Ведущее Мировое Тематическое Издание, посвященное Цифровому Телевидению

с 1981 года

TELE audiovision

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Технологии OTT и „Умное телевидение“
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Потоковая предача данных и OnDemand
Действующая компания и Розничная торговля

читают 350 000 ПРОФЕССИОНАЛОВ по всему миру

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МЕЖДУНАРОДНЫЙ 03-04 2014

Отчет об испытаниях

PANODIC DVD320

Алан Ю совмещает наземное телевидение и DVD плеер – лучшее из двух „миров“

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HWADAR

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Отчет Компании

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Отчет об испытаниях

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Лучший из кабельных ТВ-анализаторов

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HDTS-271M

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

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

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

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

DVB-T2 MPEG-4

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

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

HDT2-132A

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

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

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

PCH208-B1

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

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

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

SDS2-6381

OTT Android TV + DVB-T/T2 Combo

- OTT plus DVB-T/T2
- Android 4.0 / 4.2 / ARM Cortex A9 Dual Core 1.5GHz
- 1GB DDRIII SDRAM / 4GB NAND FLASH
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CPU DUAL CORE | H.264 HD | FULL HD | WiFi | NetTV

IV5010

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Factory: C/D Block, Zhengchangda Ind. Park, Jian'an Road, Tangwei, Fu Yong, Baoan Dist., Shenzhen, China
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Tel: +852 2951 4538 Fax: +852 2951 4738 Email: market@micoelectric.com

www.panodic.com

Дорогие читатели,

Обычно в TELE-audiovision мы представляем вашему вниманию отчеты об испытаниях ресиверов и всего остального, что может понадобиться вам для приема сигнала. И при этом, очень редко само реальное оснащение становится предметом одной из наших статей. Но только не в этот раз: в этом выпуске мы представляем анализатор сигнала, который может точно определить насколько хорошо была установлена распределительная система. К сожалению, мы слишком часто наблюдаем полное отсутствие «нежной заботы» при установке: установщик заботится только о том, чтобы появился какой-либо ТВ-сигнал в портах у конечного потребителя.

Сегодня намного проще, чем это когда-то было, установить систему превосходно, а также тщательно протестировать её с помощью подходящего оборудования. В наше время больше не должно быть некачественных установок, и даже если какая-то проблема вдруг появится – её легко можно обнаружить и исправить, используя современное тестирующее оборудование, как, например, ТВ-анализатор, который мы представляем в данном выпуске TELE-audiovision.

Говоря о превосходных установках, хотелось бы отметить, что в данном выпуске мы также рассказываем об энтузиасте спутникового дела – и его частной установке. Его система была так превосходно сконструирована, что даже профессионалы испытали благоговейный трепет. Это заставляет задуматься: почему же столько много установщиков не волнует то, как уложен кабель или как подсоединены коннекторы? Если с самого начала работа делается аккуратно и правильно, это позволит избежать ошибок сразу. И даже если позднее проявятся какие-то ошибки, то их будет гораздо проще найти, если кабели будут установлены так же хорошо, как в случае с нашим энтузиастом.

Возможно, эти две статьи в данном выпуске смогут поощрить установщиков приложить дополнительные усилия при организации их последующих установок.

Александр Визе
Главный редактор журнала TELE-audiovision

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EASY INSTALLATION

BLIND SCAN

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- Game-Controller Support
- One card reader slot (Conax Embedded)
- Two High Speed USB 2.0 connections
- Media Playback (MKV, AVI, MPG, MP3, MP4, JPG)
- Ethernet Connection, USB WiFi & 3G dongle support
- YouTube videos, Google Maps*
- RSS Reader & Weather Forecast functions*
- TimeShift - Stop Live TV! (USB Storage device required)
- Full HD (1080p) Output via HDMI
- CVBS video / audio output through RCA
- Easy software upgrades through USB or Network
- Program and Channel information transfer from receiver to receiver using the USB backup function

* internet connection required

OTT CONTENT

ecology
low power consumption in stand-by

PLUGIN SUPPORT

Full HD 1080

eco <1W Power Consumption in Stand-By mode

MULTIMEDIA PLAYBACK*

AVI MKV MPG MP3 MP4 TS

audio and video codecs are subjects to availability*

weather forecast

RSS READER

ETHERNET

YouTube VIDEOS

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

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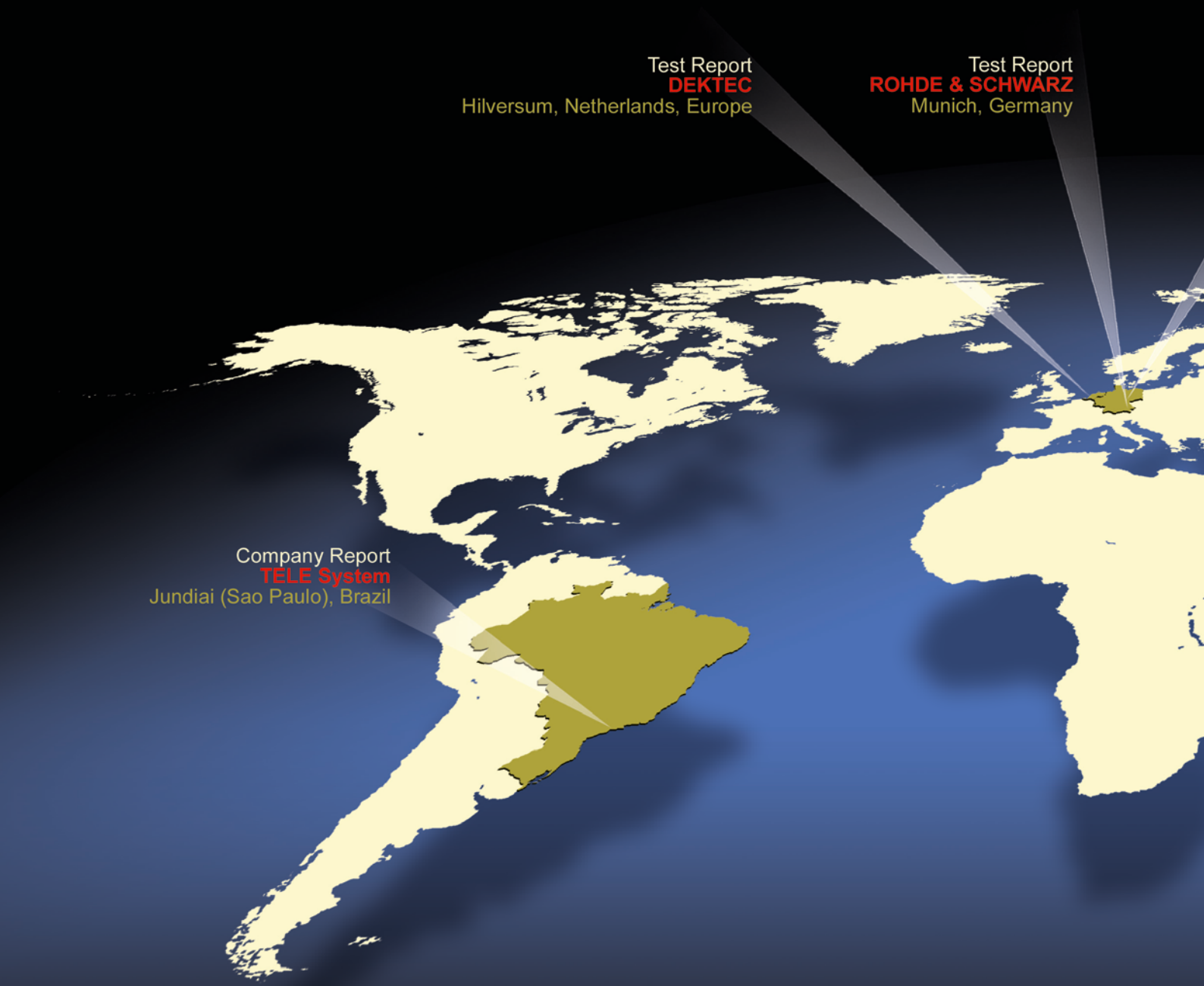

03-04/2014

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- 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

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MHEG-5 opentv NDS Core mhp

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

Http://www.changhong-network.com

E-mail:stbinfo@changhong.com

HSM1

Specifiction:

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

Feature:

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

HS1J

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

HS1C

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

HTAB

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

HTJ4

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

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

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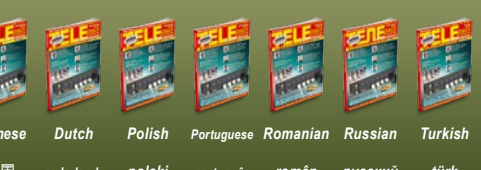

Top 25 Countries > 3200 Readers

COUNTRY	Readers #
Brazil	35,061
Germany	26,053
USA	21,418
China	14,695
Italy	13,601
France	12,327
UK	11,588
Iran	11,001
Algeria	9,642
Indonesia	9,565
Turkey	9,319
Netherlands	8,513
Portugal	7,916
Romania	7,477
Russia	6,104
Spain	6,028
Morocco	5,798
Belgium	5,787
Bulgaria	4,999
Poland	4,778
Egypt	4,774
Hungary	4,701
India	4,371
Canada	3,902
Greece	3,861
Czech	3,705
KSA	3,700
Ukraine	3,518
Argentina	3,289

Readers' Breakdown

Manufacturers	7%
Distributors	11%
Wholesaler	18%
Dealers	27%
Installers	10%
Satellite Provider	2%
Cable Provider	10%
IPTV Provider	6%
Program Provider	7%
Private Enthusiasts	2%

Top 25 to 105 Countries > 130 - 3200 Readers

COUNTRY	Readers #
Chile	2,957
Switzerland	2,947
Tunisia	2,831
Slovakia	2,746
Pakistan	2,559
Austria	2,525
Croatia	2,484
Venezuela	2,306
Iraq	2,246
Malaysia	2,181
Sweden	2,137
Australia	2,010
Israel	1,892
Norway	1,849
Serbia	1,797
Mexico	1,698
Colombia	1,627
South Africa	1,541
United Arab Emirates	1,463
Ireland	1,426
Denmark	1,304
Thailand	1,205
Libya	1,178
Finland	1,152
Peru	989
Slovenia	975
Sri Lanka	953
Philippines	935
Yemen	886
Jordan	853
Ecuador	766
Lithuania	765
Lebanon	732
Uruguay	721
Nigeria	710
Syria	686
South Korea	680
Japan	650
Macedonia	647
Bosnia and Herzegovina	631
Sudan	599
Bolivia	598
Albania	588
Kenya	573
Taiwan	563
Puerto Rico	550
Kuwait	517
Panama	495
Qatar	482
Cyprus	467
Hong Kong	466
Latvia	465
Luxembourg	462
Paraguay	447
Senegal	423
New Zealand	394
Belarus	387
Oman	384
Kazakhstan	383
Moldova	373
Georgia	364
Vietnam	308
Estonia	292
Singapore	287
Mauritius	280
Ivory Coast	274
Bahrain	267
Dominican Republic	240
Ghana	240
Palestine	236
Costa Rica	235
Iceland	208
Uganda	198
Ethiopia	194
Malta	181
Suriname	179
Cameroon	173
Bangladesh	171
Afghanistan	158
Uzbekistan	156
Zimbabwe	156
Azerbaijan	154
Tanzania	143
Barbados	142

Top 106 to 180 Countries < 130 Readers

COUNTRY	Readers #
Mali	140
Trinidad and Tobago	134
Brunei	133
Montenegro	114
Macau	109
Armenia	104
Botswana	102
Myanmar	101
Malawi	101
Mauritania	95
Martinique	94
Maldives	89
Aruba	86
Netherlands Antilles	84
Madagascar	84
New Caledonia	83
Angola	78
Namibia	78
Rwanda	78
Mozambique	67
Zambia	67
Congo	65
Guatemala	65
Guyana	65
Haiti	63
Kyrgyzstan	61
Burkina Faso	59
Niger	59
French Guiana	58
Cape Verde	55
Reunion	54
Benin	53
French Polynesia	52
Togo	51
Jamaica	48
Cuba	47
Honduras	45
Djibouti	43
El Salvador	42
Turkmenistan	42
Gabon	41
Greenland	41
Nicaragua	41
Tajikistan	37
Guadeloupe	34
Cambodia	34
Kosovo	34
Comoros	31
Seychelles	29
Monaco	28
Dominica	26
Congo [Republic]	24
Mongolia	24
Palau	24
Nepal	23
Bermuda	22
Bahamas	21
Gambia	20
Timor-Leste	19
Laos	18
Somalia	17
Burundi	16
Curacao	16
Fiji	14
Papua New Guinea	13
Belize	12
Guinea	12
Faroe Islands	11
Guernsey	10
Anguilla	9
Swaziland	9
British Virgin Islands	9
Central African Republic	8
Equatorial Guinea	8
Jersey	8
Cayman Islands	8
Liechtenstein	8

