studio HD from the company Haenlein Software. This kind of software became very interesting at that moment; thanks to PVR receivers, end-users were given the ability to record digitally broadcast TV and radio programs without any restrictions. It didn't take

long for the idea to surface to not only save this TV content on a hard drive but also on a DVD and now on a Blu-Ray disc.

How right the company was with their DVR-Studio program can be seen in its enormous success. It is now available in version 3 and is extremely easy to use plus comes with a multitude of

different functions. This was a perfect reason for us to test this software's usability for our digital TV viewers.

To start things off, we always liked the idea that you can test the software free for 30 days so that you can first check out all of the features for yourself. After downloading the roughly 1.0MB large



1. DVR-Studio HD's setup menu
2. The menu languages for DVR-Studio HD are German and English
3. The list of supported receivers is quite long and extensive
4. Even cameras and PC TV cards are supported
5. List of supported cameras

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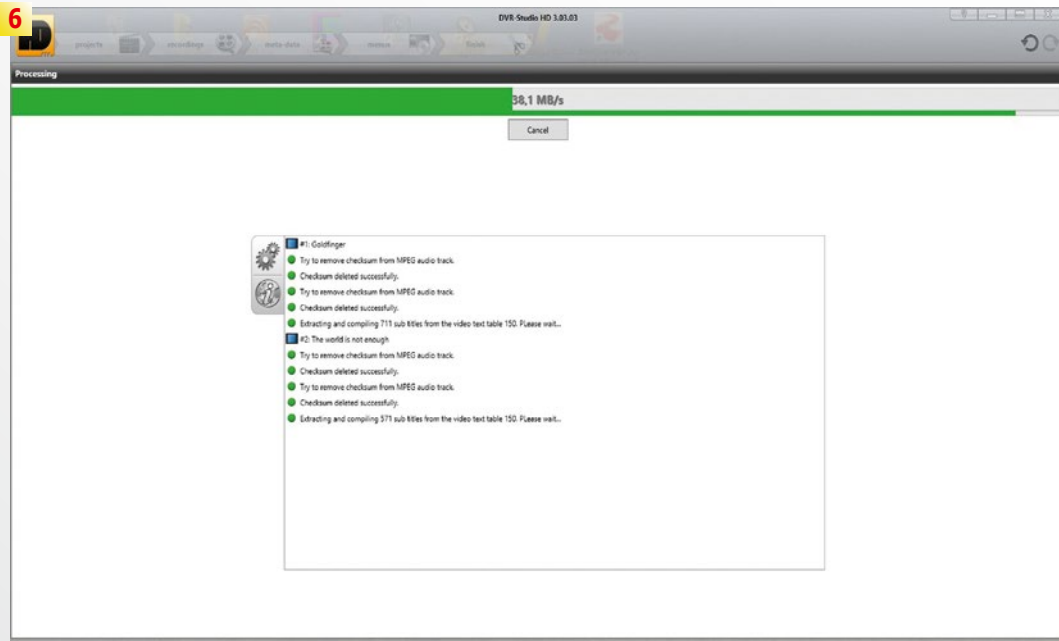


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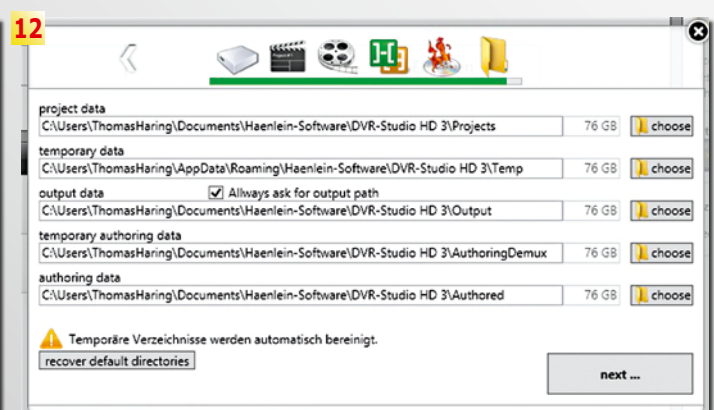
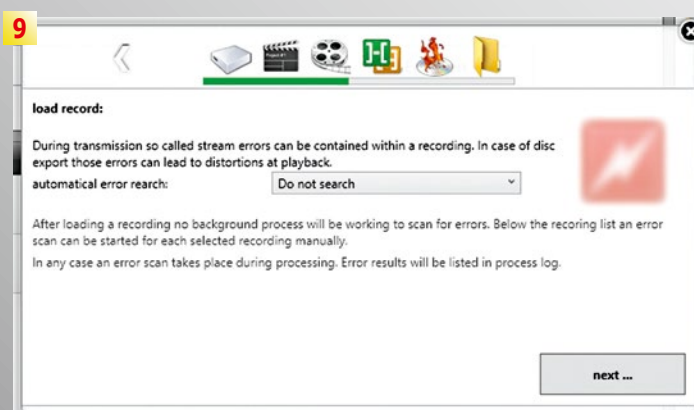
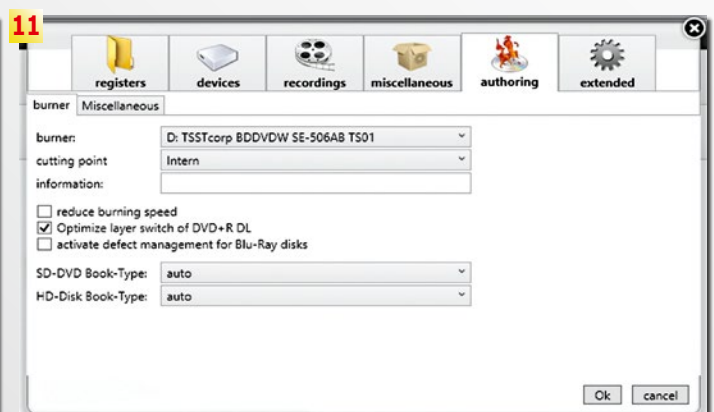
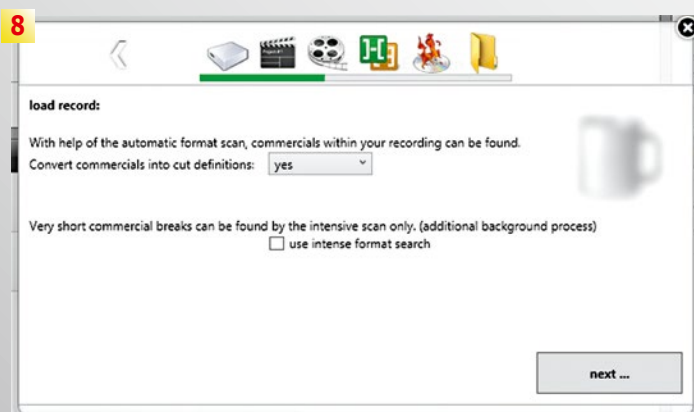
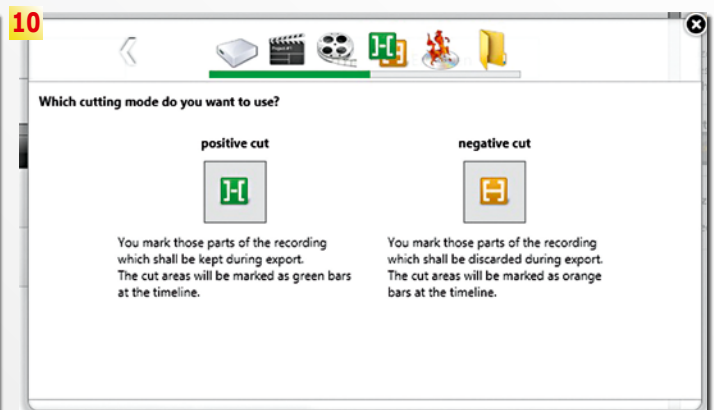
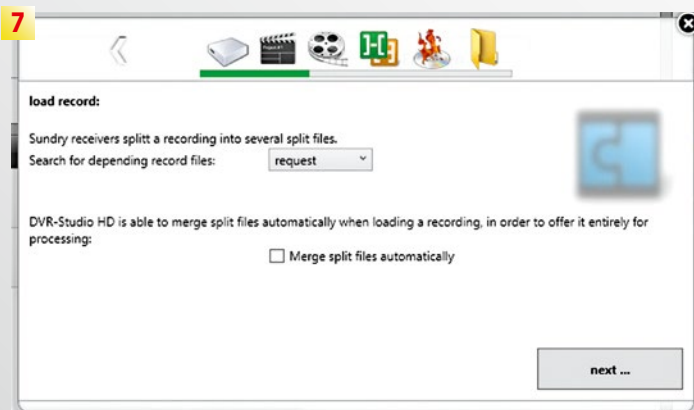
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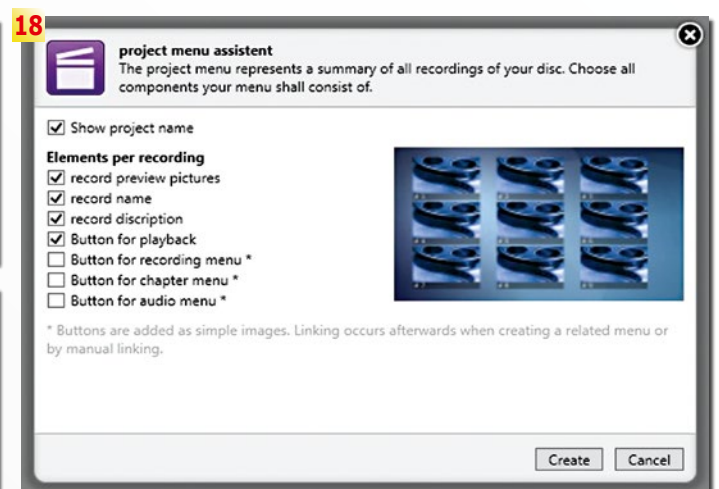
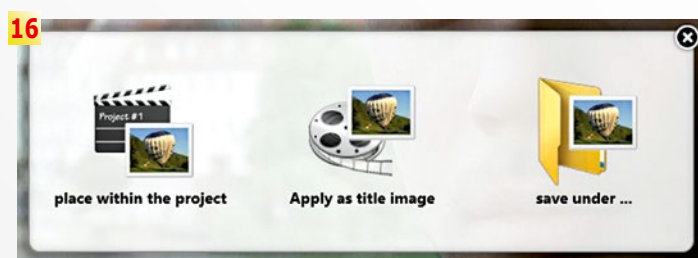
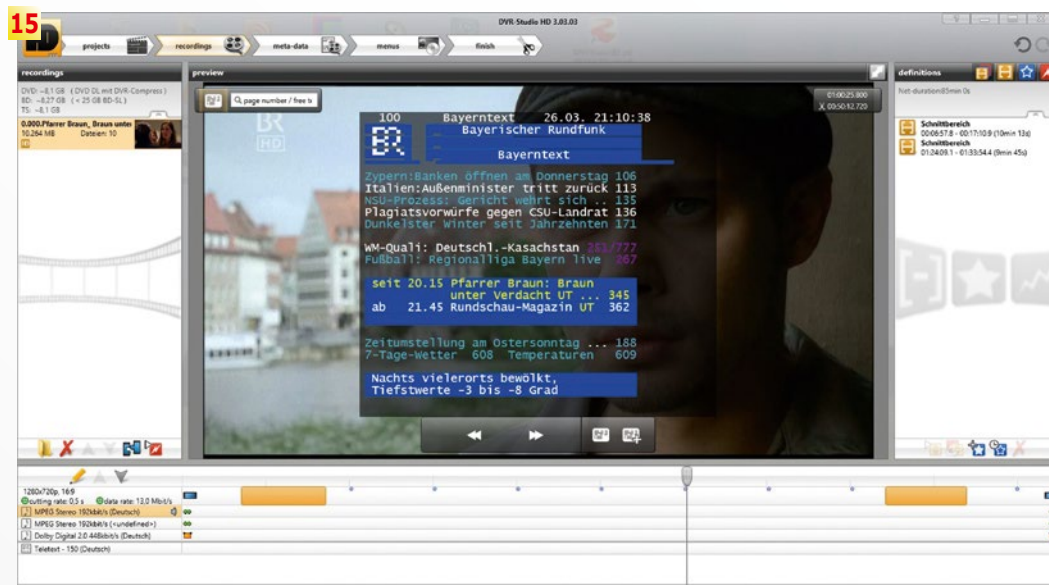
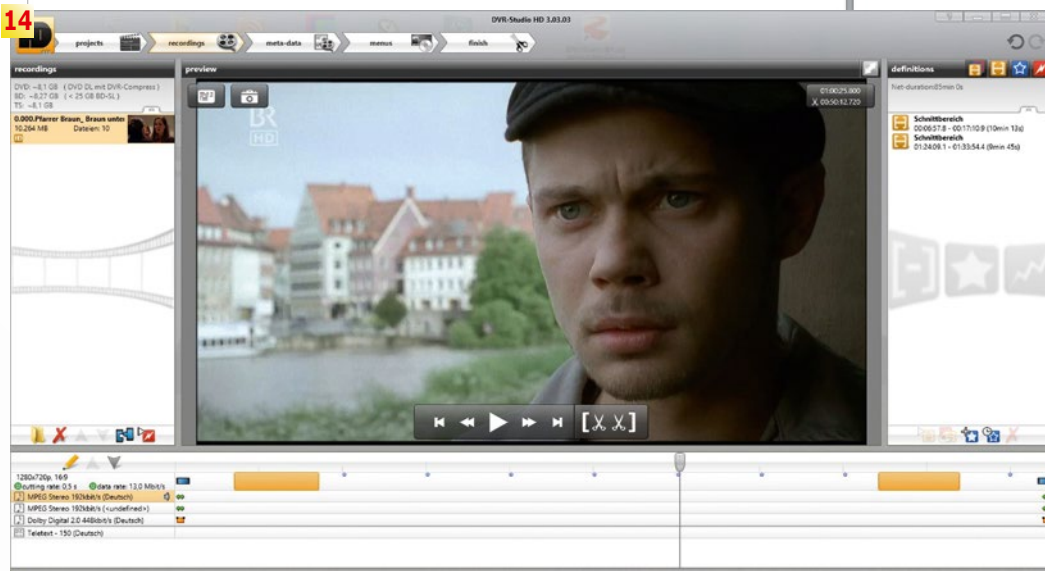
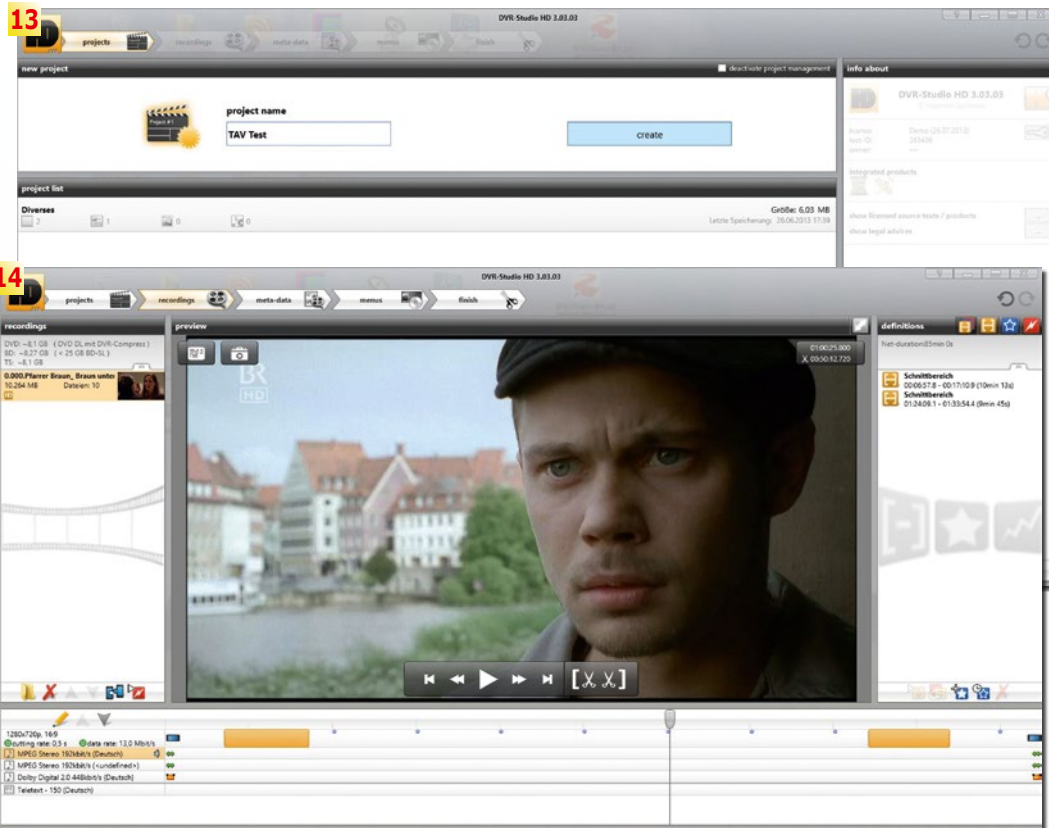




installation file from their web site www.haenlein-software.com, you can start the installation. All of the necessary components are then downloaded directly from Haenlein's servers so that you are always installing the latest version.