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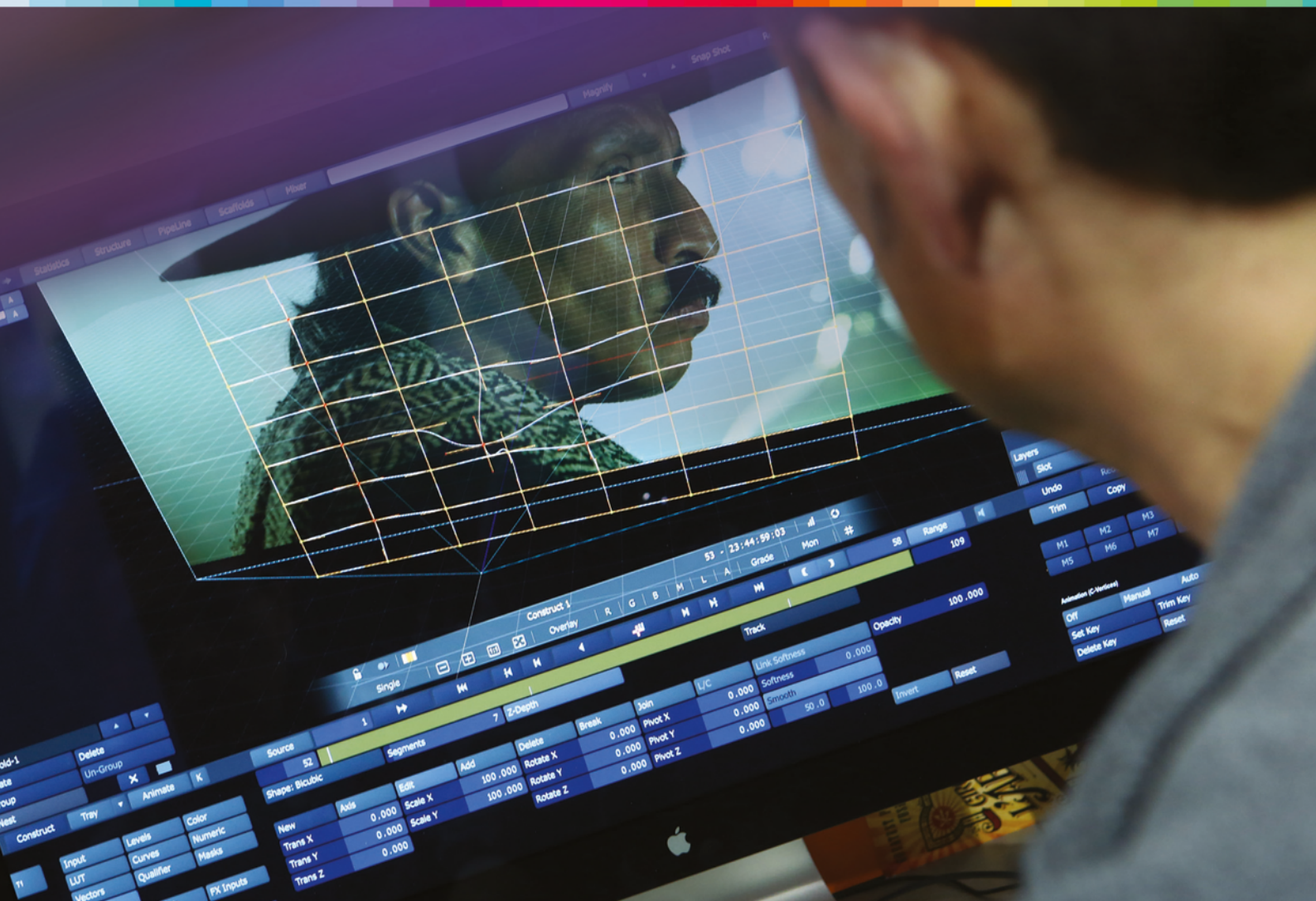
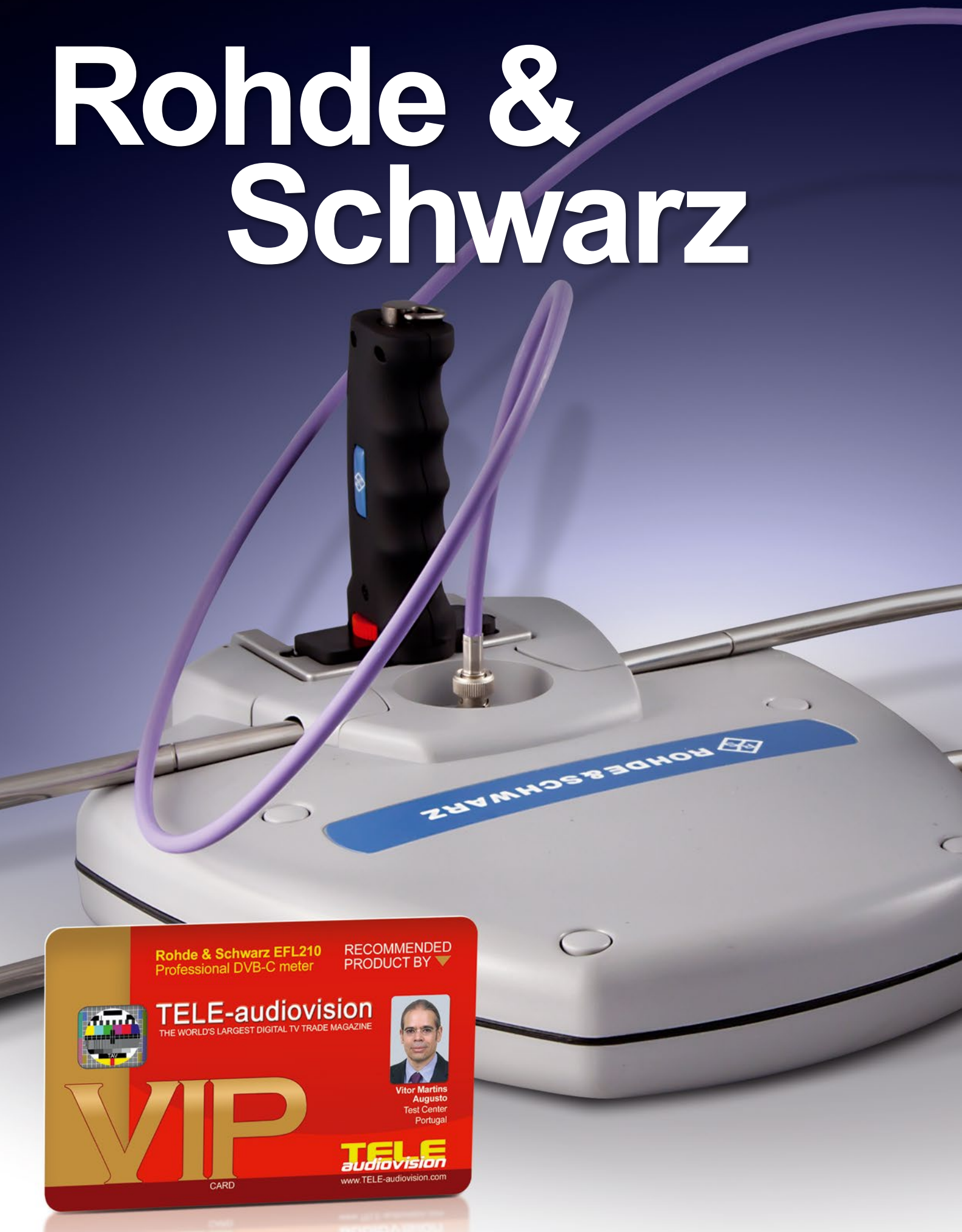


Rohde & Schwarz



Signal Analyzer That Provides the Perfect Installation and Leakage Measurement of Cable TV Networks

Rohde & Schwartz is well-known for their high-quality test instruments that can be found primarily in laboratories and R&D departments. For mobile applications the company has developed the new EFL product line for use by technicians to check and measure an installation. One of the products from this series, the R&S EFL210, is especially interesting.

It has been conceived for the installation and maintenance of cable TV networks with emphasis on the maximum attenuation of leakage signals. The analyzer comes with a matching antenna and it's this combination of the R&S EFL-210 analyzer and R&S EFL-Z100 antenna that we put to the test.

Both of these products come shipped in a very sturdy hard plastic case that was designed to be used in extreme outdoor conditions. Inside the case the analyzer and antenna are further protected by a solid foam material that perfectly fits the R&S EFL-210 analyzer and R&S EFL-Z100 antenna. There are also cutouts in the foam to securely store the accessories such as the power supply, coaxial cable and various connectors.

In one of these storage cutouts you'll also find two special carrying straps that allow you to carry the EFL210 analyzer on your body. Due to the size of the antenna, the carrying case for the analyzer is actually quite large: it measures about 52cm (20.5in) wide x 42cm (16.5in) long x 22cm (8.6in) high and weighs about 10 kg (22 LBS) with all of its accessories. One thing is for sure though: this case definitely

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At first glance the analyzer itself looks rather unusual in that it isn't a typical rectangular construction. Instead it has a rounded, almost oval shape to it. It won't take long though for you to realize the reason for this ergonomic shape: the R&S EFL210 sits very comfortably in your hands and can easily be operated with both thumbs as can be seen by the ring buttons located on the right side. The analyzer can be securely held in your hands while at the same time all of its functions can easily be accessed.

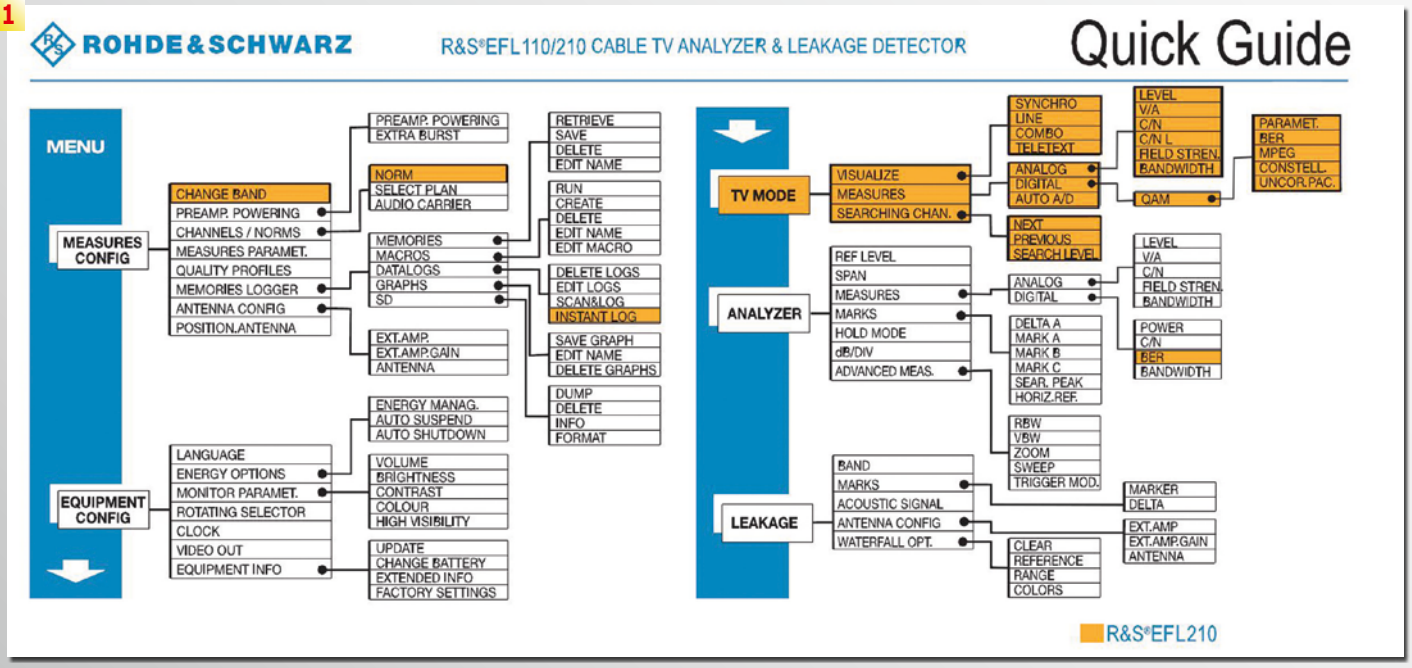
Particularly clever are the three eyelets on which the carrying strap is attached. This allows the technician to carry the R&S EFL210 and have both hands free at the same time. This can be especially crucial if you need one hand to adjust the antenna and the other hand to hold on to something. This carrying strap system is different from other systems that use only one strap that hangs around your neck.

Through a three-point system the analyzer also has a strap that wraps around your waist. In this way the R&S EFL210 doesn't dangle around the upper part of your body, something that many technicians have to live with every day and turns out to be a safety hazard if, for example, you're walking around on scaffolding.

The front panel features a set of buttons on the left side and the right side. The set of buttons on the left side includes four buttons in the shape of a cross to navigate through the different menus (up, down, back, and OK) as well as a button to access or exit the menu and an additional button to take you to the Main menu.

The Power button that turns the analyzer on/off is located on the lower left alongside four LEDs. Three

1



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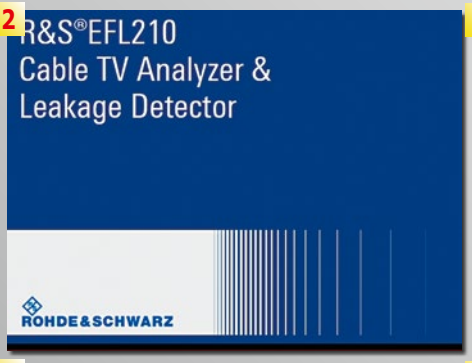

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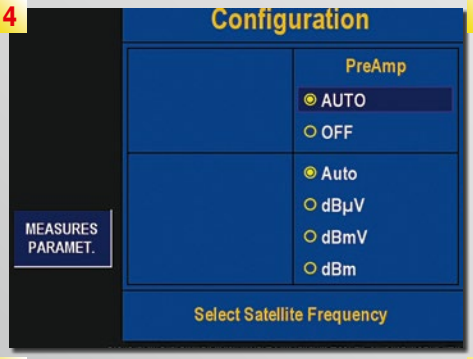

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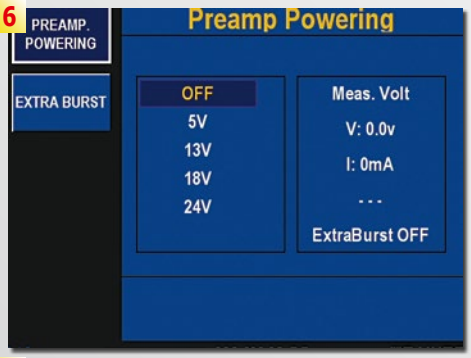

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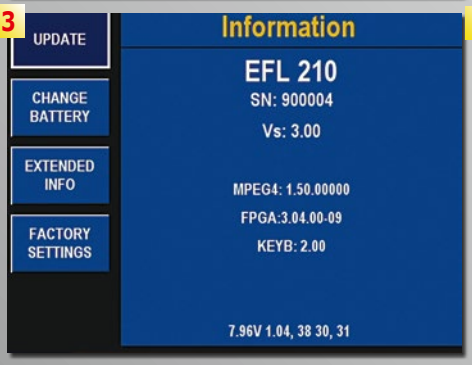

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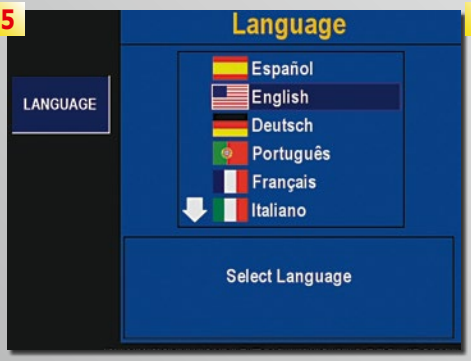

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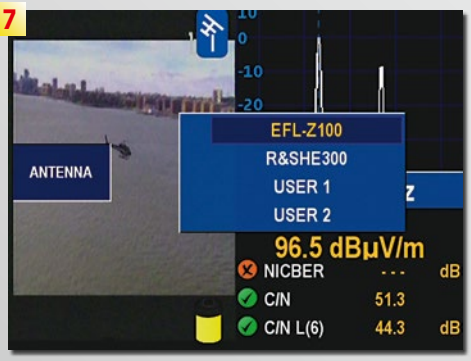


of the LEDs show the status of the rechargeable battery (external power source, internal power source and battery is charging) while the fourth LED illuminates when the R&S EFL210 is turned on.

On the right side is a „touch-knob" that simulates a mechanical rotating knob; instead of turning a knob, you merely pass your finger (the thumb would be best) over the touch knob. The touch sensor works perfectly making it easy to use, for example, for extreme fine frequency adjustments. The sensitivity of the sensor can be adjusted to your personal tastes in the analyzer settings but the default settings worked just fine for our tests.

Surrounding this touch-knob are another 15 buttons that provide direct access to all of the R&S EFL210's functions. After a short break-in period you'll hardly need to access the menu since less-used menu pages can be accessed through an additional function of these buttons, namely pressing and holding the button for 2-3 seconds. To further increase the technician's productivity, two additional buttons are reserved as function buttons that can be programmed by the user to any desired function.

In the middle there's a high-resolution color monitor that is exceptionally bright. It has a resolution of 640x480 pixels and parameters such as brightness, contrast and color can, of course, be adjusted as needed. There's also a special mode that provides for exceptional monitor readability.

On the top side of the analyzer you'll find the HF input. As you might expect with a professional instrument, the input jack is designed to be used with a variety of swappable connectors („F" connector, BNC connector, etc.) that are naturally included with the analyzer. There's also a slot for an SD memory card available (unfortunately, only SD cards up to 2GB are recognized; SDHC cards are not compatible), a USB interface that allows you to connect the R&S EFL210 to a PC, an HDMI output and the power

1. The menu structure of the R&S EFL210 at one glance. One can see that great care has been taken to provide a user friendly and logical menu structure that allows to quickly access all functions of this instrument.

2. Start screen of the Rohde & Schwarz EFL210.

3. The equipment info screen. Throughout the test I was using the latest firmware version.

4. Let's start configuring the R&S EFL210. The built-in pre-amp can be turned on or off and you can select the preferred units for the measurements. This device can be set to an automatic mode, which will then output the common units for different measurements. This is a highly appreciated new feature.

5. Support for many different languages.

6. Using external amplifiers or other active elements like switches or a LNB the output voltage can be set. The included R&S EFL-Z100 antenna needs to be powered with 13V for the LTE band.

7. In the Antenna menu select between two pre-configured R&S antennas, the EFL-Z100 (included) and the R&S HE-300. Two further antenna settings can be configured by the user, who can then also set the correct antenna factor (K). The K value expresses the antenna gain for a given frequency in MHz.

8. A unique feature with the R&S EFL210: it can be pre-configured for up to four different applications.

9. The R&S EFL210 can be configured for low power consumption, which will allow for a longer autonomy when running on batteries. The drawback will be a less bright screen, but it might get you around for a particularly work intensive day. The auto mode will try to give the best relation of brightness and speed against battery autonomy.

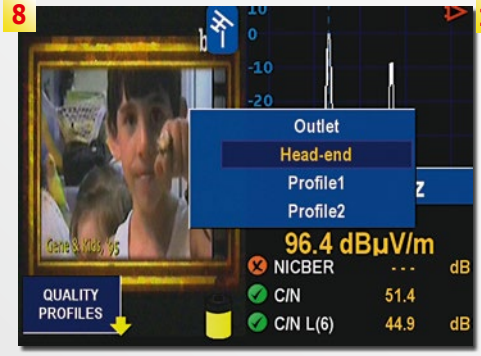
10. Being a handheld measuring instrument for field use the R&S EFL210 features a memory logger that allows to store the measurements made.

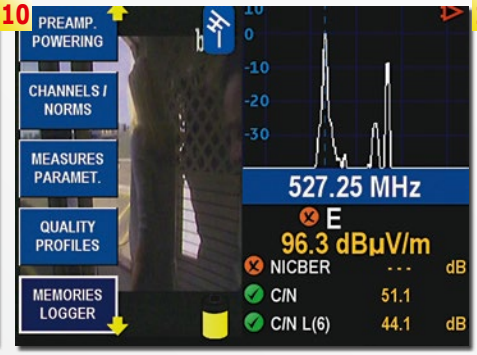
11. There are different options within the Memory/Logger menu. It is possible to store the measurements and graphs and to access SD type memory cards. This is particularly important as technicians are often on the field for days, generating a lot of information. Using SD cards, the data can be copied to them and read on a PC without connecting the R&S EFL210, allowing to write reports, while the instrument is still available for measurements.

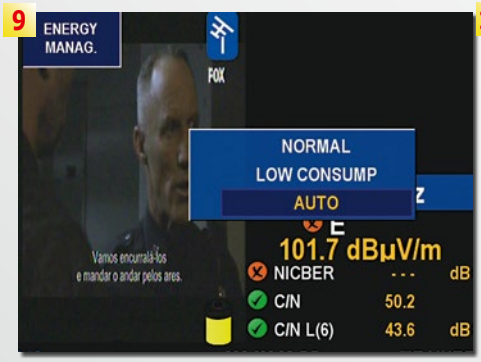
The MACROS option allows to define a set of measurements exactly tailored to the individual need. Once setup, you just run the macro and the instrument will do all measurements automatically.

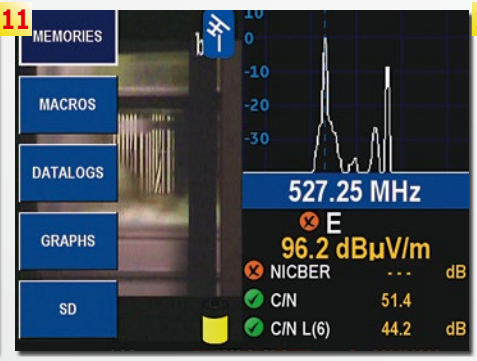
12. Doing a regular scan. The R&S EFL210 will tune all frequencies of the selected plan and provide a quick PASS/FAIL information view, recording all relevant measurements. These are stored and can be recalled at any time.

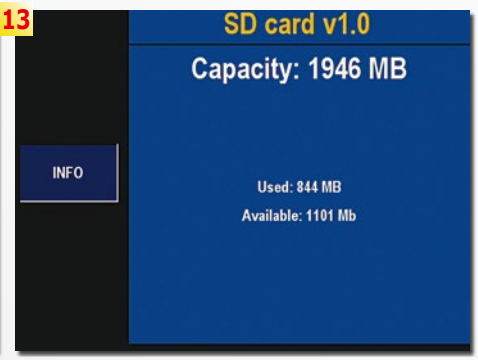
13. The R&S EFL210 supports SD cards with sizes up to 2GB; SDHC cards are not supported.











supply jack. A speaker and a recessed Reset button are also provided. On the rear panel you'll find a stand that can be opened into two positions so the analyzer can be comfortably used on a table. Two cooling vents on either side of the analyzer provide sufficient ventilation for the R&S EFL210.

Overall, the analyzer felt very solid and robust even though it didn't feel all too heavy. Particularly striking is its unusual design that after only a few minutes impressed us with its outstanding ergonomics and convenient operation.

To help us get used to using the R&S EFL210, we first started playing with the otherwise normal functions you'd find in cable TV measurements. Here you can setup, measure and display analog and digital transponders as long as they are not encrypted. For a channel scan the standard cable TV frequency lists are preprogrammed into the analyzer although you can easily and comfortably edit and expand this list from your PC. More on that later.

The following measurements can be performed with analog signals:

- Level
- V/A
- C/N
- C/N L
- Field Strength
- Bandwidth
- Display of reception parameters
- BER
- MPEG: Channel list and video display with MPEG2 and MPEG4 support
- Constellation diagrams
- Evaluation of uncorrectable packets

Measurements such as BAR Scan (simultaneous signal level display of multiple channels in bar graph form) and TILT (skew) that can be found in many other CATV signal analyzers are not available in the R&S EFL210. It would be nice to have these functions to, for example, properly set up an amplifier so that all of the frequency ranges would have a uniform signal level. But there's a reason that these extra functions are missing; the R&S EFL210 includes a spectrum analyzer that in the end is a much better alternative!

Thanks to the logical menu structure and sufficient number of buttons, using the R&S EFL210 is a piece of cake. We were able to work with all of the measurements in CATV mode without having to refer to the user manual. Especially useful is the simultaneous display of the image and the spectrum. Although the displayed image is distorted, it is still easy to determine the quality of analog signals by simultaneous analysis of the spectrum.

The R&S EFL210's spectrum analyzer highlights the

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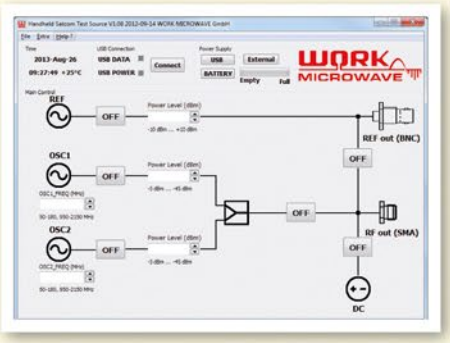

Key Features:

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

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14. Measuring analogue CATV channels is very simple and quick. Just select the required frequency and off you go. All relevant information is displayed in one single screen and PASS/WARNING/FAIL icons show immediately if the channel to noise ratio, video to audio ratio and signal level are adequate.

15. If only one measuring parameter is important it can be displayed exclusively in a larg font.

16. One of the special features of the R&S EFL210 is its capability of mixing different information into one single screen. For analogue channels visualizing the image is often not enough. Being able to evaluate the line signal allows to check for example if the sync signals are within conformity.

17. This oscilloscope functionality can be displayed individually. It is possible to select the line to be analyzed and to zoom in.

18. Zooming in reveals some noise within the line blanking interval. Despite having an acceptable picture quality, this shows a potential problem.

19. A different visualization mode shows the demodulated image next to the spectrum view of the current transponder. The relevant measurements are displayed as well.

20. The tuner and demodulator are of the finest quality and despite the considerably weak signal a good image is rendered. This only shows how important it is to rely on the measurements and explains why you can never use a normal receiver or TV to evaluate a CATV signal.

21. One interesting measurement is the channel/noise ratio of a selected video line. Instead of measuring against an average of all lines you can select a specific line, against which you measure the ratio to the noise level. This is very handy if you are working with test pictures, where the desired pattern occupies only part of the image.

22. You can specify the level thresholds. Once the set level is reached the instrument stops the search. The search function can be done in both directions and the spectrum updates in real-time, following the frequency.