As for the hardware requirements, Haenlein Software recommends a minimum of a Dual Core 2 GHz CPU, 2 GB RAM, 16 GB of free hard drive space (for temporary files), a resolution of 1024 x 768 as well as a Blu-Ray or DVD burner.





But, as is always the case when it comes to video processing, the more the better. DVR-Studio HD also requires Windows XP, Vista, 7 or 8 as well as DirectShow 9.0 or higher, .Net Framework 4.0 plus Microsoft Visual C++ Redistributable Pack-

6. While a disc is being burned, the user is presented with status information

7. DVR-Studio HD can merge/split multiple recording files automatically

8. Commercials can be automatically recognized and marked for cutting

9. The recordings can be checked for errors before they are processed.

10. Marked sections can be set as positive or negative cuts.

11. Our external DVD/Blu-Ray burner was correctly recognized

12. The working directories of DVR-Studio HD can be customized

13. DVR-Studio HD's project administration

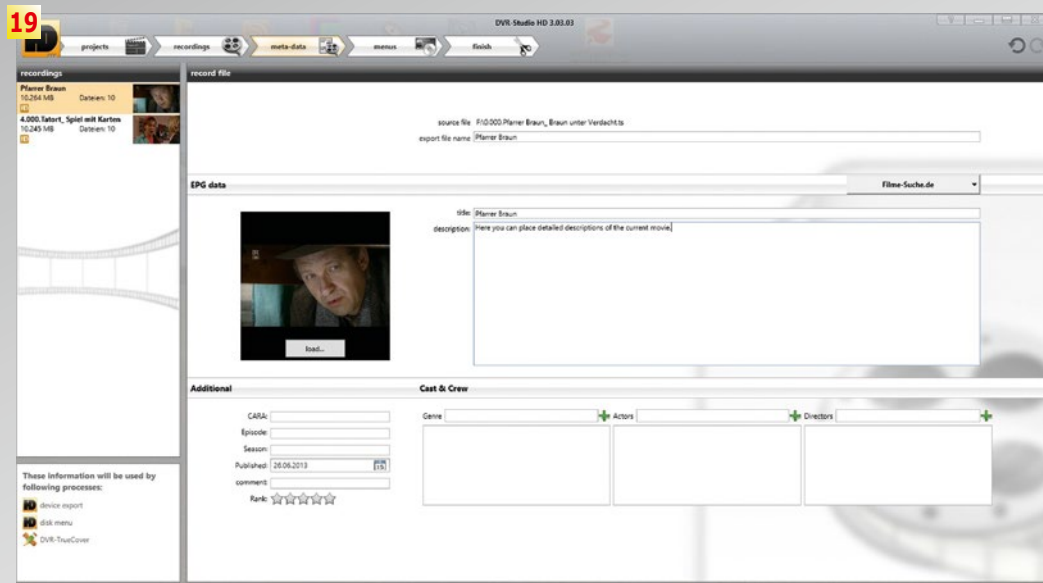
14. DVR-Studio HD's main window with an opened recording

15. Even the teletext stored with a recording can be displayed by DVR-Studio HD

16. A screenshot of the current recording can be used at the title image or stored as an image file

17. Automatic chapter locations can be made at specific time intervals or as a specific number per recording

18. DVR-Studio HD automatically creates a project menu with individually defined content



19. In the Meta Data section the user can enter in detailed information to an individual recording

20. The menus can be customized

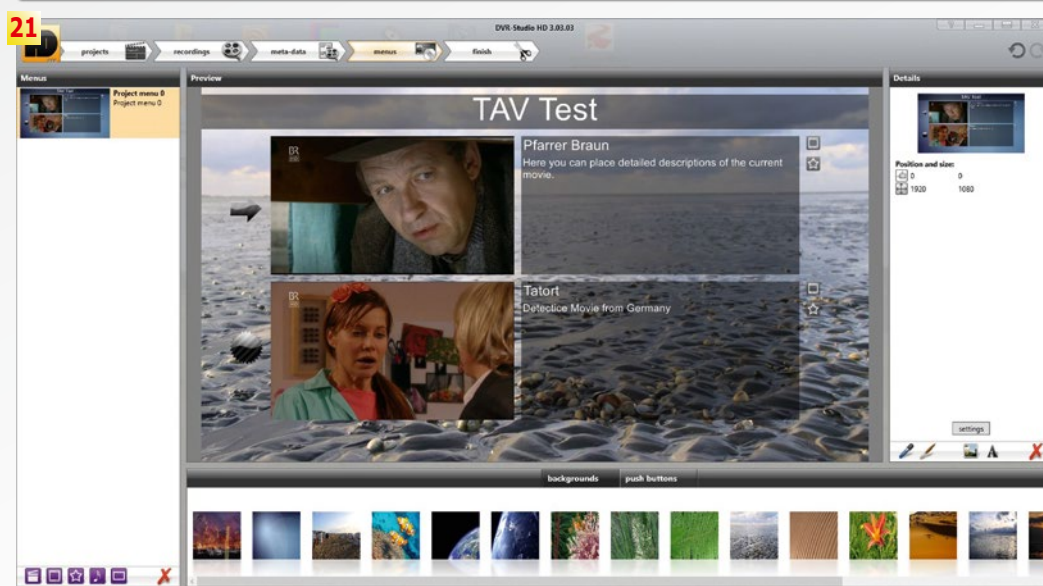
21. Individual buttons, images, background images, text - everything is doable.

DVR-Studio HD to function as best as possible, it is recommended that you identify to the software the source of the digital TV recordings.

The manufacturer put together an extensive database of receivers, cameras and PC cards from which to choose from. We also liked that a colored icon makes it easy to see if DVR-Studio HD is able to output edited recordings in a format that the receiver can understand. Besides burning DVDs and Blu-Ray discs, this is also a function that many users utilize quite often.

While the first version of DVR-Studio HD still has restrictions in place regarding editing individual recordings and storing all the information separately, it is however possible to work on projects where all the information is centrally stored in one location allowing it to be easily accessed with a single mouse click.

While working on the initial settings, the user can also activate another useful feature, namely the automatic recognition of commercials. During a movie, it is able to identify the altered picture format of the commercials and insert the cut marks on its own. These cut marks can be set as positive cut marks or negative cut marks; in other words, the user can choose whether he likes the marked section and wants to keep it (positive cut) or if it should be deleted (negative cut).

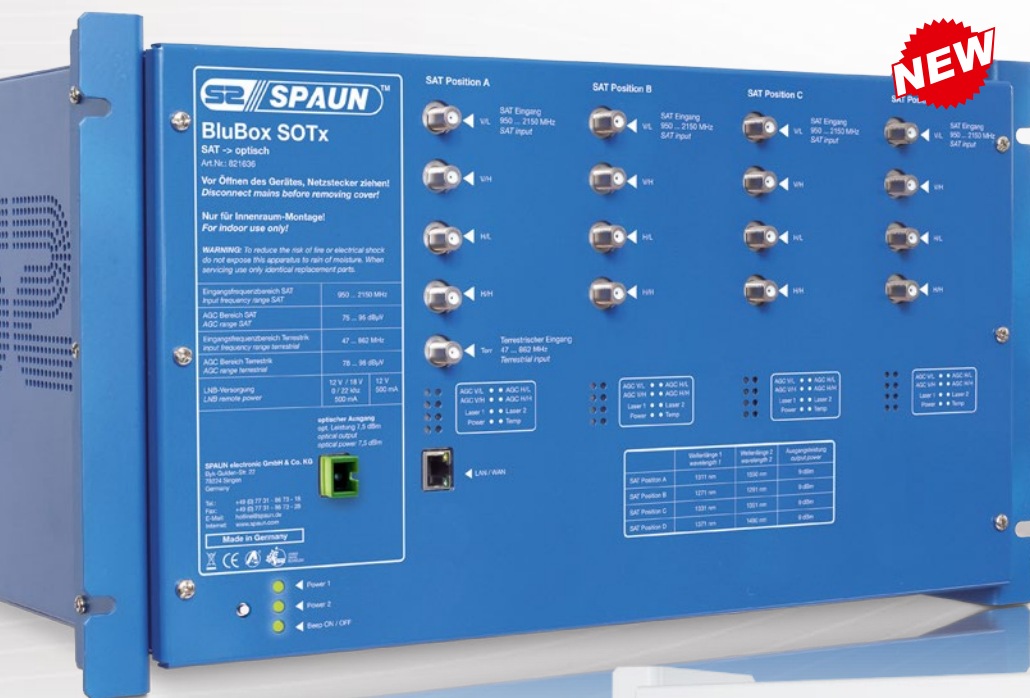


age (x86). It may all sound a little complicated at first but you can rest easy, the Installation Assistant takes care of all the software set-

tings without you having to do a thing.

Once this step is completed, the next step is the

initial settings of the DVR-Studio HD and this begins with selecting the language. Both German and English are available. In order for



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



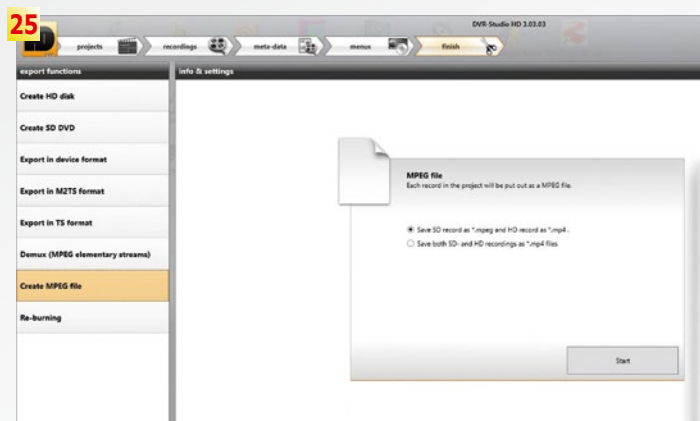
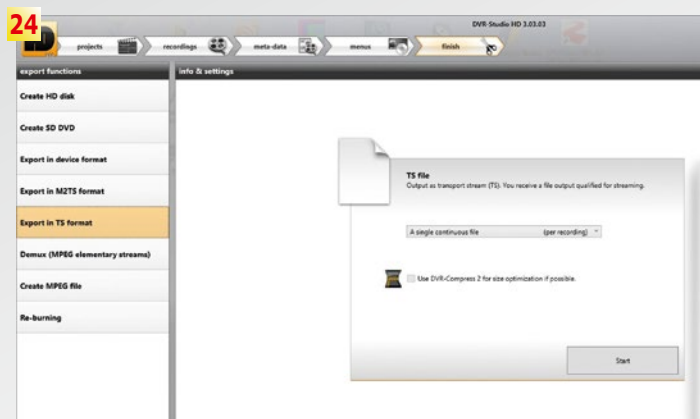
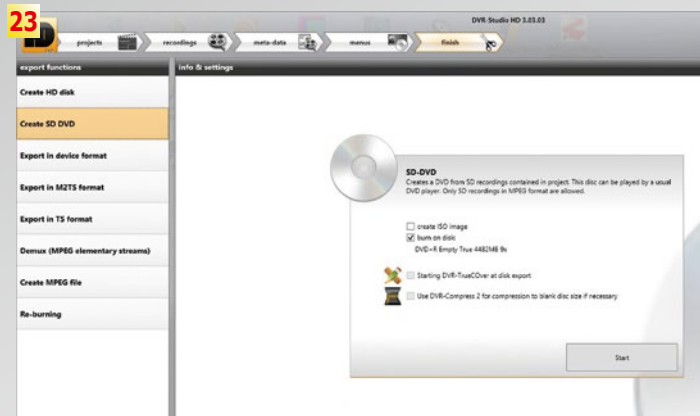
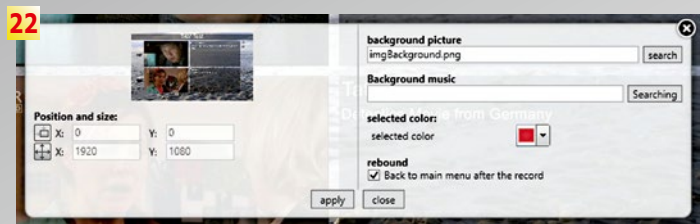
WhiteBox

- 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!



22. All of the menu elements can be individually positioned
 23. The final step: the burning of a DVD or Blu-Ray disc
 24. Output in TS format
 25. Output as an MPEG file

The software's main window is presented in an organized manner and provides all of the necessary information. Towards the top of the display the progress of a DVD or Blu-Ray disc burning is presented graphi-

cally to the user in five steps culminating in a completed disc.

For our tests we used SD and HD recordings from two different receivers that we previously transferred to

the hard drive of our Intel Pentium G630 PC with 4GB of memory. In just a few seconds, DVR-Studio HD recognized the 10 files of a 90-minute nearly 10GB HD recording and displayed it in the Editor window.

The three audio tracks (MPEG stereo, MPEG stereo for an acoustical image display description and Dolby Digital 2.0) as well as the availability of teletext were all correctly recognized. With the help of the time bar graph the desired section could easily be marked. It's a very precise selection thanks to the blended-in symbols for step-by-step video playback located next to the cut buttons.

At this point it is recommended to search for a desired still image that can be used as the title picture with just a single mouse click or can be saved as an image file to be used at a later time. Extremely practical is the display of the expected size of the completed project so that the user can get an idea of how many recordings might still fit on the DVD or Blu-Ray disc.

The third step to a completed disc involves the section Meta-data. If available, DVR-Studio HD accesses the EPG data from the original recording. If, however, this is not available, the user can manually enter the program's title, content, genre, cast of characters, etc.

A properly created DVD or Blu-Ray disc would also include a graphically appealing menu. This is all taken care of by DVR-Studio HD in the fourth and second-to-last step. Using the available recordings in the project, the software creates a project menu, a recording menu,

a chapter menu or an audio menu. We were very impressed that the preprogrammed menus were all very graphically appealing and that they could easily be customized with just a few mouse clicks.

Once the recordings of a project have been edited, provided with content information and the menus have been created, the final step is the actual burning of the DVD/Blu-Ray disc or the saving of it to a file. DVR-Studio HD supports the creation of DVD and Blu-Ray discs with HD or SD recordings, the export in a digital receiver's format as well as the export in the M2TS and TS formats. Additionally, an MPEG file can also be created.

In our tests DVR-Studio HD effortlessly recognized our external Blu-Ray burner and there were absolutely no problems with the burning of a DVD or a Blu-Ray disc. The software also gives you the capability to provide the output in the form of an ISO image so that it can then be burned to a disc at a later time using other burning software.

DVR-Studio HD from Haenlein Software demonstrated itself in our tests to be exceptionally easy to use for permanently storing HD recordings on a DVD or Blu-Ray disc. The number of supported devices is enormous and the editing capabilities are so far-reaching and at the same time well-organized and easy to understand that both beginners and seasoned professionals will enjoy using DVR-Studio HD.

Since the manufacturer offers a full 30-day free trial period, there's only one thing we can suggest: just give it a try!

Your Partner of OEM/ODM Communication Solution.



No. 206 Cheng-Kung 3 Rd., Nan Kang Industrial Park Nantou, Taiwan

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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*

How to artificially re-create a HD video

Jacek Pawlowski

AVS2 is a third generation coding standard under development by the Audio Video Coding Standard Workgroup of China. It will be a successor of AVS. The AVS standard is comparable in performance with the H.264/MPEG-4 AVC commonly used all over the world for coding HD video. The tests showed that both standards achieved almost identical performance for HD signals. Performance is here understood as the PSNR (Peak Signal-to-Noise Ratio). Only for smaller resolutions (SD), MPEG-4 proved to be a little better. An important feature of the AVS standard is its lower complexity of the encoder and decoder what makes it more practical.

Another reason for China developing the AVS standard is saving money by not paying royalties for MPEG-4. Most of the patents in AVS standard belong to Chinese companies and organizations. They charge for them much less than the Western world companies do for MPEG-4. In this way, a Chinese consumer can save maybe 5-10% when buying a AVS receiver without MPEG-4 decoder.

But China didn't stop at AVS and developed the standard further one. AVS2 will have a better compression ratio and thanks to that it will be more adequate for ultra high definition TV. Actually, AVS2 can be seen at the Chinese answer to the new HEVC/H.265 standard published recently by ISO/IEC and ITU.

In what ways will AVS2 ensure better performance? Well, the very accurate explanation is extremely complex, requires good background in mathematics and only a narrow group of experts really can fully understand that. But what we can understand are at least

the basic concepts underlying the methods used in AVS2.

Let's start with the texture analysis and synthesis. The readers more familiar with computer games certainly understand that their software games synthesize various textures on different objects required in a game. And there is no need to store every pixel of the surface. The software program can create complex texture knowing only a small pattern of a bigger area. New compression algorithms in AVS2 can also do that. And instead of transferring information of many pixels of a wavy sea or a distant flowerbed the AVS2 encoder will analyze what texture is needed for this part of the picture and will send to the receiver only this information (only a small picture). Now, the decoder in your receiver will fill in holes in an image by synthesizing non-repetitive parts of an image, as in inpainting.

Another interesting method is super-resolution based video coding. To put it simply, a high resolution image is reconstructed from multiple sequential low resolution images. During this process high frequency modeling as well as spacial-temporal interpolation is performed. Interpolation means reconstructing correct values for an unknown image pixel located between known pixels. Located either in space (left/right/top/bottom) or time (previous/next).

Learning based video coding is maybe even more interesting. The encoder analyzes the video sequence in which one or more objects are moving. It yields information about size, location and motion of the objects. Using computer graphics methods, it creates models of each object. It sends to the receiver decoder information about the model and animation information. This is sufficient for low resolution vid-

eo. To make it suitable for HD video, some additional information containing residual pixel signal is sent. This is simply the difference between the model and the real image processed by the encoder.

Except for the above new concepts described above, there are also more improvements in the methods and algorithms used so far. So, AVS2 will take advantage of: Super-macroblock prediction, Adaptive Block-size Transform (ABT), Directional transform, Advanced motion vector prediction and Rate Distortion Optimization Quantization (RDOQ).

We can say that up to the second generation (AVS and MPEG-4) video coding standards relied mainly on taking advantage of various imperfection of the human eye to achieve high compression ratio. AVS2 takes a step further. Some elements of the video will be in fact computer animations or computer generated textures resembling real things. This is another step away from transmitting the original video: what you see on your monitor is a brand new artificially created video, which looks as the original, but in reality it is re-created by using only some parts of the original video.

Compressed video already went away from a 1:1 transmission, as in the old analog times (the original is identical to the copy). Now even less of the original is needed, to re-created it.

Will AVS2 achieve similar compression ratio improvement over AVS as HVEC has demonstrated over MPEG-4? Can it save up to 50% of the bandwidth? Some scientific papers report up to 37% of bandwidth reduction. This can change because the standard is not finalized yet and very few test results have been published. So let's see where all this will eventually end.

The Most Versatile UHF Antennas

室内/室外天线



YAGI
U-LD3

From the Inventors of the YAGI Antenna:
We Know How to Make YAGI Antennas!

从八木天线的发明 -
我们知道八木天线是怎样炼成的！



YAGI

U-PA
UHF DIGITAL

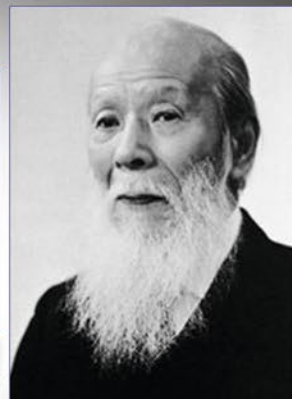


**DESIGNED IN
JAPAN**

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

YAGI



中国代理 China Agent: www.aluo-sat.com
<http://aluosat.taobao.com>

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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Feature Stories to Know All About
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Enjoy Reading TELE-audiovision
FREE on Your
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Coding Standard

AVS2

A New Video Coding Standard

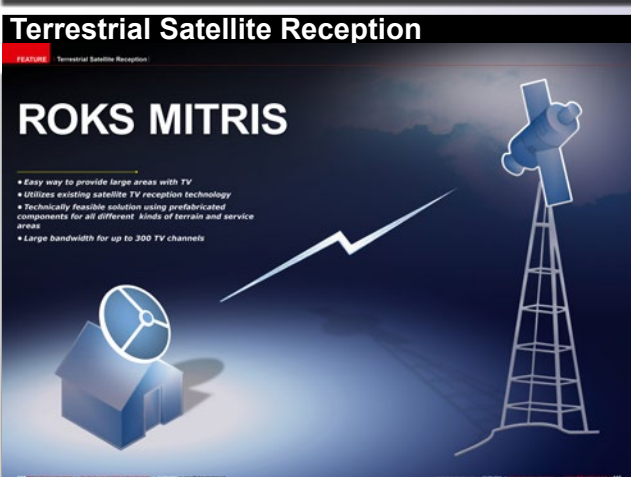


- requires even less of the original video information
- re-creates parts of the original video by artificial intelligence
- saves on the amount of data required to transmit
- makes use of software developed for gaming

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

Terrestrial Satellite Reception

ROKS MITRIS



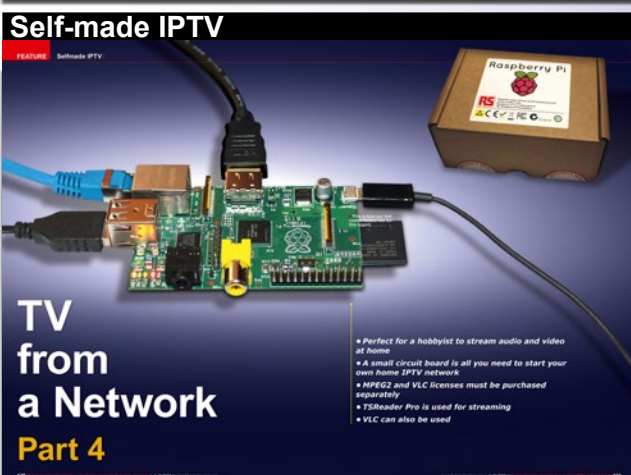
- Easy way to provide large areas with TV
- Utilizes existing satellite TV reception technology
- Technically feasible solution using prefabricated components for all different kinds of terrain and service areas
- Large bandwidth for up to 300 TV channels

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

Self-made IPTV

TV from a Network

Part 4



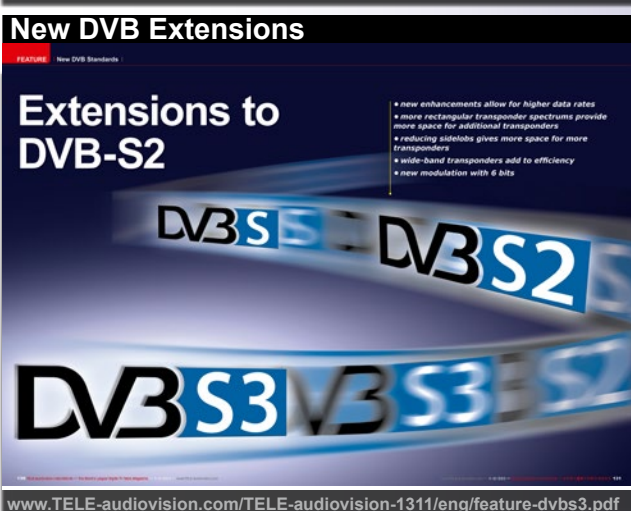
- Perfect for a hobbyist to stream audio and video at home
- A small circuit board is all you need to start your own home IPTV network
- HFEQ2 and VLC licenses must be purchased separately
- TSReader Pro is used for streaming
- VLC can also be used

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

New DVB Extensions

Extensions to DVB-S2

DVB-S3



- 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

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

UHD TV

Ultra High Definition Television



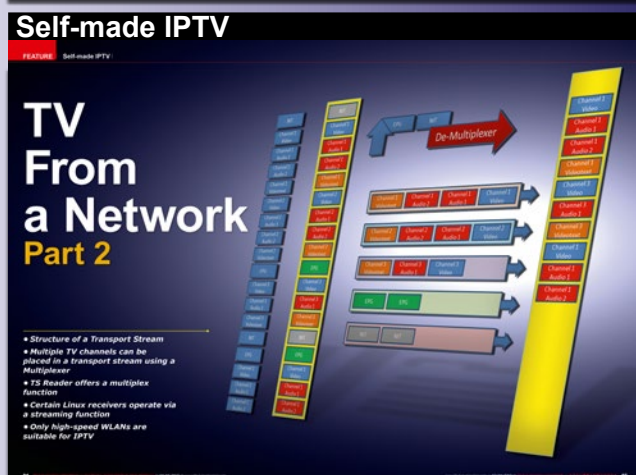
- can better display colors, mainly red and green shades
- suitable for 3D due to its higher frame rate
- requires an enormous bandwidth
- users will need brandnew equipment as UHD TV is not backward compatible

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

Self-made IPTV

TV From a Network

Part 2

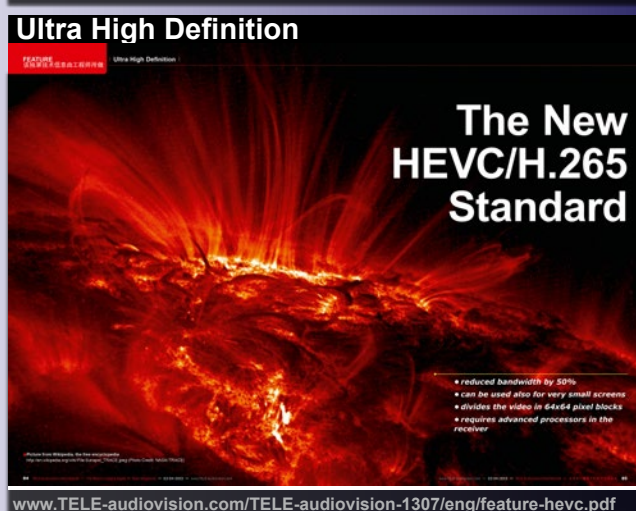


- Structure of a Transport Stream
- Multiple TV channels can be placed in a transport stream using a Multiplexer
- TS Reader offers a multiplex function
- Certain Linux receivers operate via a streaming function
- Only high-speed WLANs are suitable for IPTV

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 4x4 pixel blocks
- requires advanced processors in the receiver

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

Self-made IPTV

FEATURE Self-made IPTV

TV from a Network Part 1



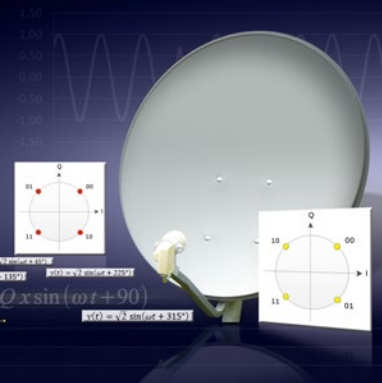
- Digital TV distribution via your own Internet network
- No cables needed if used with WLAN
- Laptops, Smartphones, Tablets can be used as TVs
- Very high data flow with HDTV

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

Phase Shifts in Digital TV

FEATURE Phase Shifts in Digital TV

I/Q Vectors Swap



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

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

Digital Terrestrial TV - 2nd Level

FEATURE Digital Terrestrial TV - 2nd Level

ATSC 2.0



- contains various separate streams 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

FEATURE Special Transmission Modes

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

Thomas Haring

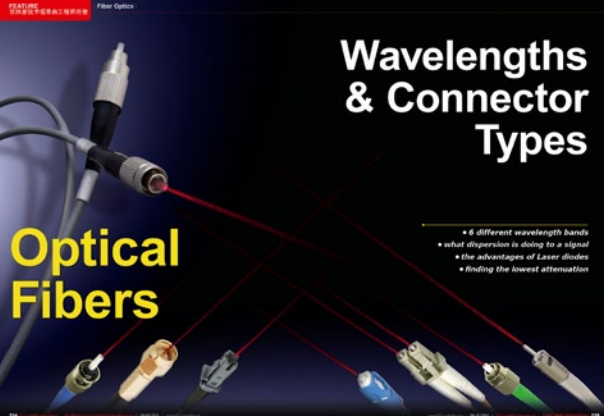


www.TELE-audiovision.com/TELE-satellite-1209/eng/feature-transmission.pdf

All About Fiber Optic Connectors

FEATURE Fiber Optics

Wavelengths & Connector Types



- 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

FEATURE Basic Knowledge

Polar Mount Antennas Motorised Antennas for Satellite Reception

Adolf Oberhuber



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

DVB-S2: Hide the SD inside the HD

FEATURE Satellite Transmission Technology

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

DVB-S2 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

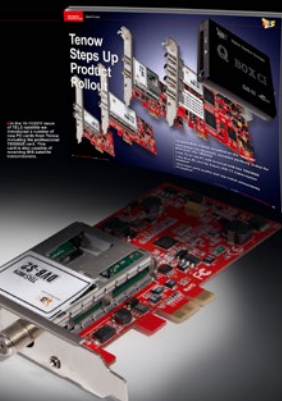
www.TELE-audiovision.com/TELE-satellite-1205/eng/dvb-S2-vcm.pdf

DVB-S2 MIS Reception with VCM/ACM

FEATURE

The New Flexible MIS Transmission Technology

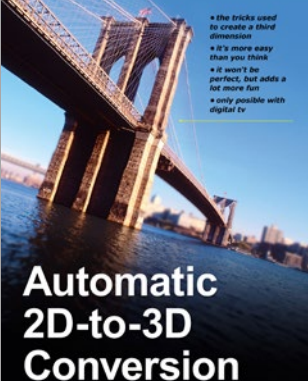
- The receiver chooses the optimal reception mode
- Programming providers can optimize transmission costs
- Picture quality based on usable signal
- From "Broad"-Cast it becomes "Individual"-Cast



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

Automatic Creation of 3D

FEATURE



- the tricks used to create a third dimension
- 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

What's inside a silicon tuner?