23. Once a channel is found with at least the specified signal level the search stops and immediately the measurements are presented.

24. To make the channel tuning easier it is possible to select from a list of predefined channel plans. I have created my own channel plan, covering all analogue channels of my cable operator using the R&S EFL Suite on the PC.

25. Configuring the audio.

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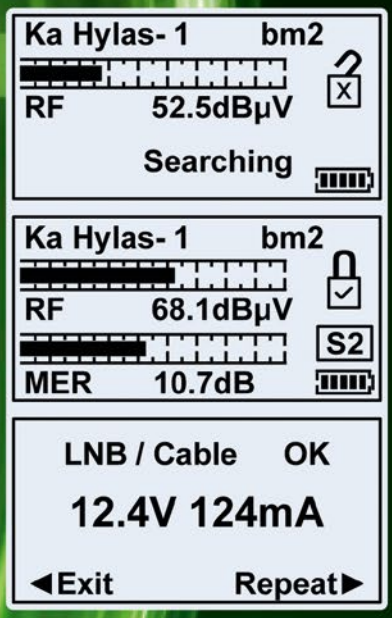
Introducing the new HD-S2A!

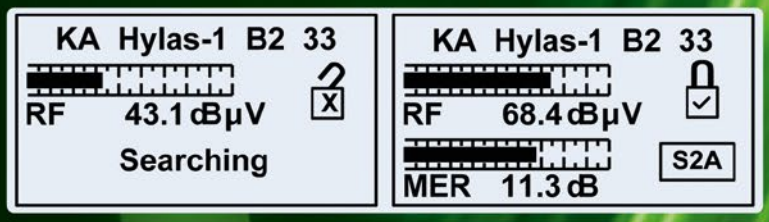


The HD-S2 satellite meter features all the functions you will need to perform DVB-S and DVB-S2 satellite installations.

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

The cost effective Nano S2A

The Nano-S2A satellite meter is the ideal cost effective solution for Hylas-1 and Hylas-2 VSAT installations. The Nano-S2A features tone generation for Hughes ODU polarisation control along with a lock state indicator that supports DVB-S2 advanced modulation schemes. The signal level and quality indicators make this the easiest meter to use ever. One button does it all. The Nano-S2A can be receiver or battery powered.



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26. All measurements clearly visible at one glance: Frequency, CBER, Signal Power, C/N Ratio and MER. Notice that CBER is shown twice: once along with the other measurements and then a second time in a bigger format. On the bottom you get the list of services contained in the current transponder.

27. Pressing the MENU button will show further options. You can edit the reception parameters, visualize BER with more detail, and display the MPEG picture, the constellation diagram or a statistic with how many uncorrected packets are being received.

28. This screen allows to edit the reception parameters. Notice that the deviation of the Symbol Rate is automatically calculated and shown. All of these values can be set to automatic and in most situations the R&S EFL210 will be able to automatically tune to the QAM transponder.

29. Here we see the demodulated MPEG picture. The R&S EFL210 supports both MPEG-2 and MPEG-4, so you are always prepared for whatever standard is being used. The OSD shows the CBER along with the relevant channel PID's and MPEG information.

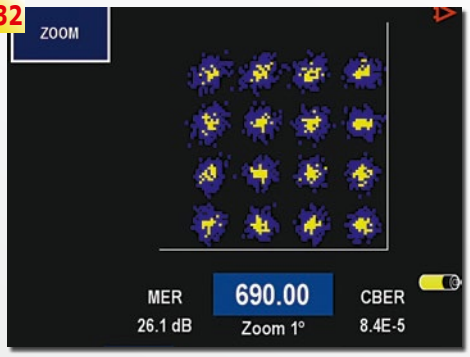
30. The constellation diagram is fast and functional.

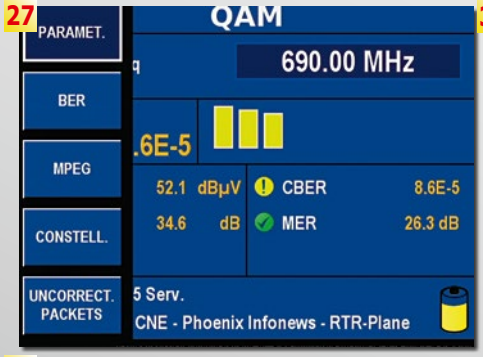
31. With QAM64 you get four quadrants and you can zoom into each one of the four.

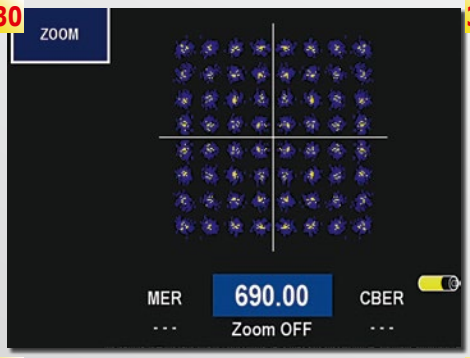
32. This will allow analyzing the constellation in more detail. If you give the meter a few seconds it will display MER and CBER as well, thus allowing a complete analysis of the signal. Note that CBER is the Bit Error Rate before the error correction algorithm is applied. While the BER after the correction is useful to effectively see what amount of errors the demodulator will have to deal with it is the CBER that you want to evaluate to get an idea on how stable the reception will be. Many problems in the constellation diagram can only be understood and resolved by simultaneously considering the constellation diagram, MER (modulation error ratio) and CBER. Hence it is a great feature of the R&S EFL210 to provide all three measurements in one screen. This is by no means common in CATV analyzers.

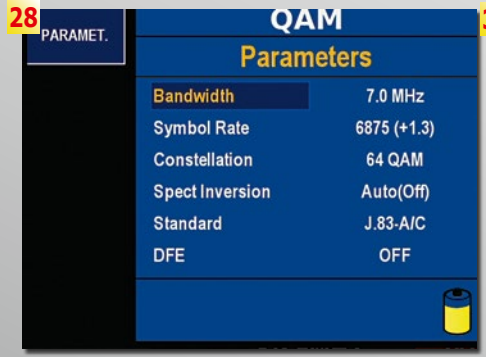
33. Better than a Bit Error Rate after the error correction: the R&S EFL210 gives a complete statistic on uncorrected packets! These are shown in number and time interval, i.e. how much time passed since the last uncorrected packet appeared. Each uncorrected packet will produce a glitch in the TV image, so it is nice to have this measurement running over a small period of time to understand if the reception is indeed acceptable or not. It can be used to spot intermittent problems, too.

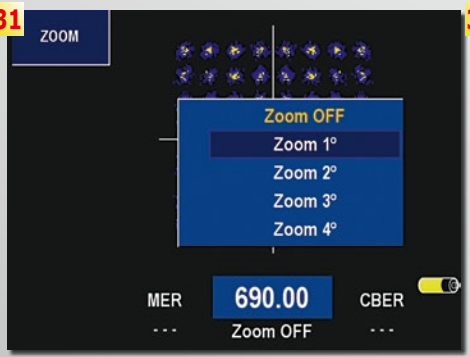
34. I especially like this measurement screen: one can see the demodulated picture, the PID's and MPEG info's together with CBER. This is a quick and simple way to confirm if everything is OK. Notice that the rather borderline measurements of my CATV service is due to the fact that I am using a very poor signal on purpose to see how the tuner of the R&S EFL210 handles weak signals. You can see the results: no problem for the R&S EFL210











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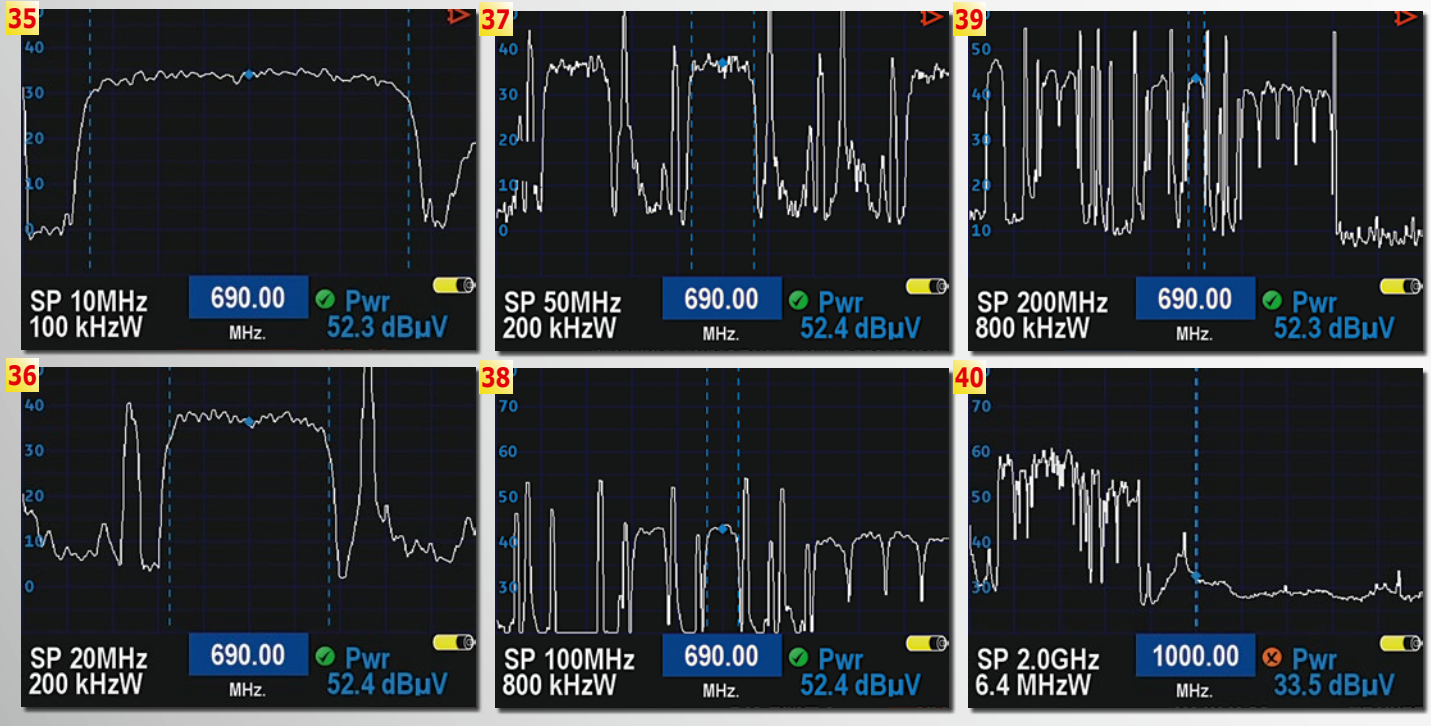
strength of this device: the spectrum is displayed not only in real-time but also provides a frequency span of 2500 MHz. In this way you'd be able to observe the entire frequency spectrum from FM all the way up to WiFi!

In addition to standard functions like the ability to place markers (maximum of three different markers) to calculate frequency and level/power offsets, RBW and VBW filters can also be individually customized. Also, the sweep rate can be selected from three different modes: normal, fast and special accuracy. This is especially practical for a technician; this function automatically selects the ideal RBW and VBW values for each selected mode.

In cable networks, the higher frequency signals are distributed into the 50 to 2150 MHz range. The result is that a large amount of data in a variety of different modulations is simultaneously transported, namely: radio, analog TV channels, digital TV transponders, broadband Internet and te-



lephony. In a perfect world, there wouldn't be any signal leakage from the cable network, but, of course, the real world looks quite different. Various leakage signals can manifest themselves and could be caused by the smallest imperfection in a coax cable or an improperly attached connector.

Even utilizing defective passive or active components could cause signal leakage; and especially with these types of defects the coax cable could end up behaving like a transmitting antenna that, depending on the type of defect, would broadcast the signal in the coax cable across various frequency ranges.

That's why there are specific regulations and recommendations that dictate what kind of leakage and how much of it can be tolerated before it becomes too much. Signal leakage has become even more prevalent since the introduction of LTE (4G) mobile networks for broadband Internet. Cable network operators therefore need to painstakingly test and protect their cable networks against any signal leakage.

And it's exactly this problem that the Rohde & Schwartz EFL210 with the directional antenna EFL-Z100 were meant to be used for: this compact measurement instrument makes it possible for the technician to quickly and easily test a cable network for any signal leakage, locate it and then eliminate it. This instrument also simultaneously functions as a cable TV analyzer that can be used on both analog and digital cable signals.

So, how is this done? The

35. This is a detailed view of the selected CATV transponder. Using a span of 10MHz with a RBW filter width of 100kHz the transponder is rendered with a very nice detail. Individual carriers can be identified and the refresh rate is in real time.

36. The same frequency but with a 20MHz span and a RBW filter settings of 200kHz.

37. Now with 50MHz span. Everything is still rendered in smooth real time.

38. At the 100MHz span the RBW filter automatically adjusts to an 800 kHz window, since you could not benefit from a higher resolution anyway, because of the fixed screen resolution

39. Smooth real time spectrum with a 200MHz span, which outperforms any other spectrum analyzer I have tested so far in the CATV bands.

40. To shorten it up: with an amazing 2GHz span and the RBW filter set to 6.4 MHz width the spectrum is still very detailed and rendered in smooth real time.