Jack Pawlowski

- a silicon tuner is a significant technological improvement that finds its way into nearly every new product in digital TV equipment



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

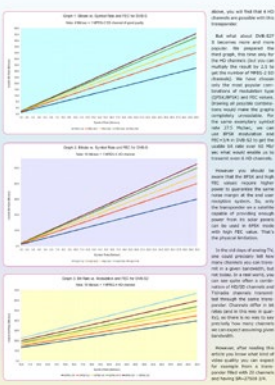
Channel Capacity of a Transponder

FEATURE

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 search 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.



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

CI+ and HD+Encryption

FEATURE



- prevents unauthorized distribution of HDTV 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

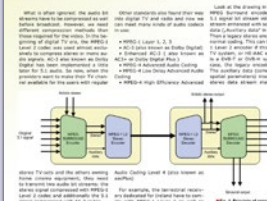
How MPEG Surround Works

FEATURE

The New Audio: MPEG Surround

Jack Pawlowski

- When we think about digital TV we usually focus on the video performance. The terms SDTV and HDTV refer to video resolution. To save bandwidth, the original video data stream has to be compressed. Most of our TELE-satellite readers 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).



Two percent of the total bit stream is used for the audio. This is a very small portion of the total bit stream. The audio is compressed using a technique called MPEG Surround. This technique allows for a more efficient use of the audio bandwidth. The audio is compressed into a single stream, which is then transmitted alongside the video stream. This allows for a more efficient use of the total bandwidth. The audio is then decompressed at the receiver, where it is then played back through the audio system. This process allows for a more efficient use of the total bandwidth, which is a key benefit of MPEG Surround.

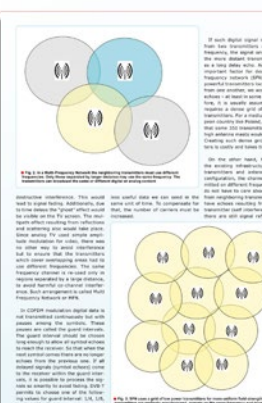
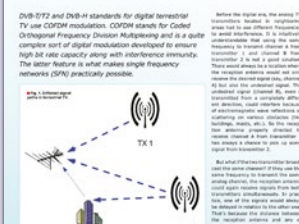
www.TELE-audiovision.com/TELE-satellite-1105/eng/mpeg-surround.pdf

How the SFN Modulation Works

FEATURE

Single- and Multi-Frequency Networks in Digital Terrestrial Television

Jack Pawlowski



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

How HbbTV Works

FEATURE

HbbTV Hybrid broadcast broadband TV

Get organized for the inevitable

This will not be a surprise for TELE-satellite readers. A new convergence between broadcast and broadband has been started to integrate the digital TV world with the Internet. The basic idea is quite clear: make it as seamless as possible for the end user. TELE-satellite readers after monitoring the progress of the average and user in terms of interest through what transmission medium data is coming to their TVs or monitors. Is it via satellite, via cable or via the old TV or perhaps via Ethernet rather than the usual one used in CATV? And maybe via optical fiber?



www.TELE-audiovision.com/TELE-satellite-1101/eng/hbbtv.pdf

How DVB-C2 Works

FEATURE | DVB in the field

Ultimate Spectral Efficiency DVB-C2 is around the corner

Jack Pawlowski

The old DVB-C standard has been in use since 1994. The time for a second generation standard came in 2005, when European cable operators expressed their big concerns about the limited bandwidth they have for the distribution of their services. The major goal was the more efficient use of the available bandwidth in cable networks.

The DVB-C2 standard was developed by experts from 20 different companies and scientists from various universities. Kabel Deutschland, one of Europe's major cable operators, provided the chairmanship for this effort. The standard was finalized last year and supplements the DVB-S2 and DVB-T2 standards developed earlier.

In the past, this standard was not used. The old DVB-C standard was a single stream, which means that the signal was sent in one direction. The new DVB-C2 standard is a two-way system, which means that the signal can be sent in both directions.

The new DVB-C2 standard is a two-way system, which means that the signal can be sent in both directions. This is a significant improvement over the old DVB-C standard, which was a single stream.

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How Decoding Works

FEATURE | Pay TV

Decoding of Encrypted Content

Thomas Haring

The currently used DVB standard provides for encrypted channels to be decoded according to the following procedure. A subscriber receives a smart card from their content provider. This smart card is equipped with a key that is required to decrypt the encrypted channels and/or programs. The relevant key is sent to the card via satellite. As each card has a unique serial number, content providers are in a position to activate or deactivate each individual smart card as necessary. In order to decode the encrypted transport stream transmitted by the satellite a device is required which is regenerated every few seconds. This code is calculated directly by the CI module or in a proprietary receiver with built-in card reader - used - by the internal control of the box, using a number of other parameters which include - among others - the key that is stored on the smart card.

The key that is stored on the smart card is used to calculate the code that is required to decode the encrypted transport stream. This code is then used to decrypt the transport stream.



The CI+ standard is a new standard for the Common Interface Plus. It is designed to provide a more secure and efficient way to decode encrypted content.

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www.TELE-audiovision.com/TELE-satellite-1009/eng/dvb-c2.pdf

Streaming TV via the Internet

FEATURE | TV via Internet

Streaming TV via the Internet - Quick Setup and Free!

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

In this issue of TELE-satellite we are once again introducing a solution that would let you receive TV and radio content via the Internet. This time it's a new solution that is even easier to set up and even faster to use.

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The website provides a step-by-step guide for setting up streaming TV via the Internet. It includes instructions on how to connect to the Internet and how to use the streaming service.

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

Testing Horizon to Horizon Actuator

FEATURE | Horizon-to-Horizon Antenna Actuators

How Can You Test H-H Antenna Actuators?

Heinz Koppitz



H-H antenna actuators are sophisticated components that can turn any mono-feed antenna into a receiver system for all locally available satellites. All H-H antenna actuators are DVB-S2 compatible and accept USALS (DVB-S2) LNB commands.

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The test setup involves using a signal generator to send signals to the antenna actuator and a receiver to receive the signals. This allows for the testing of the actuator's performance.

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

How SCR Works

FEATURE | SCR LNB

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

Thomas Haring

SCR is short for Satellite Channel Receiver and is a special-purpose device in the DVB-S2 standard, which applies worldwide and which is the result of joint forces between several companies under the guidance of SES Astra. So what's in it for you?

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

How to Calculate the Power Factor

FEATURE | Energy Saving

Power Factor

Jack Pawlowski

All our satellite systems need electrical energy to operate. Electricity, of course, is the power that consumes all our energy. But only our bills are lower than that we also protect our environment. In TELE-satellite we can provide information on power consumption of the tested products. The power is generally expressed in Watts (W) but sometimes also in Volt-Amperes (VA).

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



Auntie Ling sells receivers



■ Huaqiang Road is the major shopping mile for electronic goods. All the buildings on both sides of the road are home to countless shops and stores, both small and large. Everything electronic can be found here, with mostly mobile phone equipment shops facing the road. If you're looking for digital TV receivers and the like you have to go a little deeper into the shopping complexes.

- *DTMB receivers are top sellers*
- *most customers export their purchases to Hong Kong*
- *various satellite components are on offer as well*
- *shop is open seven days a week*



■ 'Auntie Ling' Aling (left) showing a UHF antenna that is sold in a package deal together with Tsinghwa receivers.

A Small Shop with Huge Success

Alexander Wiese

Tsinghua GT-278

- sehr schnelle Umschaltzeiten
- sehr schnelle OSD-Darstellung
- mit PVR-Funktion bei angeschlossenem Speichermedium
- hervorragende Multimediafunktionen



■ Look for the test report of the Tsinghua DTMB digital TV receiver in this issue of TELE-audiovision. Thanks to its excellent performance it is hugely popular in China and Hong Kong (both countries use the terrestrial DTMB standard for digital television).

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

DIGITAL OUTDOOR ANTENNA
package structure



If you sell some 500 receivers a month, you have every reason to be proud of what you have achieved. Ling is the one to be congratulated on that enormous success, even though most people only refer to her as 'Aling', which is Chinese for auntie Ling. In the confusing maze that makes up the electronics market of Shenzhen she is one of

the most successful figures. Thousands and thousands of usually tiny shops sell everything that remotely fits under the umbrella term electronics. With so much competition all around, you need to stick out from the crowd – and Aling does just that: Her specialty are new digital DTMB receivers from the Tsinghua brand, the latest model of which

we introduce in this issue of TELE-audiovision.

Not far from Huaquiang Road underground station and right in one of the huge shopping complexes on Huaquiang Road is the so-called Shenzhen International Electronic Market, where you can find Aling's small business in the far back of the ground floor. She's been a

regular here since 2006, yet she reveals that she's been in the business since as early as 1997. "In actual fact, I'm a dressmaker by profession, but when my sister opened her own electronics shop many years ago I helped out as an assistant." Later, Aling decided to become self-employed and today she runs her own business. "I started out



■ Aling's brother with the top selling product, a digital TV receiver from Tsinghua that is hugely popular among residents of Hong Kong, where the offering of terrestrial DTMB channels is already quite substantial.



■ Front entrance to the shopping complex. In case you're wondering what those Chinese signs mean: 'Shenzhen International Electronic Market'.

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with selling satellite receivers and dishes," she goes on, "but that line of business has gradually declined."

Nonetheless, she still sells satellite components: "Some 15 antennas go over the counter each month, ranging from small 45cm dishes to the occasional 1.8m and 2.4m antenna." You won't, however, see any antennas on display inside her small store – all of them are warehoused at another site.

Business with digital TV receivers for the Chinese DTMB terrestrial transmission standard has picked up enormously in recent times. "Demand is particularly strong in Hong Kong," Aling explains and has a surprising revelation in store: "The huge majority of customers export newly purchased receivers to Hong Kong right away. There are entire groups who travel here from Hong Kong, purchase all the items they need and bring them back home."

What's the point of coming to Shenzhen of all places to

buy television receivers in the first place? It's the unbeatable deals Aling offers on DTMB receivers. "We even throw in a full one-year-warranty," Aling proudly adds.

The Tsinghua DTMB receiver has made it to the top of the list of Aling's best selling products, with a total of 500 receivers changing hands every month.

Many receivers are sold in a package complete with the right UHF antenna, of which Aling offers a large variety as well. IPTV receivers have also gained in popularity, with approximately 200 of them being sold in an average month. Added to that are meters for DVB-C signals and a full range of digital TV accessories such as HDMI cables and splitters.

When we browsed the shelves of Aling's shop we even discovered repeaters for mobile phone coverage. "They sell well, particularly with customers in new housing estates, who want to make sure they have reliable coverage throughout their home."



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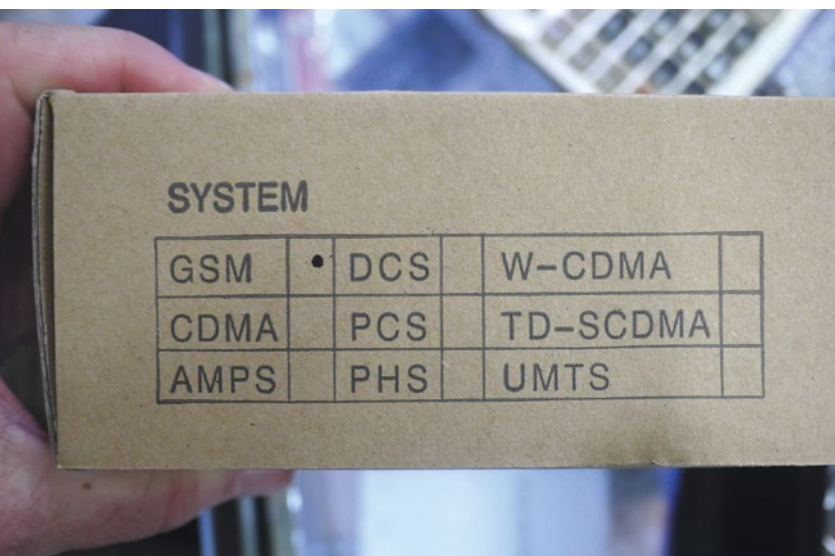


The one thing Aling does not have enough of is free time. She can be found in her small shop every day of the week from 9:30 in the morning until 7 in the evening. Her little brother often helps out and she also employs a staff of two. Time and again she contemplates moving to another

location where she could use larger premises. But there is a reason she has never really taken that step: "We have very loyal customers who have been doing business with us for many years and who keep coming back. It's probably better to stay right where we are."

1, 2. Interesting niche products: repeaters for GSM (above) and CDMA (below) signals.

3. Selling well: satellite signal meter. The Chinese characters mean 'hot seller.'



- ***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***
 - ***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***
-



RT-RK

■ RT-RK occupies most floors of this modern office. 250 software engineers work at the company's headquarters close to the city centre of Novi Sad. Additional sites are located in the vicinity of the Novi Sad University of Technology as well as in Belgrade.



High-end Software Development for Digital TV

Alexander Wiese

Right in the heart of Europe there is a company with a total of 400 engineers looking at continuously improving software for digital TV reception and at bringing to fruition new ideas and strategies. These days, you'd expect businesses like that to set up tent on far away shores, so it's all the more surprising to find RT-RK in the city of Novi Sad in Serbia. With a population of 400,000 Novi Sad is the second largest city in Serbia, right after the capital Belgrade, and it is here that a small centre for highly-specific software solutions has come into being. Two large enterprises in that line of business are located here – and they are even headquartered in neighbouring buildings, sharing the same staff cafeteria. One of the two companies has a focus on energy and ways to save energy, while the other company bears the name RT-RK and offers a whole range of software solutions for digital TV technology (www.rt-rk.com).

"Our local University of Technology here in Novi Sad has an excellent reputation based on its top-notch study programmes," Vukota Pekovic explains. He holds the position of „Head of QA Systems Group" and as such manages and coordinates various teams of software developers at RT-RK. Referring to the university, he at the same time leads us

back to the very beginnings of RT-RK. "The company came into existence in 1991, when university professor Vladimir Kovacevic together with four of his colleagues established a spin-off company." One of the initial tasks of the newly founded business with its then workforce of 12 engineers was to develop computerised telephone systems.

Then years later, in 2001, a German company from the automotive industry took notice of RT-RK and acquired a shareholding in the company. The company had grown to employ more than 100 engineers by that time and with the new partner from Germany its development strategy was extended to also cover the consumer sector and – above all – the automotive sector. At one point in time the original founder of RT-RK, professor Vladimir Kovacevic, felt that automotive technology had taken over too much of the company's business and sold his shareholding, only to create a new company with a renewed focus on audio and video developments. After another few years the German automotive partner also withdrew, which paved the way for the original RT-RK founder to merge his newly established business with the existing RT-RK company. Vladimir Kovacevic also took over all employees,

which subsequently created a workforce comprising 350 engineers in 2012. "This number keeps rising, and thanks to our impressive growth rates we now have 400 engineers," Vukota Pekovic proudly states. Until 2011 RT-RK had been spread across a number of different buildings close to the university in Novi Sad. In that year, however, RT-RK moved to a new large-scale office building close to another major software company. "There are still some 100 engineers working in one of the original premises in the vicinity of the university, while our headquarters here has some 250 engineers. We also have a branch office in the capital Belgrade with 50 engineers," Vukota Pekovic continues, providing some details about the company's three sites.

400 engineers is quite a number – what are they actually working on? "40% look at new software for chipsets, while 50% develop software for TV panels and receivers. This software is then sold to manufacturers, OEM manufacturers, IC producers, content providers and also large distribution companies for digital TV." What about the remaining 10%? They are involved in the newly created division of telecom technology. "This year we will generate sales of around 15 Mio Euro and we're looking at annual growth rates of 15% to 20%."

As always, we are hugely interested in on-going projects that are currently in the pipeline for RT-RK engineers. The BBT product line (bbt.rt-rk.com) that focuses on receiver testing looks particularly interesting to us, since more than 100 software engineers are allocated to that division alone at the moment. BBT is short for Black Box Testing and come to think of it, there could hardly be a more fitting description. RT-RK offers a test environment that allows an in-depth check and evaluation of digital TV receivers according to a virtually unlimited set of clearly defined



■ Professor Vladimir Kovacevic is the founder and manager of software company RT-RK, which develops a whole range of innovative applications for the digital TV business.

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test criteria. "Up to 400 test routines are available," Vukota Pekovic explains and adds "we mainly target set-top box manufacturers, but also IC and TV panel manufacturers who need to perform thorough pre-release tests of all features and functions of their products." Content providers are among RT-RK's BBT customers as well, using the testing software for checking whether certified receivers meet the providers' technical specifications for reliable operation. Interestingly enough, a number of repair centres have also shown considerable interest in BBT software.

Specialising in software development has pushed RT-RK into an excellent sweet spot for doing business. The company is now in a position to offer interested customers bespoke software solutions for all kinds of digital TV applications. This in turn relieves clients of those development tasks and allows them to select RT-RK applications that best meet their requirements for hardware production. Over the course of many years, RT-RK has gained a well-deserved excellent reputation for niche solutions in the digital TV market.



3



1. Meet receptionist Dragana. She is the first face to welcome visitors, and the first voice to answer calls to the RT-RK switchboard.

2. View of the workplace of some of the software developers.

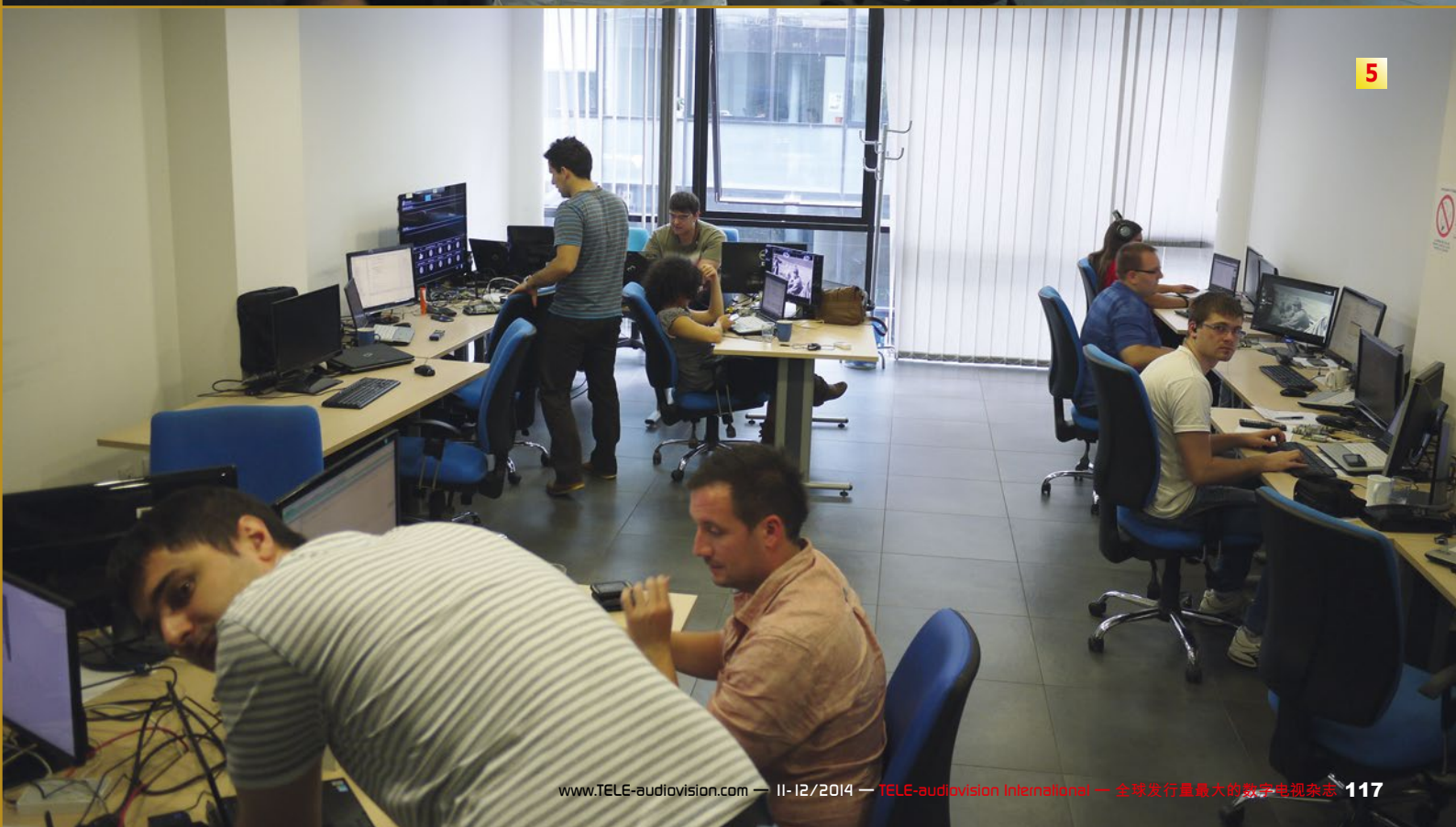
3. Vukota Pekovic on the white board, presenting the different development stages of RT-RK.

4. This is where software engineers work on solutions for TV chipsets. RT-RK cooperates with chipset manufacturers such as Marvel, Broadcom and ST.

5. The RT-RK R&D team.



4



5

6



7



8



9



6. The Quality Assessment Team checks RT-RK software to make sure it is flawless and bug-free.

7. RT-RK already has a dedicated Google TV team. Several TV engineers are officially certified by Google as system integrators.

8. RT-RK manufactures some devices in-house. Boards and cases are sourced from third-party manufacturers, while small-volume production and final assembly take place right at the company's premises.

9. This is where production samples are manufactured.

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10

BBT Automatic Receiver Testing

10. If it's not only one receiver that needs testing but several, this rack is the solution. Up to eight receivers can be connected to it simultaneously, four of which are subjected to a round robin test run. The benefit of such a set-up: While one receiver is tested, the previous receiver with a completed test-run can be exchanged for a new one. This way, each receiver requires only two to three minutes for a thorough evaluation and thanks to simultaneous test runs of several receivers at the same time up to 60 devices can be checked in one hour. The question that now arises is: Who needs that kind of in-depth testing? For once it's manufacturers that look for top quality. Or receiver manufacturers that pick out samples from their production line for random tests. Top-tier manufacturers, in particular, make use of this quality assurance process, since it allows them to issue a test certificate for each tested receiver, guaranteeing full compliance with all required specifications.

The software is based on the bar code system with a specific coded label on the back panel of each receiver. All connections for the receivers are equipped with standard retail cables which can easily be exchanged once they're starting to wear out. This is particularly important since the high frequency of plugging in and unplugging those cables causes considerable wear and tear.

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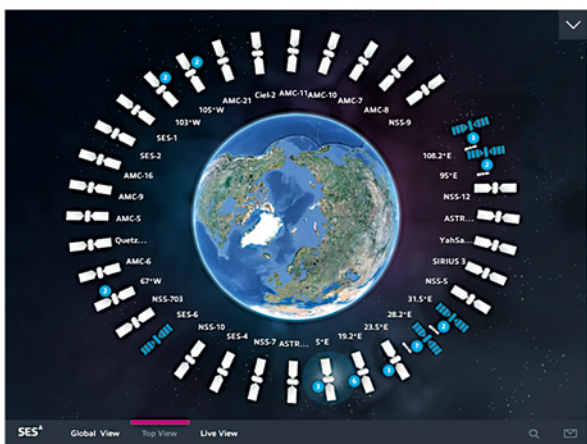


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(Niclas Friese Greene, Senior Vice President of Marketing and Corporate Communications, SES)



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11



12

11. View from inside towards the front panel of a receiver slotted into the test rack. A camera records all display activities of the device and the so-called Remote Control Emulator automatically executes all remote control commands. This way it is possible to automatically test receiver functions and features in their entirety.

12. This single-unit testing station can be used whenever only a single receiver at a time needs to be checked. This system has been designed with receiver manufacturers in mind.

13. All the worker at the conveyor belt has to do is plug in the receiver and press the large START button. The test routine then launches automatically. Upon completion of the test either OK or ERROR lights up and gives a clear indication whether the receiver is ready for shipment to a customer or still requires some fine-tuning.

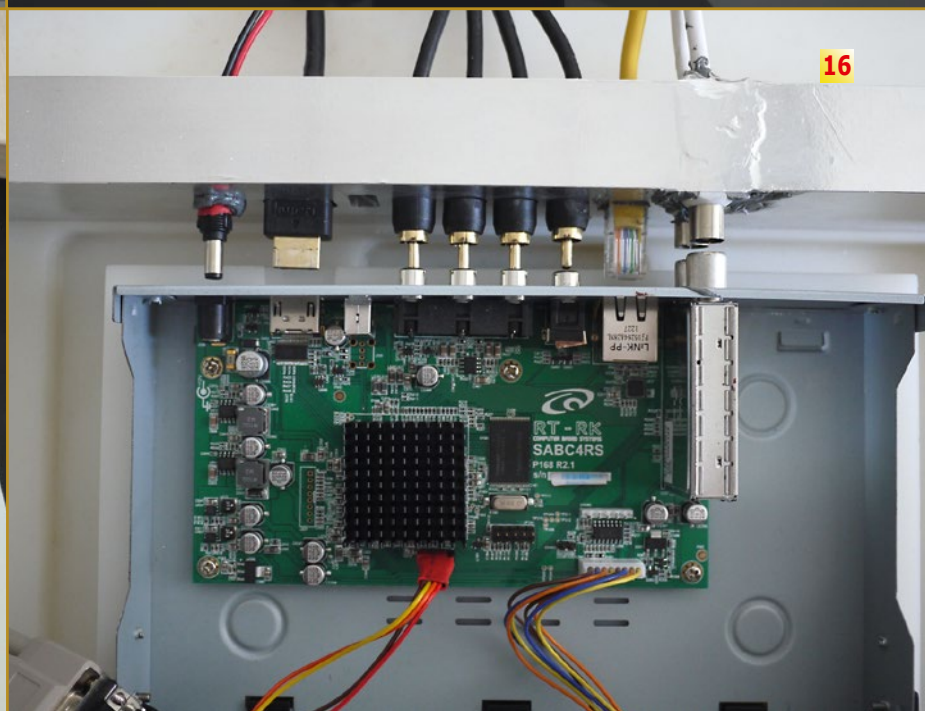
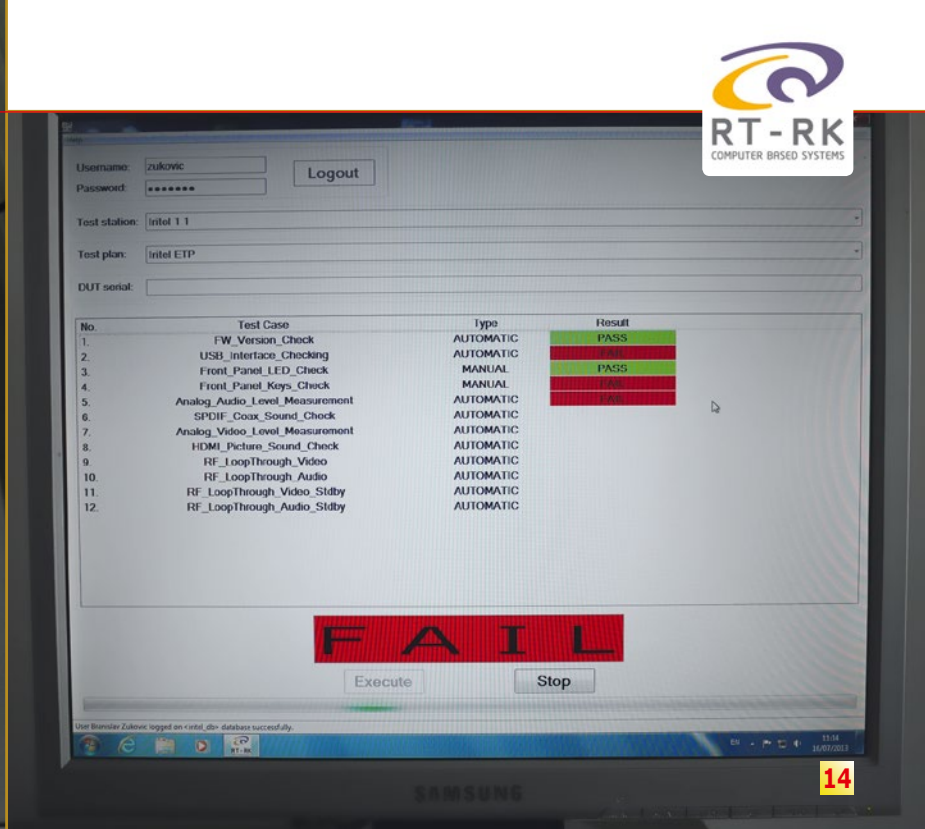
14. The software gives a clear answer to all test routines that need to be performed.

15. Employees feeling that plugging in all connections manually is to tiresome an affair can use this positioning device. It comes with all connectors nicely in place and makes sure a single mechanical step is all it takes to connect the receiver for testing.