41. And yet the R&S EFL210 managed to surprise me with real time spectrum on a full span of 2.5GHz. Congratulations to Rohde & Schwarz!

42. Measurements of analogue signals are represented by a signal level while digital signals use the signal power. In order to correctly represent the measurement at the marker frequency you can select which mode you are interested in.

43. Within the spectrum you can now measure in the analogue mode: Level, V/A (video to audio ratio), C/N (channel to noise ratio), Field Strength and the Bandwidth.

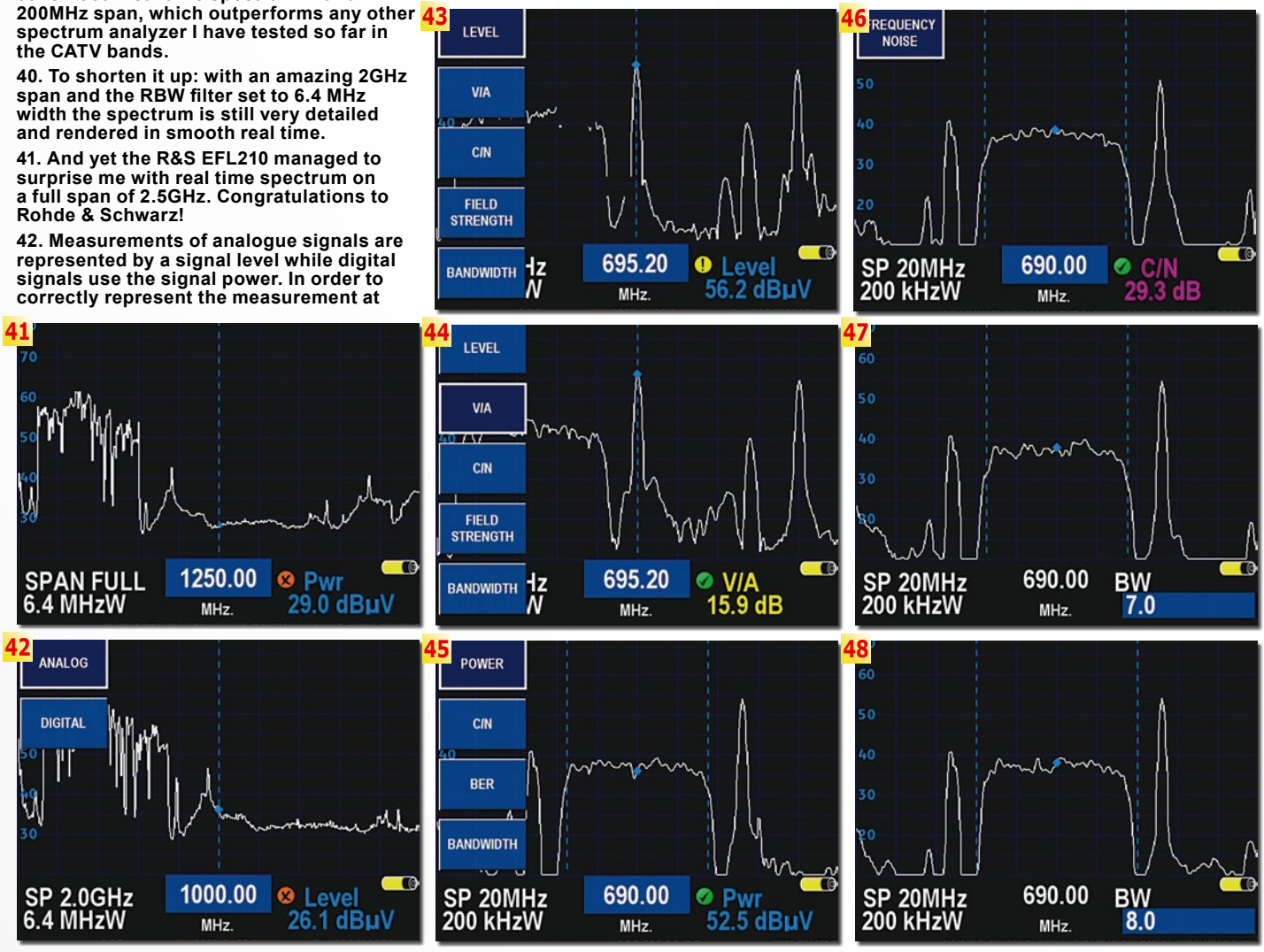
44. Another nice and useful feature: the R&S EFL210 shows an automatic quality assessment of the signal. If you get a green checkmark, everything is OK. Yellow means that you have weak signal quality and red indicates no reception. A technician can see this result immediately, without having to think about the measured values. This increases productivity and makes the job easier.

45. Here you can measure Power, C/N, BER (Bit Error Rate) and bandwidth. Measuring bandwidth of the transponder can be very useful for unknown transponders.

46. Measuring the C/N, also known as frequency noise, shows the difference between signal power and noise power.

47. Here I am measuring the bandwidth of a digital QAM64 transponder. The transponder uses more than 7 MHz.

48. Moving the markers I could determine that the bandwidth of this transponder was indeed 8 MHz.



■ Handling both the R&S EFL210 and the R&S EFL-Z100 is an easy task. The antenna is not too heavy and the straps are very comfortable around the neck. Thanks to the ergonomic shape of the instrument and its circular button grid, you can access all functions with your thumb.

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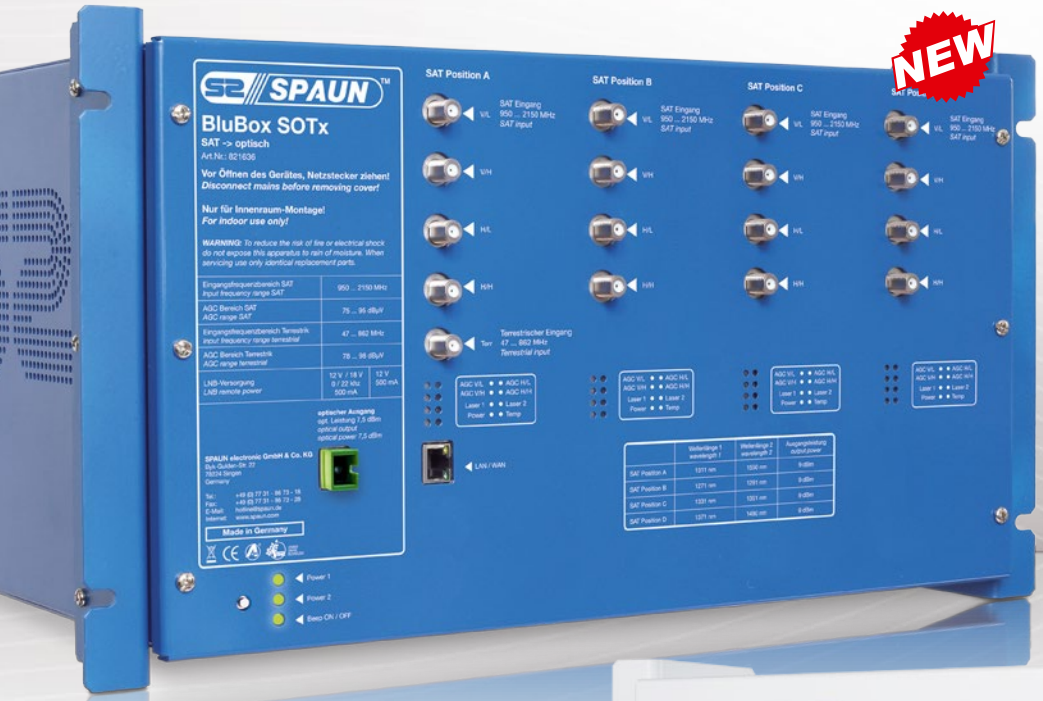

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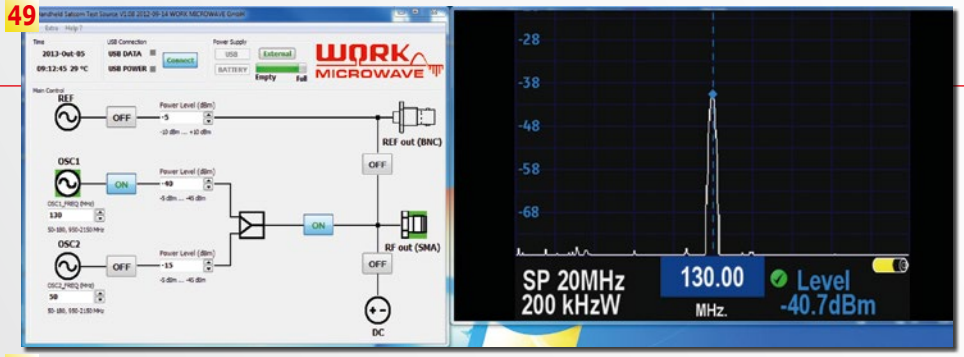
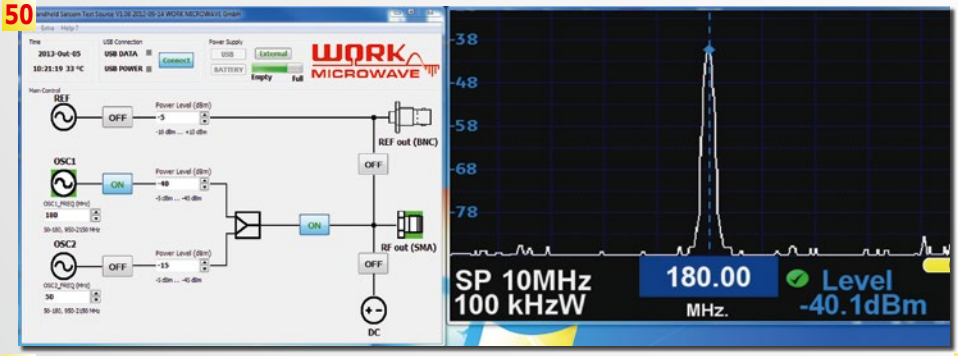
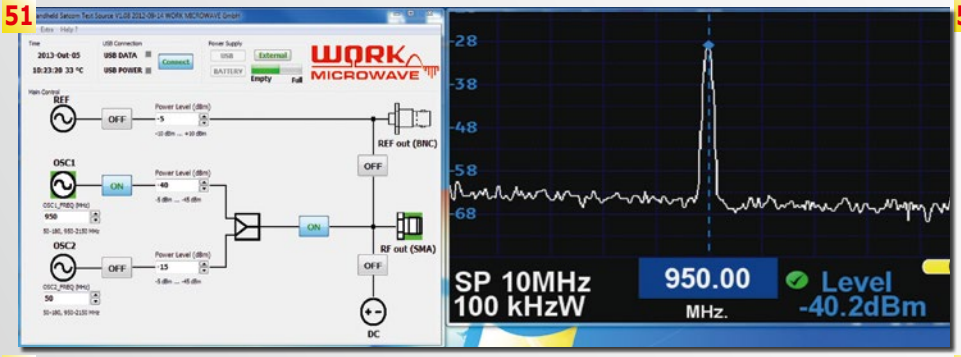
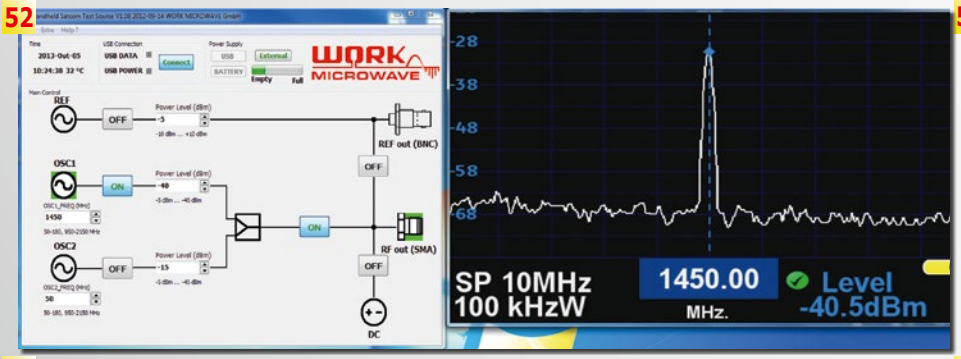
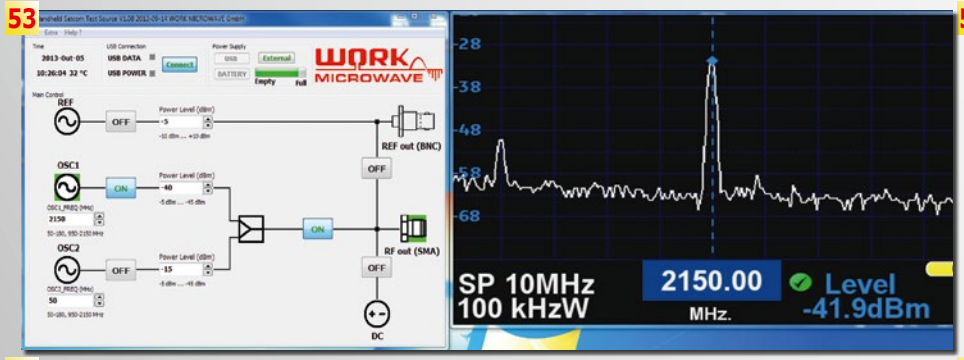
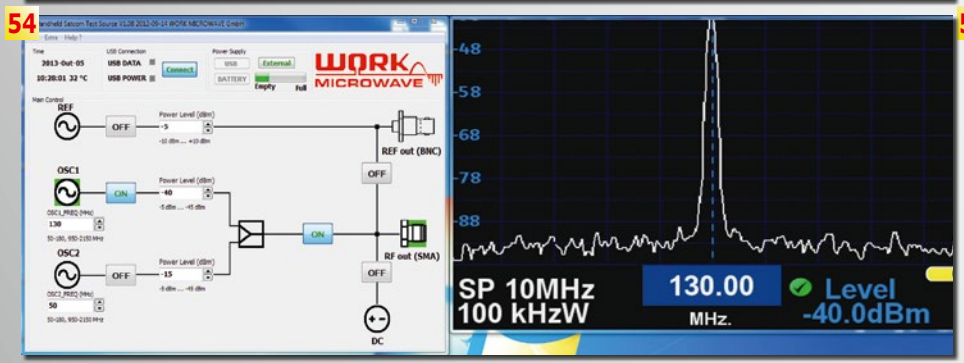












49. Our calibrated Test Source generates test signals at user defined frequencies and power levels. The test signal is of extreme accuracy, making it the ideal way of testing the R&S EFL210. And indeed, this picture does not lie: using the HDMI-output of the R&S EFL210 connected to my test computer (which has a HDMI capture card), I put both windows side by side. Look at the result: I generated a -40 dBm signal at 130 MHz and on the other side of the cable, the R&S EFL210 measured -40.7 dBm at exactly 130.00 MHz. An excellent result.