15. Almost ready for testing.

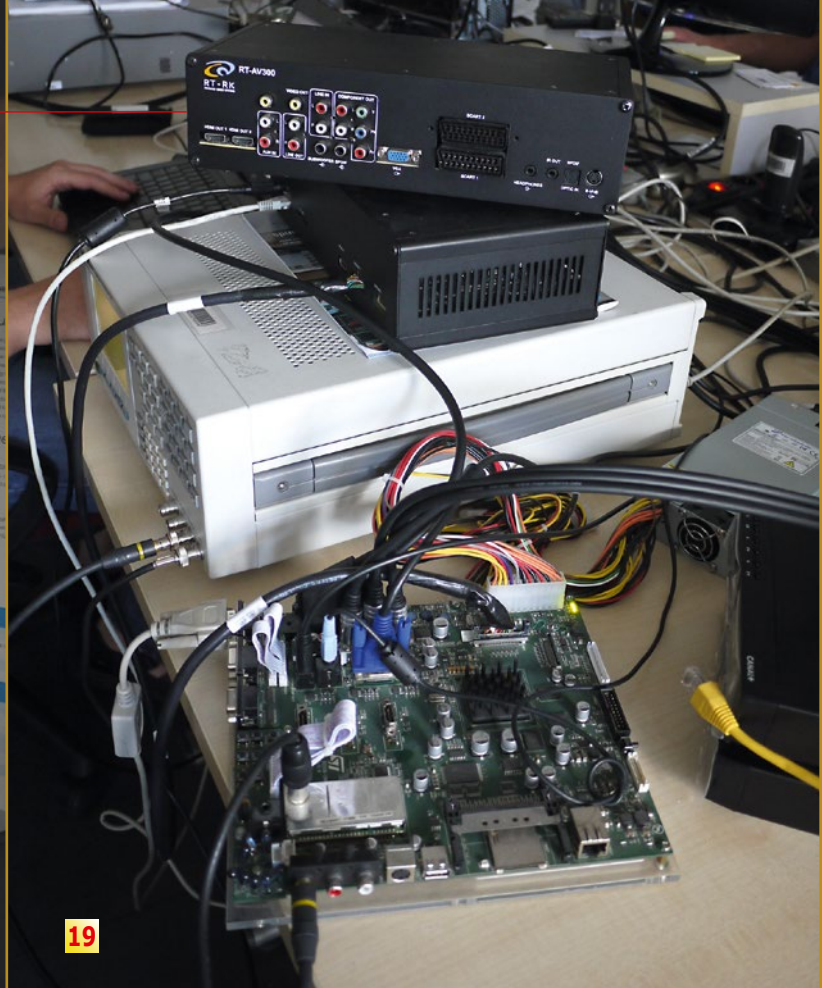
16. Done. All connections of the receiver are firmly in place.







18



19

RT-RK Product Examples

18. One of RT-RK's in-house developments: The AV030 audio video grabber (above: image from the sales folder; below: the actual device) is inserted between the main board of the TV set and the LCD panel. It then measures the video and audio outputs of a tested TV set. The measurement results indicate whether or not all technical specifications are met.

19. The AV300 is a device for universal use. Not only does it assist in testing digital TV receivers, but also DVD and Blu-ray players. The video and audio outputs of the tested device are connected to the AV300, and with the help of the RT Executor software all parameters are automatically measured and logged.

20. The BBT system at work: Various functions of a digital TV receiver are put to the test. BBT performs all measurements fully automatically and shows the colour-



20





21



22



23

coded result (FAILED or OK) on the PC monitor. The RT-RK engineer seen here makes sure the BBT software runs flawlessly.

21. The image quality of a live signal is measured here.

22. Another in-house innovation by RT-RK: A remote control adapter for switching the light on and off in your home. Using the remote control any combination of lights can be controlled individually or in groups.

23. RT-RK has also developed tailor-made software for Android-based receivers. Its main draw card: The RT-TK solution is based on the TV

picture and positions all information as well as Android apps on top of the TV picture rather than in a dedicated OSD menu. Similar to what we have come to appreciate on our smartphones, all apps can be accessed and used without having to take your eyes away from the currently selected TV channel. Seen here is the example of a clock that is inserted in the upper left corner, with the Google search bar below, as well as Google news. All of this can of course be fully customized, so you can adjust the layout of your personal screen to your heart's content. Manufacturers of Android-based TV panels and receivers should give this a close look.

24



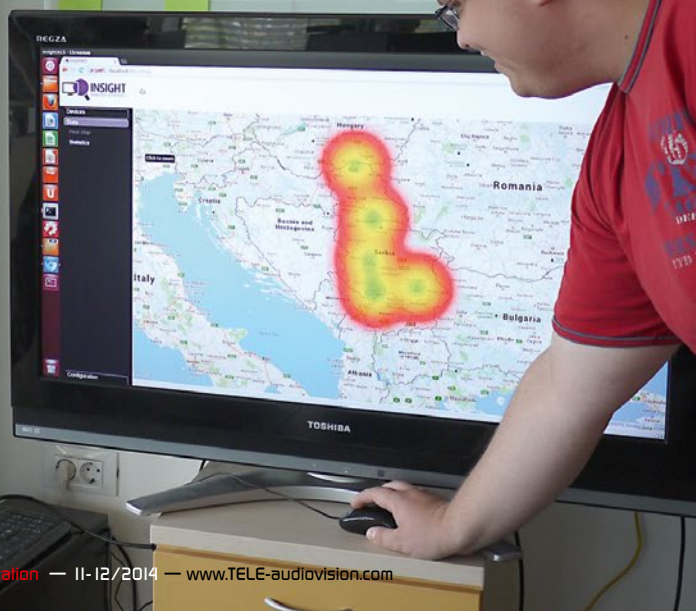
Testing Receiver on The Go

24. A genuine sensation delivered by RT-RK: a receiver tester for on-the-go! The system contains all components required for on-site receiver testing, no matter where you are. The AV150 is mainly geared towards field staff of large TV providers. Customers are no longer required to send in a faulty receiver for inspection and wait for the repaired box or a replacement product. "As it is often the case, the receiver is not to blame for the problem, but simply incorrect user inputs," says Vukota Pekovic. It is much more convenient for the customer – as well as more efficient for the provider – to look at the problem right at the customer's home. "Using the AV150 a service technician is able to test all receiver functions and find an optimum solution for technical troubles."

25

Receiver Network Testing

25. Even though this system is not yet in actual use, RT-RK has completed its development and is ready for launching it: Content providers are given a tool that allows them to monitor all functions of their channels in real-time. The system uses receivers provided by the content company and installed at the customers' end. Since these days most receivers are connected to the Internet, RT-RK uses this Internet connection as return channel for evaluating a range of metadata sent by the receiver. In particular, this involves the currently received transponder and channel of the receiver as well as its signal strength. With the help of the so-called INSIGHT software from RT-RK content providers can then look at a graphical presentation of the current functions of their network. Seen here is a simulation for the terrestrial DVB-T network in Serbia. Five receivers on the wall simulate five different locations across the country and the displays show the current reception quality: Yellow stands for OK, red indicates a weak signal. If a content provider uses metadata from thousands of receivers instead of five, it is possible to gain an exact insight into the current live state of its broadcasting network.





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- ☐ Whol
- ☐ Shop
- ☒ Serv



Founder

Vladimir
Kovacevic



Head of QA

Vukota
Pekovic

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



- 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

- 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

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



GM

Ian
Robinson

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



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

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

Jonsa, Taiwan - Satellite Dish Manufacturer

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



CEO

David
Lin



Production

Stanley
Chiang

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



Sales

Conny
Chen



Marketing

Paula
Chen



- 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

- 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



CEO

Juan Carlos
Vegas



Marketing

Mitra
Tarnonsky

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



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

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

Telecontrol, Germany - Analyzing TV Programs

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



Chairman

Guido
Ciburski



CEO

Petra
Bauersachs

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



- 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

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

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


GM

 Marco
Szili

Engineering

 Jonathan
Gregory

R&D

 Marcos
Santos


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

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


Marketing

 Bernd
Hackbart

Software

 Christian
Hackbart


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

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


GM

 Marcos
Benni


- Largest Digital TV Internet forum in Brazil
- Reaches 400,000 readers every month

- Starting a new form of digital TV online shopping with a video shop
- Also active in IPTV and IP Radio

Elnet, Iceland - Distributor
www.TELE-audiovision.com/TELE-audiovision-1311/eng/elnet.pdf

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


GM

 Asmundur
Einarsson

Sales

 Magnus
Eyjolfsson


- can supply everything from DVB transmitters to DVB receivers
- always adapts its large range of products to meet current market demands

- believes in terrestrial and satellite DVB reception
- expects fibre-optic products to gain popularity in near future

GlobalInvacom, UK - Fibre Optic Products
www.TELE-audiovision.com/TELE-audiovision-1311/eng/globalinvacom.pdf

- ☑ Manu
- Distr
- Whol
- Shop
- Serv


**Business
Development**
Gary
Stafford

**Technical
Support**
Matt
Presdee


- Invented the new satellite IF transmission technology via fibre optics
- Five million FibreIRS connections are expected by 2015
- Through continuous technological improvements FibreIRS can now serve more than 4000 connections from a single LNB; for professional applications it's several 10,000's

- 14 Multiple R&D Engineers are consistently working to improve the system
- Northern Europe, North Africa and Southeast Asia are the largest FibreIRS markets

Oreind, Iceland - Distributor
www.TELE-audiovision.com/TELE-audiovision-1309/eng/oreind.pdf

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


Founder

 Baldur
Sveinsson

Founder

 Sigurour
Gunnarsson


- successful in the home electronics segment
- all antenna installation material always in stock

- focus on IPTV for sustained business development
- sizable repair shop for home electronics equipment

Deviser, China - Signal Analyzer
www.TELE-audiovision.com/TELE-audiovision-1307/eng/deviser.pdf

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


President
Zhong
Changan

MD

 Liu Lian
Jun

**Production
Manager**

 Li Hong
Xiao

Sales

 Jason
Wu


- new company headquarters streamlines production and administration at a single site
- expansion of a dedicated repair and logistics centre in and for Europe

- strong growth in export markets
- state-of-the-art test benches for EMS and overvoltage protection

Dexin, China - Digital TV Head-ends
www.TELE-audiovision.com/TELE-audiovision-1307/eng/dexin.pdf

- ☑ Manu
- Distr
- Whol
- Shop
- Serv


GM

 Sun
Yu


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

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

Forcetech, China - IPTV Solution Provider

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

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



Sales
Ren
Nan



Marketing
Lan
Haidong



- offering technically mature and fully-fledged IPTV solutions
- large Chinese movie provider as showcase customer and shareholder

- small-scale IPTV systems can be realised on a tight budget
- excellent video quality thanks to P2P technology

Tianditong, China - Antennas

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

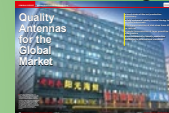
- ☒ Manu
- ☒ Distr
- Whol
- Shop
- ☒ Serv



GM
Bang Xian
Peng



Production Manager
Bang Xing
Peng



- uses state-of-the-art production machinery
- fully automatic quality control during the production process
- volume production of dish sizes from 45 to 180 cm

- ready for production of large quantities at short notice
- environmentally-friendly production according to international standards

ELDTEC, Brasil - Dish, Antennas and Cables

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

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



Sales Manager
Jefferson
Cruz



- Large market coverage within Brazil
- OEM production for other brand names

- Concentration on just a few product series
- Also offers antennas for 2.4 and 5.8 GHz (WiFi)

LIANXING, China - Satellite Dishes

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

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



Product Manager
Wen Liang
Yuan



Sales Manager
Liao Wen
Fei



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

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

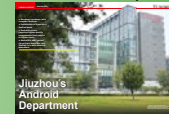
Jiuzhou, China - Android Receivers

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

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



Product Manager
Yongjun
Zhang



- Develops receivers with complex features
- Installation of Apps on a limited basis
- Android system requires higher quality components that results in

- higher costs
- Android is well-suited for private users but only limited for cable network operators

Sat-Link, China - Signal Analyzers

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

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



GM
Qing
Zhang Lin



Project
GuiHuang
Huang



Sales
Nancy



R&D
Han Guang
Rong



- Only five years on the market
- Focusing on the signal analyzer product group
- Offers signal analyzers in four function classes and four price classes

- Optimizes signal analyzers for every region
- Brand new: combo analyzers for DVB-S2 and T2 with fast spectrum display

Tecsys, Brazil - Professional Equipment

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

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



CEO
Jose Marcos
Freire Martins



COO
Jorge Alberto
Ganuza



Production
Adilson da
Silva



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

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

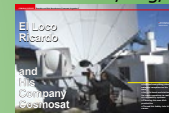
Cosmosat, Argentina - Satellite Dishes

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

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



Owner
Ricardo



- Learned everything about satellite reception on his own
- Installs head end stations for cable operators as well as community systems

- Planning his own dish production
- Turned his hobby into his career

Horizon, UK - Signal Analyzers

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

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



Technical Director
Paul
Hardcastle



Technical Manager
Rob
Sydee



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

- South America
- Specializes in easy to use analyzers for installers



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without compromise



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A perfect marriage between old and new

Advanced design based on 1970's vacuum tube technology

Takes an audio signal from a CD Player, Tape player, Tuner or Computer and reproduces it with amazing high quality and resolution

Reveals music dynamics and natural tone never before heard in any standard amplifier both at the instrument and vocal levels

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Each tube has been specially selected to provide the best possible sound experience

The result? Sound quality that will take your breath away!



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

EXPLAINING CES TO SOMEONE WHO HASN'T ATTENDED IS LIKE EXPLAINING PARTICLE PHYSICS TO A HOUSECAT.



In other words, you really can't. What you can do is make sure you don't miss what promises to be our most innovative and rewarding show ever. That and maybe take some pictures for the unfortunate cats left behind. Register at CESweb.org.



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LAS VEGAS, NEVADA
CESWEB.ORG
#CES2015

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

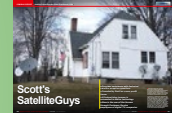
- Manu
- ☒ Distr
- Whol
- Shop
- ☒ Serv



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

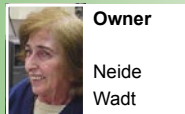


- Already operating the first IPTV project
- 3D planned for the future

- 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

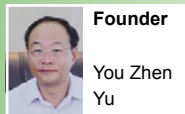


- Develops Digital TV receivers optimized for OTT
- Dedicated OTT development team

- 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



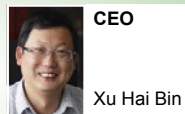
Founder

You Zhen
Yu



Founder

Huang
Wei



CEO

Xu Hai Bin



Marketing Manager

Alan Yu

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

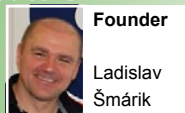


- Multiple quality control points before, during and after production
- Concentrating on digital TV products

- Cooperating with many license providers
- Continuous product palette expansion

Sortec, Slovakia - Distributors

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



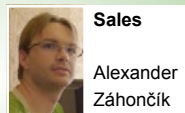
Founder

Ladislav
Šmárik



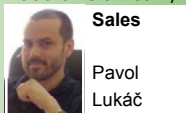
GM

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

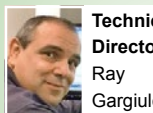
Turbosat, UK - Receivers

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



Sales

Chris
Ward



Technical Director

Ray
Gargiulo

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



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

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

50th
ANNIVERSARY

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INTER BEE EXPERIENCE, which celebrates Inter BEE's 50th anniversary, will be held on November 20th (Thur.) at the event hall. This event includes demonstrations of line array speakers for professional audio companies to take part in and live stage for new expressions fusing cutting edge technology in images, music, lighting and performance.



 **INTER BEE**
shared a link

INTER BEE CONTENT FORUM provides simultaneous Japanese-English interpretation services for overseas visitors.



 **INTER BEE**
shared a link

INTER BEE CONNECTED shares the latest trends and innovations in imaging and ICT based on themes such as links between broadcasting and communication, possibilities in media business through the Internet, use and application of clouds as contents production infrastructure and the application of big data in the contents business.



 **INTER BEE**
shared a link

Inter BEE has concluded partnerships with other exhibitions and international conferences relating to broadcasting and media in every region in Asia and other countries around the world.



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TEL:+81-3-6212-5231 FAX:+81-3-6212-5225 E-mail:contact2014@inter-bee.com

INTER BEE ONLINE
www.inter-bee.com



BSD, Brazil - Internet Forum

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



Manu
Distr
Whol
Shop
Serv



Owner

Marcus
Bernardini



- Operates Brazil's largest digital TV website
- Engaged in the further education of digital TV antenna installers

- Planning his own IPTV channel all about digital technology
- Living his dream with his own worldwide radio station

P-Sat, Hungary - Distributor

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

Manu
Distr
Whol
Shop
Serv



Owner

Tibor
Posta



- Has its own customer magazine
- Created supermarket style store

- Planning start of own branded TV services
- Operates one of the most well-known web communities in Hungary

AB-COM, Slovakia - Receivers

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

Manu
Distr
Whol
Shop
Serv



Founder

Juraj
Masaryk



Marketing Manager

Michal
Grezo



Sales

Pavol
Blaho



- Particularly successful in Central Europe
- Products for different applications such as 3D and pay TV

- Focus on cost-efficient product range
- Products optimised for individual applications

Applied Instruments, USA - Signal Analyzers

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

Manu
Distr
Whol
Shop
Serv



GM

Tom
Haywood



Engineering

Jeff
Haas



Sales

Scott
Haywood



- The power of this company is its robust signal analyzers
- Company plans worldwide expansion with its internationally compatible analyzers

- Special test signal generators for receiver manufacturers
- Special attention to ergonomic operation
- Technical customer service an important highlight of the company

Huber+Suhner, Switzerland - Fibre Optics

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

Manu
Distr
Whol
Shop
Serv



Marketing Manager

Othmar
Fuchs



- One of the leading fiber optic companies in the world
- New CLIK! System for easy installation
- New market segment that will make coaxial cable distribution systems

- obsolete
- Now available: economical alternative with distribution systems starting with eight users

iPONT, Hungary - 3DTV

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

Manu
Distr
Whol
Shop
Serv



CEO

Zoltan
Korcsok



CTO

Andor
Pasztor



- 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

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

Manu
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Whol
Shop
Serv



GM

Sven
Melzer



- 80% of distributed products come from in-house MEGASAT brand
- full range of satellite components

- special focus on self-aligning camping antennas
- distribution to the whole of Europe

Sapro, Czech - Receiver and Wholesaler

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

Manu
Distr
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Shop
Serv



Owner

Lubomír
Probošzcz



Sales

Petr
Zwrtek



Sales

Jana
Probošzczová



- Covers every price segment with its four brand names
- Starting expansion to surrounding countries

- In-house design and production (assembly line)
- Produces 100,000 receivers per year

WSInternational, USA - Receiver and Wholesaler

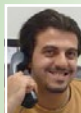
www.TELE-audiovision.com/TELE-satellite-1109/wsinternational.pdf

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

Asia-Pacific's
Largest Broadcasting Show



China International Exhibition Center, Beijing
26 - 28 March, 2015

The 23th China Content Broadcasting Network Exhibition CCBN2015 will take place from March 26 - 28, 2015 in the prestigious China International Exhibition Center (CIEC) in Beijing. As the largest broadcasting technology and equipment expo in the Asia-Pacific region, CCBN boasts 60,000 square meters of exhibition space. It attracts more than 1,000 exhibitors and 100,000 professional visitors from more than 30 countries



**We look forward to meeting you
at CCBN2015 in Beijing!**



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Visit registration: 010-8609 1647 / 3436 / 1340

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

www.ccbn.tv

BYA, Algeria - Dishes and Receiver

www.TELE-audiovision.com/TELE-satellite-1107/bya.pdf

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



GM
Slimane
Ait Yala



Boingsat, China - LNB

www.TELE-audiovision.com/TELE-satellite-1105/boingsat.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



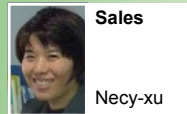
Technical Manager
Tewfik
Lamrani



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



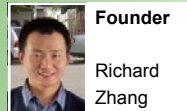
- IPTV box production may reach 1 million units in 2011
- Jiuzhou starts HbbTV boxes for Europe

- 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

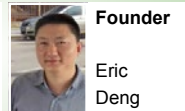
- ☒ Manu
- ☒ Distr
- Whol
- Shop
- Serv



Founder
Richard
Zhang



Founder
Bob
Liu



Founder
Eric
Deng



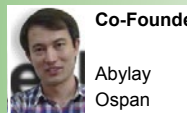
Founder
James
Liu



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



Tevii, Taiwan - PC Cards and Receiver

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

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



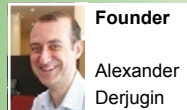
Founder
Matthias
Liu



Satbeams, Belgium - Software

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

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



Founder
Alexander
Derjugin



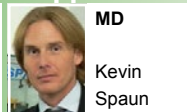
Spaun, Germany - Power Supplies

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

- ☒ Manu
- Distr
- Whol
- Shop
- Serv



IBC
Certificate
Holder



MD
Kevin
Spaun



Boxsam, China - Receivers

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

- ☒ Manu
- Distr
- Whol
- Shop
- Serv



GM
Xiaofeng
Huang



VP
Jeffrey
Zhao



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A 3D collage of various media icons and images, including a camera, film strip, news, sports, and social media symbols, arranged in a dynamic, overlapping structure.



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SATELLITEPRO BROADCASTPRO

FROST & SULLIVAN



FIBTV
FUTURE OF BROADCAST TELEVISION

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

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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
Scott
Parsell



**Marketing
Manager**
Sandy
Nelepovitz

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



Nanoxx, Germany - Wholesaler and Receivers

☒ Manu
☒ Distr
☒ Whol
Shop
Serv



Founder
Marcel
Hofbauer



Sales
Daniel
Sam

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



Smart, Germany - Receivers

☒ Manu
☒ Distr
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Serv



MD
Peter
Löble



MD
Christoph
Hoefler

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- Latest industry trends
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デジタル時代のメディアビジネスマガジン
Monthly Broadband * Broadcasting * Business Magazine

B-maga

2013 SEPTEMBER 9

Interview
小牧次郎氏 スカパーJSAT(株) 執行役員常務 有料多チャンネル事業部門 放送事業本部長
Jiro Komaki, Managing Executive Officer Group President Broadcasting Business Group Multichannel Pay TV Business Group, SkyPerfect JSAT

CS Channel Focus
時代劇専門チャンネル&スカパー! Jidaigeki Senmon Channel & SkyPerfect TV!
衛星劇場 Eisei Gekijo

CS/BS/CABLE/BBの最新加入者数
Subscriber Trends for BS & CS Broadcasting, Cable, Broadband
CSチャンネル加入世帯数TOP50ランキング
Top 50 Subscriber Count CS Channel Rankings

Future Technology

ケーブルテレビの 今と未来を考える

Contemplating Cable TV Today and Tomorrow

Interview 福岡 徹氏 総務省 情報流通行政局
Toru Fukuoka, Director General, Information and Communications Bureau, MIC

**ケーブルテレビ事業者 215社に聞いた
ケーブルテレビの今と未来を大調査!!**
Extended survey of cable TV today and tomorrow: 215 cable operators respond

IP-VODプラットフォームを検証 Validation of IP-VOD platforms
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Actvia Corp. / Jupiter Telecom & Jupiter Entertainment / Broadmedia Corp.

ケーブルテレビの技術トレンド2013 Cable TV 2013 technology trends
ARRIS Group/ジャパンケーブルキャスト/メディアキャスト
ARRIS Group / Japan Cablecast / Mediacast



MOST FAMOUS Satellite and TVRO Enthusiasts **WORLDWIDE**



Mike Kohl

USA

Plain, Madison, Wisconsin, USA

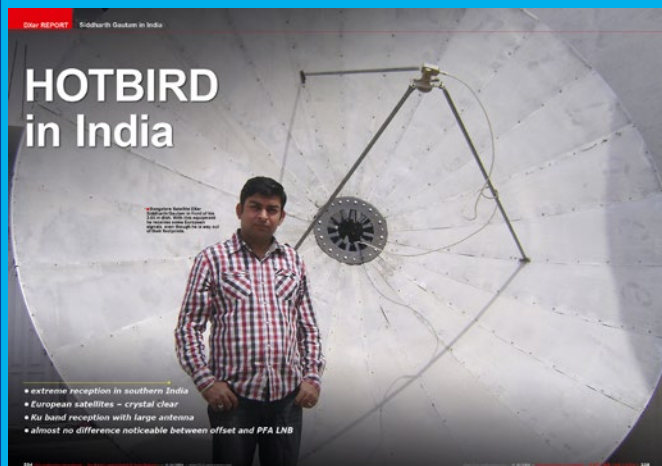


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Siddharth Gautam

India

Bangalore, India



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Daniel Rank

Germany

Blankenberg, Germany



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Lasmotos

Argentina

Daniel Hasink, Buenos Aires, Argentina



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Flavio Pairol

Brazil

Sao Jose dos Campos, Brazil



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FTA Fan

USA

Michael Kilgore, Denver, USA



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BluBox

Professional Headend 8/16/24/32 x DVB-S/S2 into QAM

The proven BluBox headend system offers a high quality modulation from DVB-S/S2 into DVB-C (QAM).



Features:

- 19" Base Unit with redundant switched-mode power supply.
- 4 slots for BluCard 8 or BluCard 4 CI cards.
- Modular extendable to up to 32 QAM transponders.
- LNB remote power with 14/18V + 22 kHz, DiSEqC 1.0 or SCR EN 50494.
- Configuration and monitoring via LAN/IP.
- Complete processing of the transport streams possible.
- Each of up to 32 output channels can be placed individually in the spectrum.
- Two independent input ports per BluCard 8/4 CI.
- **BluCard 4 CI with 4 CI slots for the extension with Pay-TV programs.**

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FORUM



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Henry

Henry Kapitapita, Zomba, Malawi

Malawi



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Oscar

Oscar Campos, Santiago, Chile

Chile



www.tavmag.com/TELE-satellite-1209/eng/oscar.pdf

Natalino

Natalino, Jundiá, Brazil

Brazil



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Big Ronaldo

Ronaldo Zovaro, Louveira, Brazil

Brazil



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Jack

Jack Moran, San Diego, USA

USA



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DX-Ralf

Ralf Sunke, Emlichheim, Germany

Germany



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SLTE 30, SLTE 60 and SLTE 90



Features:

- SLTE 60 and SLTE 90 with a very steep-edged signal curve in border areas between the DVB-T and LTE 800 signal.
- Pass band frequency range up to 790 MHz.
- Strong attenuation from the first LTE block (channel 61).
- Compact design for connection of various DVB-T devices.

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KEY FEATURES

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- Switchable DVB tuner design
- 19" 1 U rack-mount system



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SatGuy

USA

Scott Greczkowski, Newington, CT, USA



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DX Bozoth

Hungary

Laszlo Toth, Püspökladany



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Györgi

Hungary

Györgi (George), Budapest



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Ken Wong

Hongkong

Ken Wong, Hongkong



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Benni

Brazil

Marcos Eduardo Bernardini, Jundiá (SP)



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DXer

Iran

Daryoush, Mehdi, Saeed, Davood, Milad



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VAM 420 NG DVB-T
• Modulator with COFDM (DVB-T) output signal

VSF Twin Modulator VAM 420 NG PAL

- Easy to create analog tv signals
- Adjacent channel capable
- Simple and fast programming
- Cascading allows for multiple TV analogue channels
- TV standard: B/G/D/K/I/L
- Frequency range: 110 ... 862 MHz
- Output level: max 90 dBμV
- C/N ratio: ≥ 50 dB



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- Input Range: -43dBm ~ +27dBm
- Basic Accuracy: $\pm 1\%$ and ± 0.05 dB
- Full Range Accuracy: $\pm 5\%$ and ± 0.21 dB
- Optical Connector: FC/SC



Jang Lee

Jang Lee, Gangwon

Korea

Pepsi

Pepsi, Mengyang, Sichuan, China

China

Star REPORT | Satellite Enthusiast in Korea

The Shovel DXer

Farmer Jang Lee lives in the Gangwon province in northeastern South Korea. As is typical for any farmer, he most often uses shovels of all different shapes and sizes. But since he's also a satellite enthusiast, he uses these shovels not only for his daily farming work but also as satellite dishes! This is something we just had to take a closer look at.

For Jang Lee, it's not just about farming. It's also about satellite TV. He has a collection of shovels that he uses as satellite dishes. He has a collection of shovels that he uses as satellite dishes. He has a collection of shovels that he uses as satellite dishes.

Star REPORT | Satellite Enthusiast from Chengdu, China

Pepsi's Dishes

Satellite Dishes are a rather new species in China. One of the oldest dish is Pepsi in the city of Mengyang of Sichuan province in south-western China. Why would anybody choose the nickname Pepsi, you may ask? Well, that's not difficult to guess: Pepsi used to work for the company by the same name.

After more than 10 years of working in the company, Pepsi has decided to start his own business. He has started a company called "Pepsi's Dishes". He has started a company called "Pepsi's Dishes". He has started a company called "Pepsi's Dishes".

www.tavmag.com/TELE-satellite-1105/eng/korea.pdf

www.tavmag.com/TELE-satellite-1011/eng/pepsi.pdf

Keito, Takao

Keito Takahashi and Takao Kameda, Tokyo

Japan

Jiri

Jiri Vanek, Jablonec nad Nisou

Czech

Star REPORT | Satellite Enthusiast in Japan

Satellite TV in Tokyo

These satellite is always in view of the sky. It's a very common sight in Tokyo. It's a very common sight in Tokyo. It's a very common sight in Tokyo.

Star REPORT | Czech Satellite Enthusiast

Jiri, the Racer

Jiri Vanek lives in Jablonec nad Nisou, a Czech town with a population of 50,000. In his younger years he used to do race driving. He used to do race driving. He used to do race driving.

www.tavmag.com/TELE-satellite-1103/eng/japan-dxer.pdf

www.tavmag.com/TELE-satellite-1009/eng/jiri.pdf

Ponny

Rainer Schulz and Berndt Rosenberger, Tröbitz

Germany

Siddharth

Siddharth Gautam, New Delhi

India

Star REPORT | Rainer Schulz and Berndt Rosenberger, Lausitz, Germany

Two Satellite DIY enthusiasts

Rainer Schulz's company is based in a small town in Germany. It's a very common sight in Germany. It's a very common sight in Germany. It's a very common sight in Germany.