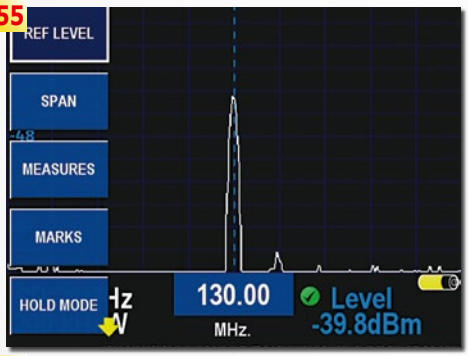
50. I repeated the same test at 180 MHz. Now I got only -0.1 dBm deviation.

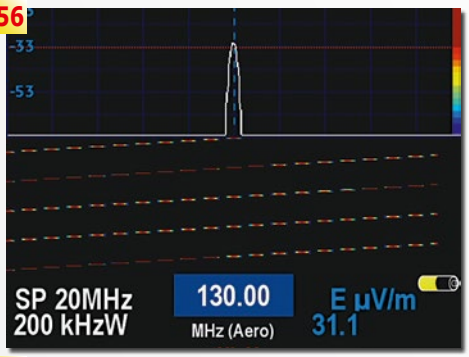
51. At 950 MHz I got -0.2 dBm difference.

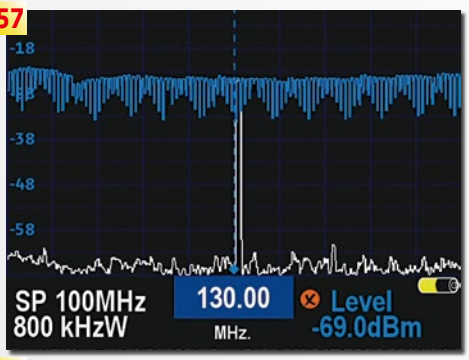
52. Again, only -0.5 dBm difference at 1450 MHz

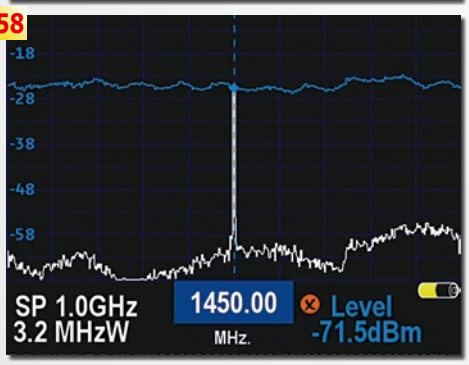
53. Finally, at 2150 MHz, the deviation was +0.1 dBm.

54. Wondering, why I got a higher deviation at the first measurement, I decided to repeat









the measurement at 130 MHz and now I got 0 dBm deviation. The truth is that any deviation under 1 dBm is an amazing precision for any HF instrument and the R&S EFL210 beats hands down all our meters, including the reference devices. And why did I get a better result this time? Because you should allow any measuring instrument to warm up properly if you want the most accurate results.

55. The REF LEVEL option is normally called "MAX HOLD" in other devices. It will continually show the highest value measured within the spectrum.

56. First I activated the waterfall display. The picture illustrates the frequency sweep of the signal source generator.

57. Using the REF LEVEL option turned on and allowing for a full sweep the spectrum shows the continuous frequency measurement. I normally try this on all spectrum analyzers and I can assure that this is by far the best result I have seen so far. The maximum value forms practically a horizontal line with very little variation.

58. In this picture I did a frequency sweep over a whopping 1GHz span. Again, the results are fantastic. Remember that on this sweep the R&S EFL210 only gets 1 second to adjust itself to the signal at a given frequency to measure it and to update the REF LEVEL.

leakage measurement is performed using a waterfall diagram. It shows the spectrum over a specific time period where each spectrum is represented as a color-coded line: black and dark colors signify a weak level while light colors indicate a high signal level.

We already reported on this type of display in TELE-audiovision several times (in the 12-01/2012 and 02-03/2012 issues). The waterfall diagram provides for a continuously running overview of the spectrum over a time span of seconds or minutes depending on how fast the waterfall diagram of the spectrum scrolls across the screen. This is perfectly suited to quickly finding the source of any leakage signal by slowing moving a directional antenna back and forth.

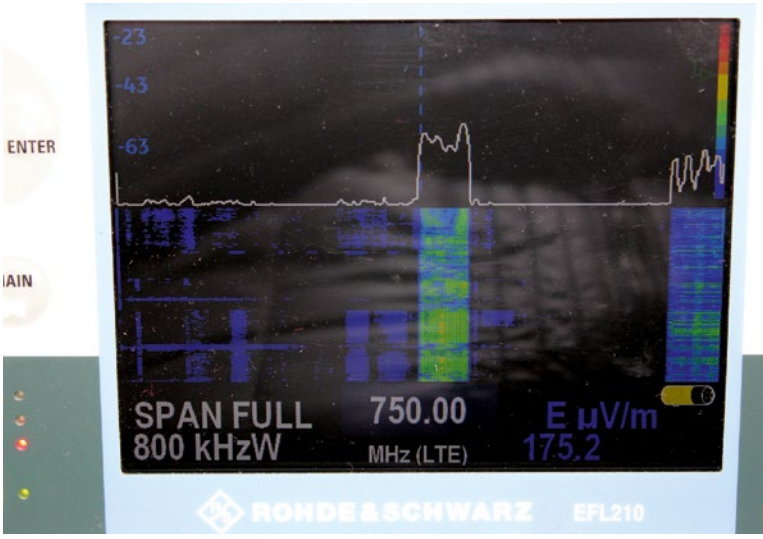
The R&S EFL-Z100 is the perfect directional antenna for the job. It consists of four pieces: the antenna itself, a hand grip that can be installed in two different positions, as well a two metal rods that can be attached to the antenna on the sides turning the antenna into a dipole (needed when working in the aircraft band).

When measurements are performed in the LTE frequency range, these dipoles are not attached. The R&S EFL-Z100 is an active antenna with an integrated amplifier.

This antenna was designed to work best on the most-often encountered and most dangerous leakage frequencies: the aircraft communications band and the LTE mobile frequency band. Rohde & Schwartz went a step further and calculated the antenna factor for those two frequency bands and stored them in the R&S EFL210. The antenna factor (AF or K-factor) is calculated using the formula AF=E/V and represents the ratio between the electric field strength E of the incoming radiation with respect to the output voltage V of the antenna. But when you use the R&S EFL-Z100 antenna, you don't have to worry about any of this: simply select this antenna from the antenna menu and you're ready to go.

Naturally, you can also connect any antenna you like to the EFL210 but then you would have to correctly define the antenna factor yourself. This antenna definition can only be entered on a PC with the R&S EFL Software Suite. Since the antenna factor is dependant on the actual frequency, the antenna configuration in the R&S EFL Suite involves entering a table: for each frequency a corresponding K-factor can be entered. The user can store two self-defined antennas in the analyzer in addition to the already predefined EFL-Z00 directional antenna and another R&S antenna, the R&S HE-

■ View of a building with CATV cables. Let's see if this doesn't produce some leakage. Guess what: yes it does.



■ **Since the R&S EFL210 does not allow to record screen shots of the waterfall diagram in leakage mode I did my best to take a pictures of the screen: notice that to the left of the DVB-T transponder at 754 MHz there is a lot of leakage from the CATV visible (in blue color). The reading in the waterfall diagram is not constant, because I am swinging the R&S EFL-Z100 antenna around, in order to determine the exact location of the leak.**

■ **To measure in the aeronautics band, you need to use the two dipoles attached. The 13V power feed can be turned off, as amplification will increase the gain only marginally.**

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Aero

59. A span of 5MHz may be a small span for CATV and satellite technicians but it is a huge span for radio communication specialists. Thanks to the very narrow RBW filter of just 18 kHzW you can clearly see all radio communications happening within the selected span. In this case a pilot is speaking to the tower.

60. Here you see the tower's reply. Because our test center is just 10 km away from the airport we can clearly receive such communications. The waterfall display allows to register all communications within the span over a period of time. Notice that the R&S EFL210 displays the signal level accurately in µV/m, which is the correct unit to measure EMI.

61. No transmission happening now on 121.10 MHz, the frequency used by the OPO airport tower. Imagine the consequences of a leakage, generating interference on this frequency. This could severely disrupt the communication between pilot and tower on a landing maneuver.

62. This picture shows the full span of aeronautics frequencies. This span is universally used throughout the world. Gladly no leakage could be detected in the test center, otherwise we would have to immediately correct the problem.

63. Here we see a communication happening on a different frequency. With the R&S EFL210 I can now visually detect any radio communication in this band at a glance, instead of having to scan through known frequencies or doing a frequency search.

FM

64. A pre-programmed frequency range is available to monitor the FM radio band. This allows to analyze if interferences occur between 88 Mhz and 108 MHz. Any radio station can naturally be tuned in by the R&S EFL210 and the audio is reproduced.

65. View of the FM band with a 20 MHz span. Individual radio stations can clearly be identified.

GSM

66. The full span of the GSM band. Two frequencies are being used, but with a faint signal. This is normal, since I am using a smartphone with GPRS and EDGE frequencies and usually GSM mode is turned off. There is no other cellphone using GSM in vicinity, either. Also, no leakage. This was to be expected, because cable operators avoid putting transponders at frequencies this high.

LTE

67. Leakage measurement with the R&S EFL-Z100 antenna. You can clearly see the DVB-T transponder at 754 MHz and the neighboring LTE transponder at 800 MHz. Some transmission is happening at 742 MHz.

68. The transmission at 742 MHz is highly directional: pointing the R&S EFL-Z100 antenna to a different direction, nothing is detected at this frequency.

69. The same happens to the mobile phone transponder at 786 MHz. Further rotation of the R&S EFL-Z100 and this transponder disappears as well.

70. This is what leakage looks like. You can clearly see the DVB-C transponders, despite the fact that I was using the directional R&S EFL-Z100 antenna a few meters away from the coaxial CATV cable. This should never happen in real life, as it means that radiation is coming out of the coaxial cable, interfering with radio services.

71. The leakage is directional and with the current orientation of the antenna, no leakage is detected (spectrum in the upper half of the screen). However, the waterfall diagram clearly shows that leakage was registered within the last seconds, when the antenna was pointing to a different direction. If you slowly move the antenna from left to right, you will quickly find the source of the leakage!

72. The antenna is pointing at the leakage again, the CATV transponders are clearly visible in the spectrum. Notice how the waterfall diagram shows a faint signal which is getting stronger as the antenna points toward the leakage source. This is an extremely useful functionality of the EFL-210: you won't just determine that there is leakage occurring, you will indeed find the source very quickly.

UHF

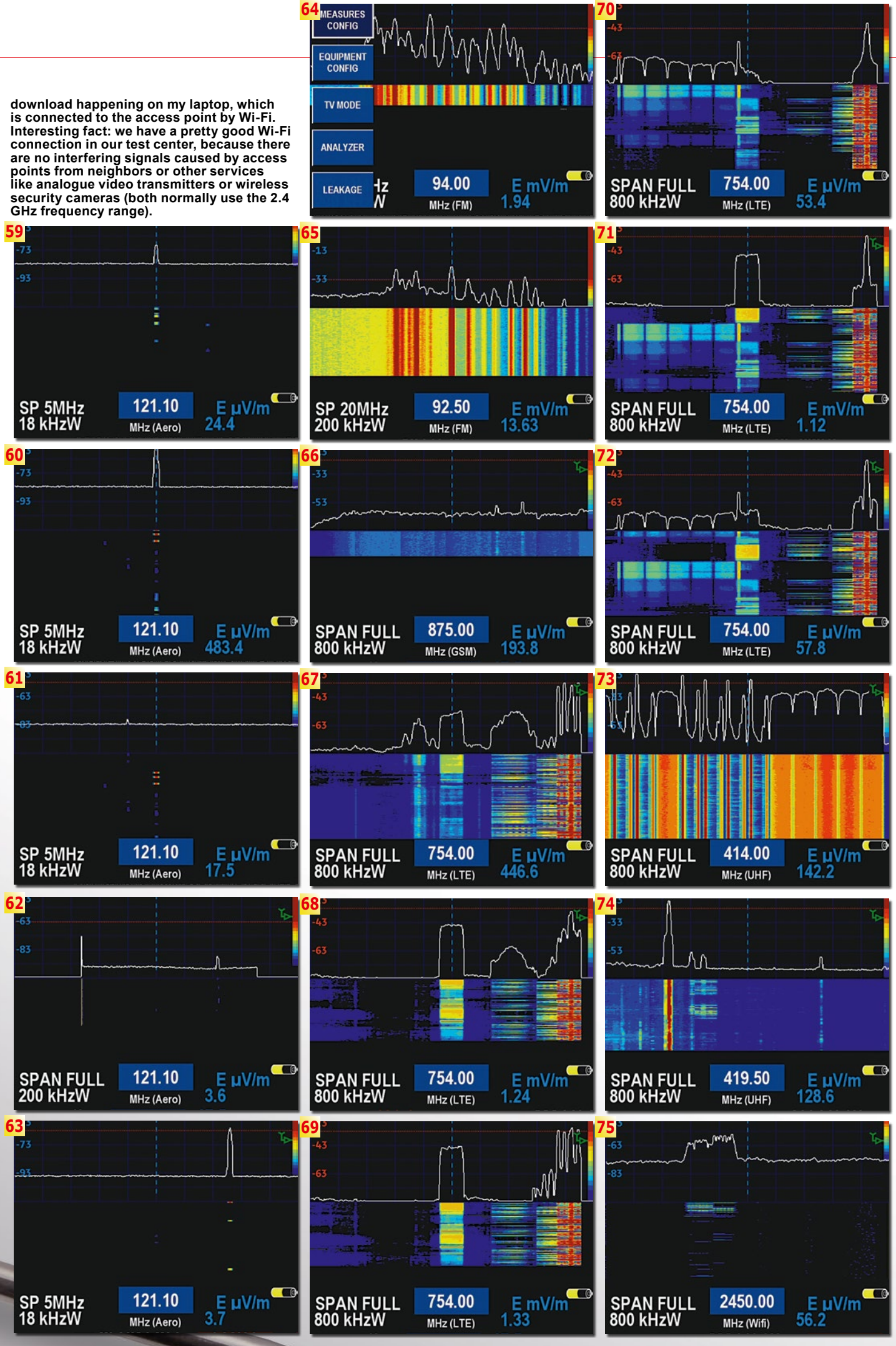
73. The waterfall diagram shows the UHF section of the CATV cable in our test center. You can clearly distinguish analogue transponders from digital transponders: the thin lines belong to the analogue transponders. Notice that they come in pairs – one line is the video carrier, the other the audio carrier.

74. Using an antenna no CATV transponders are found, which means that there is no leakage in this frequency range. The signal you see comes from different radio applications – I am using a radio scanner antenna.

WiFi

75. Because the R&S EFL210 can deal with frequencies up to 2.5GHz it is possible to analyze the 2.4GHz Wi-Fi frequency range as well. In these pictures you can see a

download happening on my laptop, which is connected to the access point by Wi-Fi. Interesting fact: we have a pretty good Wi-Fi connection in our test center, because there are no interfering signals caused by access points from neighbors or other services like analogue video transmitters or wireless security cameras (both normally use the 2.4 GHz frequency range).



Leakage in the LTE band is determined using the R&S EFL-Z100 antenna without the dipoles and with the internal amplifier turned on. For this you simply activate the 13V power on the RF connector. It is reassuring to hear a slight click inside the antenna, signaling that the amplifier is active.

Walking along the street I was impressed on how much leaked radiation I could pick up.

300, that with it's swappable modules can be used for the 9 kHz to 7.5 GHz range.

For our TELE-audiovision tests, a simulated leakage signal was created here in the test center to get a feel for how the analyzer works and from what distance the leakage can be detected. At the same time it gives us an opportunity to get used to using the R&S EFL-Z100 directional antenna. Since this particular antenna is designed primarily for the aircraft and mobile LTE bands, the frequencies from 108 to 139 MHz and from 700 to 800 MHz can be analyzed in a waterfall diagram.

The first task was to use the EFL-Z100 directional antenna to check for both frequency bands here in the test center. For the FM and aircraft bands, the antenna is used with the dipoles in-

■ Often though, the source of the leaks were not the splitters of the CATV operators.

serted and the amplifier turned off. No leakage signals could be detected.

For the LTE frequency band, the dipoles are removed and the amplifier is turned back on. This activates the 13V at the R&S EFL210's HF connector output. Once again, no troublesome leakage signals could be found. This isn't at all surprising considering that our cabling adheres to certain directives.

Now the actual test could start. Leakage signals were artificially generated so that there was something to measure. Our test setup was actually quite simple: we merely inserted a small dipole antenna into the cable TV port. Sure enough, from several meters away and even through a wall we were able to identify some QAM transponders very close to an LTE transponder at 800 MHz (see photos).

With analyzers like the R&S EFL210 it can be difficult to compare measurement results from the spectrum display with other analyzers. Why? Because the R&S EFL210 displays the spectrum in a higher resolution thus letting you identify individual carriers within a transponder. Of course, the signal strength varies considerably depending on the content of the transmitted data.

If you want to be able to compare different analyzers side-by-side, you'd have to set up all of the parameters equally, such as, range as well as RBW and VBW filters. But it would be difficult to do this because of the differences in the settings of each device. You would also have to hope for uniform data transmission.

A far better way to check the precision of a signal analyzer like the R&S EFL210 is to measure a synthetically created signal with known parameters. That's why we used a calibrated signal generator to test the measurement precision of the R&S EFL210. To that end we generated a signal at various frequencies and at different power levels and measured it with the R&S EFL210.

It's quite impressive to see how precise the measured values turned out. Measurements that are off by less than 1.0 dBm are incredibly precise and even a sweep over various frequency ranges delivered consistent results, something that really only can be achieved with high-quality hardware.

To measure the sweep we used a very simple trick: the MAX Hold function was utilized. This feature continuously shows the highest measured values and is normally used, for example, to perfectly align an antenna. In this case with an active MAX Hold function, the spectrum registers the „wandering" power level. You merely have to wait until it has gone through the entire spectrum.

Our conclusion regarding measurement precision? The R&S EFL210 is not just a simple signal analyzer, it's a fully featured test instrument. If you use this Rohde & Schwartz unit to make a measurement, you can be sure that the measured values will be absolutely correct.

Naturally, Rohde & Schwartz also includes the necessary Windows software with the EFL210, the R&S EFL Suite. With this software, measurement protocols using the stored Logger files in the EFL210 can be created. You can also edit channel lists and it's even possible to create frequency tables and so-called Macros.

Specifically, these memory frequency tables (MEM) together with these Macros makes it possible to automatically create measurement protocols whereby the R&S EFL210 automatically sets up and measures the preprogrammed frequencies.

This is an excellent time-saving way to perform the same measurement at different points in an installation. CATV installers would especially benefit from this since the frequency table from the cable provider would only need to be programmed once via Macro. From that point on, it would

Notice how I am holding the antenna. For me, this was the most comfortable configuration. If you prefer, you can screw the handle of the antenna rotated 180 degrees and hold it upside down.

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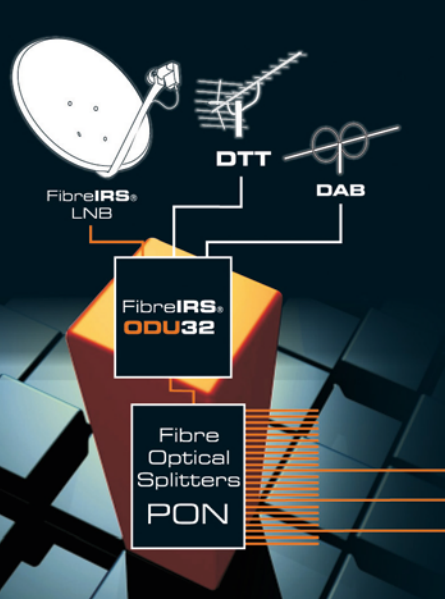
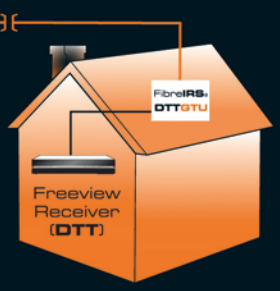
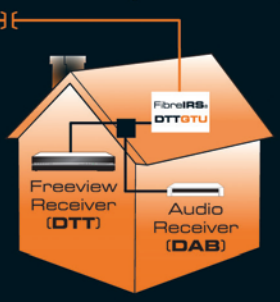
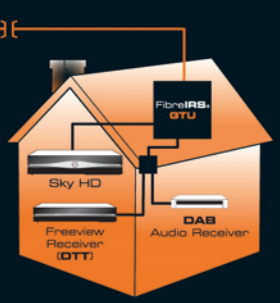




DTT & DAB Installation



DTT & DAB Installation



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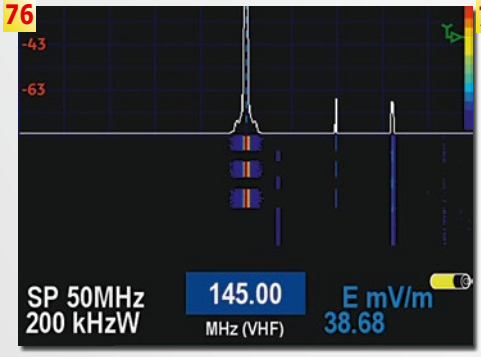
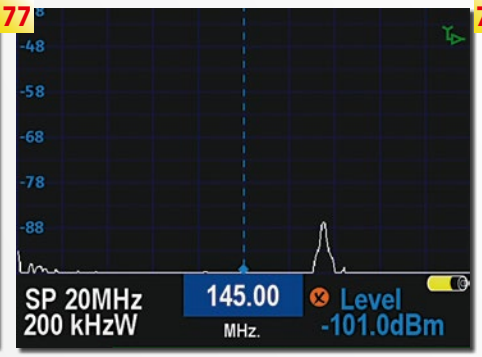
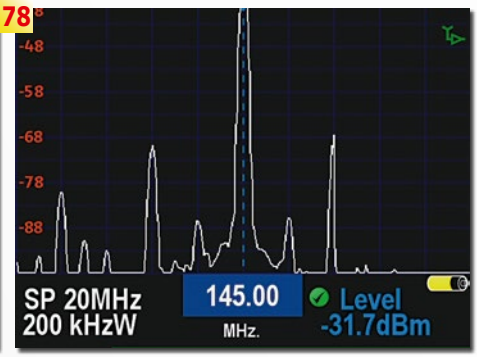






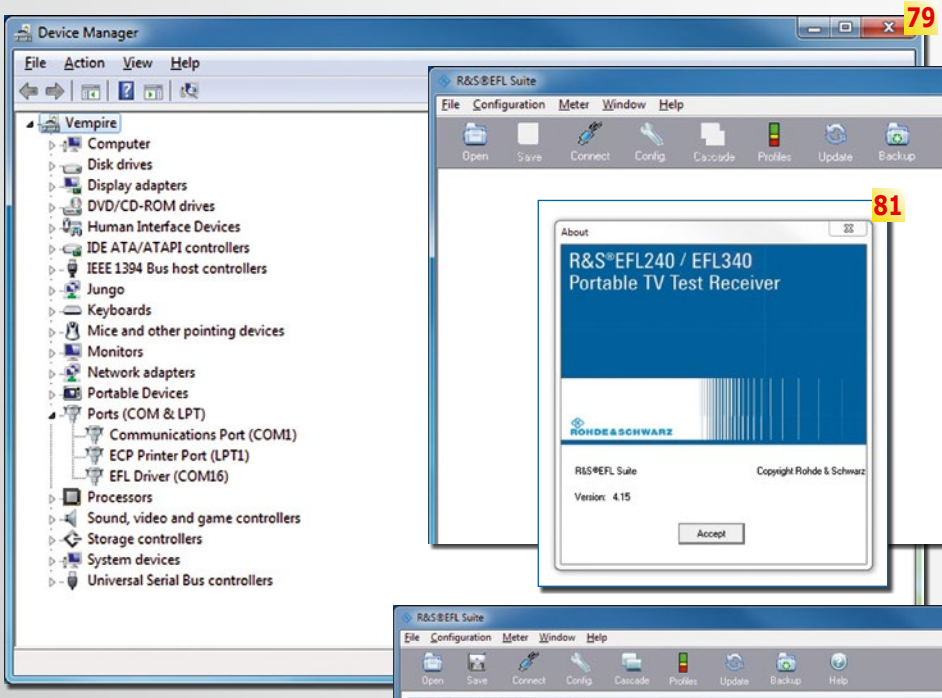
Amateur Radio

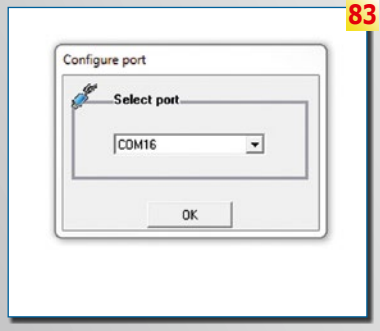
76. It happens occasionally that a customer complains about intermittent TV reception. Often the cause is an amateur radio enthusiast, who is using inadequate equipment. The picture shows the waterfall diagram of a transmission done with a cheap handheld radio, emitting at 145 MHz. Interestingly, the radio disturbs a nearby transmission at 148.5 MHz. Notice that the waterfall diagram shows that transmission, whenever the radio is not transmitting.