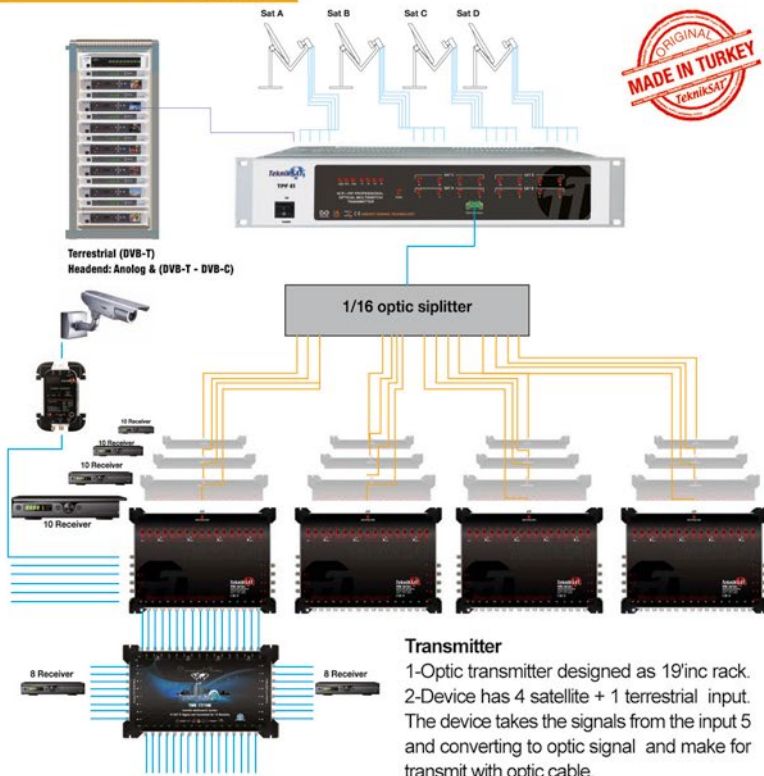
Star REPORT | New Delhi, India

Big Dish in India

Siddharth Gautam operates a major satellite reception station in New Delhi. When the time had come for a refurbishment he invited us to get a first-hand impression of his job. Siddharth Gautam tells us why these changes have become necessary. The main reason is the relocation of the eight dishes, so that they do not interfere with each other any longer. After all, every dB counts!

www.tavmag.com/TELE-satellite-1101/eng/ponny.pdf

www.tavmag.com/TELE-satellite-1007/eng/india.pdf



Transmitter

- 1-Optic transmitter designed as 19"inc rack.
- 2-Device has 4 satellite + 1 terrestrial input. The device takes the signals from the input 5 and converting to optic signal and make for transmit with optic cable.
- 3-The Device fan cooling.
- 4-Optic signal out power is 2 mW. Optic out signal can be transmitter max .32.

Multiswitch

- 1-Optic Multiswitch has 1 optic input ,10 subs cribers output and 17 cascade signal output.
- 2-Max. Optic input is 2mW.

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1 TERESTRIAL MULTSWITCH**



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10 Subscriber output

Available cascade models of this series.



TPF 41 4 SAT (16 IF + 1 RF)
One core



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BROADCASTING NETWORK**

Main advantages

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- Flexible and scalable Head-End and Network
- Cost-effective solution
- Typical for DVB systems = cheap subscriber equipment
- Wireless - better than cable :)
- Easy management of subscriber base
- Selected content for subscribers
- MITRIS is tested by years
- We will satisfy any request - we are the developer!

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Skype: KYXOLb

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**why ROKS,
why MITRIS?**



Astra Fan

Cahit Nuri Or, Adapazari

Turkey



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Yahya

Yahya, Saudi Arabia

Saudi Arabia



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Satheesan

Satheesan Puzhakkara, Thiruvananthapuram

India



www.tavmag.com/TELE-satellite-1003/eng/indiadxer.pdf

Vincent

Vincent, Jakarta

Indonesia



www.tavmag.com/TELE-satellite-0909/eng/indonesia.pdf

Hakan

Hakan Kasli, Antalya

Turkey



www.tavmag.com/TELE-satellite-1001/eng/dxerinturkey.pdf

Stone

ShiToy, Beijing

China



www.tavmag.com/TELE-satellite-0909/eng/beijingdxer.pdf

The best source of information for TVRO fans in China

The screenshot shows the AsiaTVRO website with a navigation bar at the top. The main content area is divided into several sections:

- Left Sidebar:** Contains links to '官方网站' (Official Website), '7折本月续费' (70% discount for this month's renewal), and '高清卫星电视' (HD Satellite TV).
- Top Banner:** Promotes '亚洲卫星电视' (AsiaSatellite TV) with a phone number '021-51012888' and a list of services including 'DISH HD', '菲律宾', '数码天空', and '香港有线'.
- Main Content:** Features a '知名卫星电视安装商' (Famous Satellite TV Installer) section with a list of satellite channels and their frequencies. Below this is a '山东尼创锁业有限公司' (Shandong Nicuo Lock Co., Ltd.) advertisement.
- Right Sidebar:** Includes a '7折本月续费' (70% discount for this month's renewal) banner and a 'TELE' logo.

WWW.ASIATVRO.COM

ASIATVRO Always up to date

The advertisement for SATBEAMS.COM is split into two main parts:

- Left Side:** Features a map of Europe with a red circle indicating a satellite footprint. Text overlay reads: 'Check if you are within coverage' and 'Scalable footprints with dish alignment tool'. Below the map is the website URL 'WWW.SATBEAMS.COM'.
- Right Side:** Shows a screenshot of the SATBEAMS website interface. It includes the tagline 'Everything you need to set your dish right', a section for 'Satellite charts with filters' showing a table of satellite data, and a section for 'Transponder news updated daily'. A magnifying glass graphic highlights the text 'EMBED SCALABLE FOOTPRINTS INTO YOUR WEBSITE'.

Roy

Roy Carman, London



www.tavmag.com/TELE-satellite-0909/eng/londondxer.pdf

UK

Pharmacist

Pieter Redelinghuys, Klerksdorp



www.tavmag.com/TELE-satellite-0901/eng/pharmacist.pdf

South Africa

Applesat

Applesat, Beijing

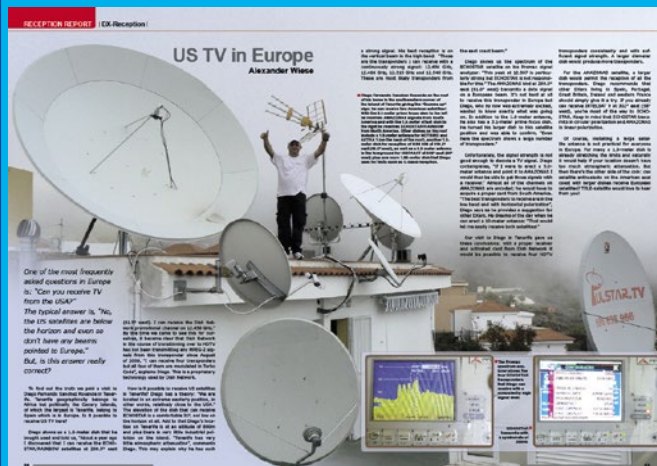


www.tavmag.com/TELE-satellite-0907/eng/applesat.pdf

China

Diego

Diego Fernando Sanchez Rosende, Tenerife



www.tavmag.com/TELE-satellite-0901/eng/dxer.pdf

Spain

Aluosat

Luo Shigang, Shenzhen



www.tavmag.com/TELE-satellite-0905/eng/aluosat.pdf

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Feedhunter

Rini de Weijze, Amsterdam



www.tavmag.com/TELE-satellite-0811/eng/feedhunter-rini.pdf

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Alle
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Technik

11/94

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PHILIPS INVENTS FOR YOU

PHILIPS

Sowas gab's noch nicht: Statistik der Sehgewohnheiten und Atomuhr-Anschluß im Sat-Receiver

EEC TR 400

N ein, im EG-Stütz in Brüssel werden noch keine Receiver gebaut. Auch wenn die Abkürzung EEC diesen Gedanken aufkommen läßt: EEC steht für ELECTRONIC EQUIPMENT & COMPONENTS GmbH mit Sitz im deutschen Erkrath. Und doch steht das Firmenkürzel irgendwo für Europa, denn geplant wurde der TR 400 in Deutschland, gebaut wird er in Slowenien und gedacht ist er für Europa.

Um diesem Anspruch gerecht zu werden, muß sich ein Hersteller schon was einfallen lassen, um auf dem überfüllten Receiver-Markt überleben zu können.

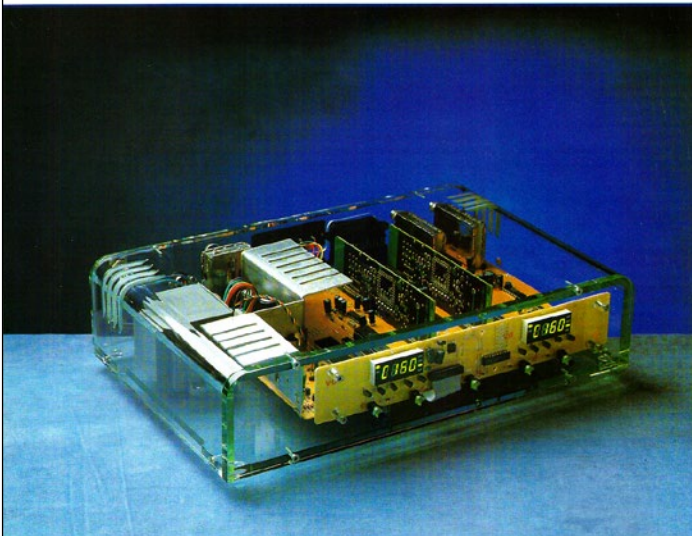
Drei Scartanschlüsse, 22 MHz-Schaltung und 330 Programmplätze zeigen, wo's lang geht: gerüstet für alle Eventualitäten und für so ziemlich alle Sat-Programme, die derzeit Europas Himmel bevölkern, bietet der TR 400 einen breiten Nutzort. Der wird noch ergänzt durch ein On-Screen-Display, 6 unterschiedlich einstellbare Timer für 365 Tage, C/Ku-Band-Tauglichkeit, frei einstellbare Oszillatorfrequenz des LNB und 330

Programmplätze (optional 600 Plätze mit einem Ergänzungs-IC).

Features

Der TR 400 ist als Twinreceiver konzipiert. Ausgestattet mit zwei voneinander unabhängigen Tunern läßt er den direkten Empfang via Tuner A und die Aufnahme eines anderen Programmes via Tuner B zu. Das ist eigentlich die Grundidee. Die Empfangsebene wird bei beiden Tunern mit 14/18 Volt umgeschaltet. Da aber auch noch eine 22-MHz-Schaltung da ist, sind da Phantasie keine Grenzen gesetzt. So läßt

Der EEC TR 400, hier im Acrylgehäuse



Messebericht

IBC '94 in Amsterdam

von Petra Hütter

IBC mit Schwerpunkt Digitaltechnik!

Überall macht sie sich bemerkbar, so auch in Amsterdam auf der IBC, die zukunftsreiche Digitaltechnik hält Einzug bei den Firmen. Mit neuen innovativen Produkten versucht man diesen Thema schon frühzeitig einen Platz in der Produktpalette einzunehmen. Sei es bei den Computerfirmen, den Broadcastern, den Telekommunikations- oder den Satellitenbetreibern bzw. Anbietern von Satelliten-equipment. Gerade hier wurde ein großer Schritt nach vorne gemacht: drei Hersteller (Philips Consumer Electronics, Pace und General Instruments) stellten erstmalig funktionstüchtige Endverbraucher-Geräte zur Erschließung der Digitalsignale vor. Alle drei Receiver basieren auf dem MPEG-2 System, das ist der zukünftige Standard für digitale Kompression und Abstrahlung der Video- und Audiosignale. Der Vorteil für den Programm-anbieter liegt in der Kostenersparnis, da nun auf einem Transponder gleichzeitig zwischen fünf und zwölf Programme abgestrahlt werden können.

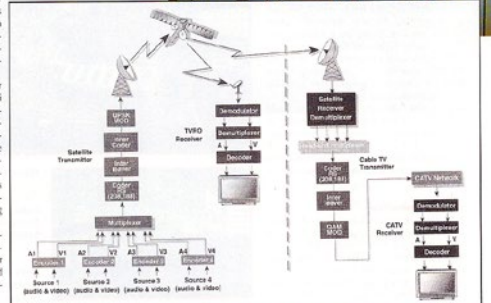
Die Anzahl der Programme auf einem Transponder richtet sich nach den qualitativen Ansprüchen eines jeden Senders. Der Zuschauer spürt den Vorteil in absolut rauschfreier Video- und Audioqualität. Die Geräte sollten im Frühjahr nächsten Jahres dem Endverbraucher zum Kauf zur Verfügung stehen. Sie unterscheiden sich von normalen Receivern nur durch den eingebauten Encoder zur Umwandlung der digitalen Daten in analoge Signale. Bei den Preisen herrschen noch gravierende Unterschiede, kostet ein einfacher Receiver zur Zeit um die 200,00 DM, wird man für die MPEG-2-Receiver zwischen 1.000,00 und 2.000,00 DM bezahlen müssen.

Messestand von Pace/NL

Foto unten: Graphik zum MPEG-Sende- und Empfangsschema

VCS 4000 MPEG-2 Video Compression System

Satellite Transmission



Links: Pace-Receiver zur Decodierung der Digitalsignale, rechts: Philips-MPEG-2-Receiver

TELE-satellit 11/94

Bei uns wählen Sie richtig

Wir feiern unseren Umzug nach Umbau bzw. die Neueröffnung wegen Geschäftsvergrößerung am 15./16. Oktober: Feiern Sie mit!

Informieren Sie sich über den aktuellen Stand der Technik im Bereich Computer-Netzwerke und im Bereich der SAT-Technik. Dazu gibt es ein tolles Rahmenprogramm:

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Die Auslosung der Gewinner erfolgt am Sa. 16.10. um 15.30 Uhr!

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Die SAT-Profis mit der umfangreichen Beratung – auch wenn's mehr als nur ASTRA sein soll

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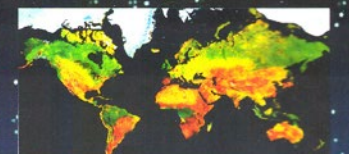
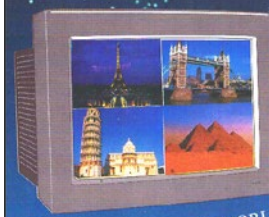
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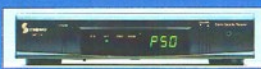
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Advertisement Deadline 广告截止日期	5 September 2014	7 November 2014	2 January 2015	6 March 2015
Hardcopies	17 October 2014	19 December 2014	13 February 2015	17 April 2015
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New Delhi, India

27 - 29 January 2015

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26 - 27 May 2015

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São Paulo, Brasil

9 - 11 June 2015

ANGACOM 2015

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2 - 5 June 2015

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3 - 5 August 2015

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4 - 6 August 2015

ABTA 2015

São Paulo, Brasil



26 - 29 August 2015

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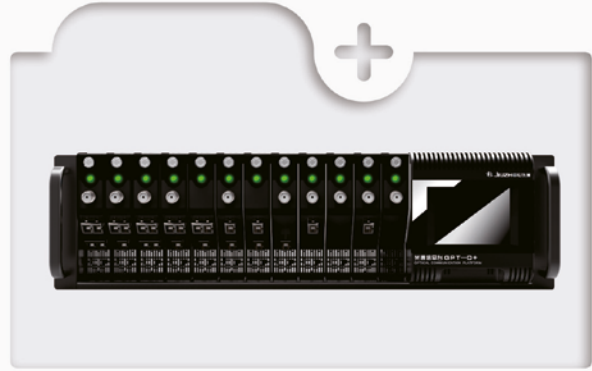
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