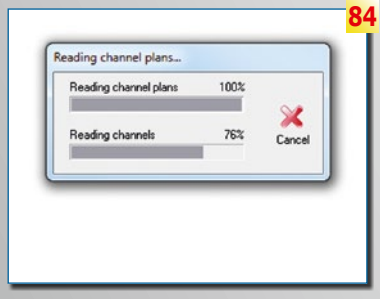
This happens, because the radio has not so good band pass filters, which produce second harmonics that are stronger than expected. This second harmonics is visible as the first smaller line to the right of the main signal.

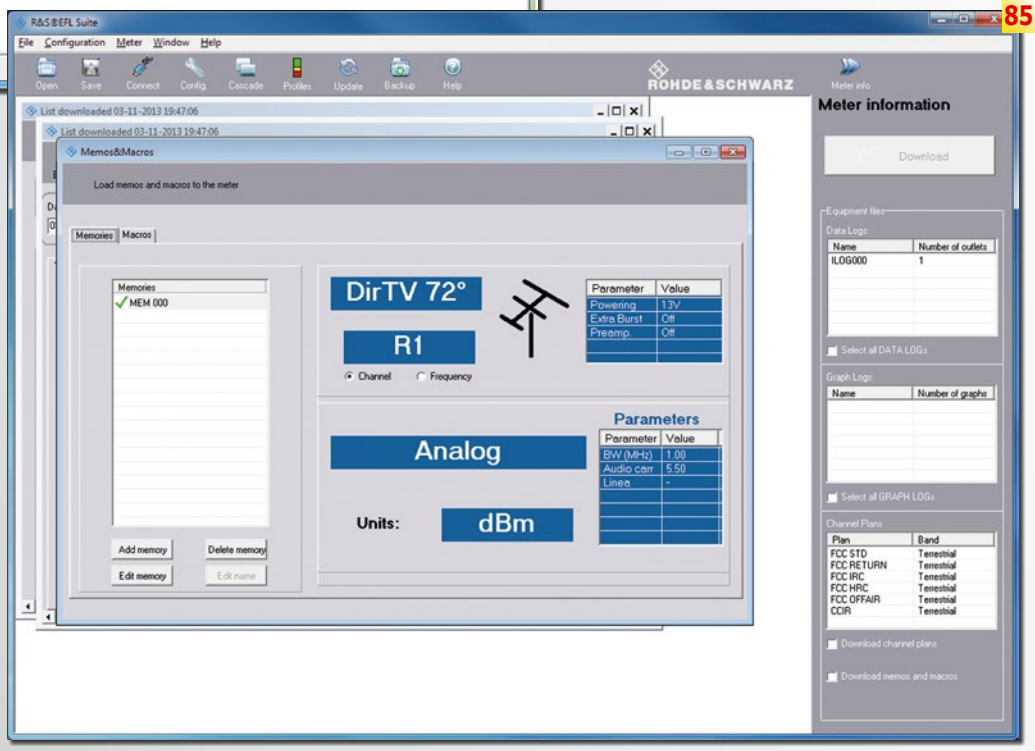
77. This is the spectrum view around the center frequency of 145 MHz wcith a 20 MHz span. The hand held radio is not transmitting in this picture, thus the transmission at 148.5 MHz is not being disturbed.

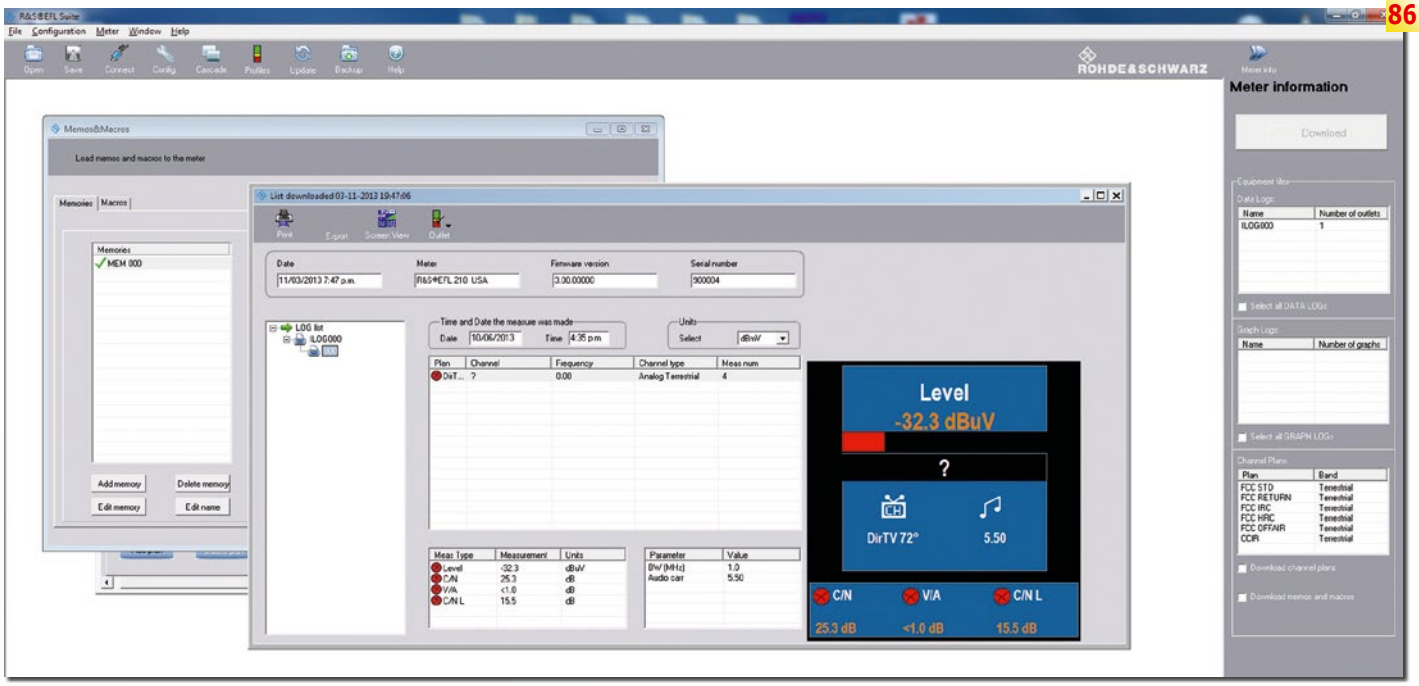
78. See what happens in this picture, when you use the cheap hand held radio: lots of harmonics, obfuscating all transmissions in vicinity. With the R&S EFL210 you can uncover problems resulting from such devices very easily and in an affordable way. Thanks to the included directional antenna you even get to know where the transmission is coming from, if the interferences are within the supported bands of the R&S EFL-Z100 antenna. Otherwise you can use the R&S HE-300 antenna, which covers the whole spectrum from 9 kHz to 7.5 GHz, thanks to its modular design.

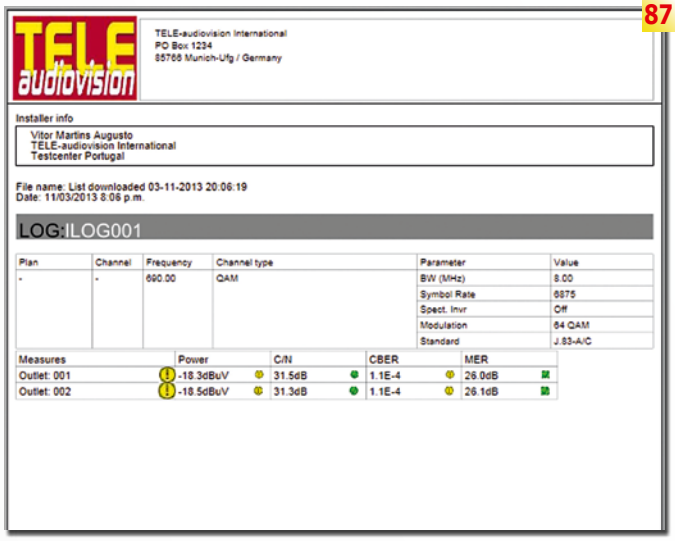


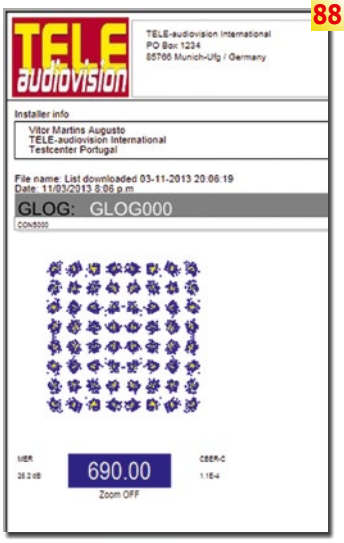


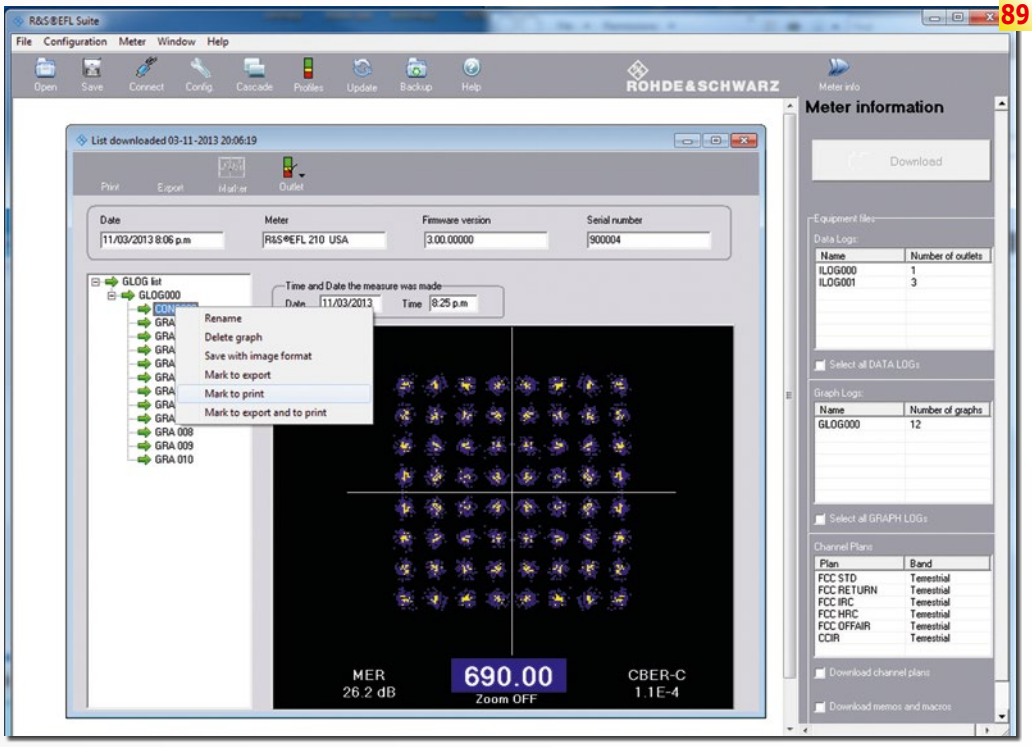












The Rohde & Schwarz EFL Suite

79. The main window of the R&S EFL Suite.

80. The R&S EFL210 is connected to the PC using a USB cable. However, the interface will actually create a virtual serial port (RS-232) for the EFL Driver. It is a good idea to check the Device Manager to confirm that the driver has been properly setup and to read the COM port number. If your computer has other COM ports, for instance because you have a Bluetooth adapter, you will get some odd COM port like I did: in my case it is COM16. You may need to manually configure the R&S EFL Suite to use the specific COM port.

81. The About screen of the R&S EFL Suite. I tested the latest v4.15.

82. No doubt a useful feature: you can import your company logo and input your company details. They will then be included in the automatically generated reports.

83. Next configuration: Which COM port is attributed to the R&S EFL210? Hopefully you did as I suggested and looked it up in the device manager.

84. Once connected the R&S EFL Suite will read out the memory of the instrument. This takes only a few seconds.

85. On the right side you can now choose what you wish to download from the instrument to the computer: data logs, graph logs (actual screen shots) or channel plans.

86. The data logs can be viewed on the PC and you can check them, so that they are included in the report generated by the R&S EFL Suite.

87. A perfect looking report, generated automatically by the R&S EFL Suite and using our custom logo and company information.

88. Of course you can generate reports with screen shots as well.

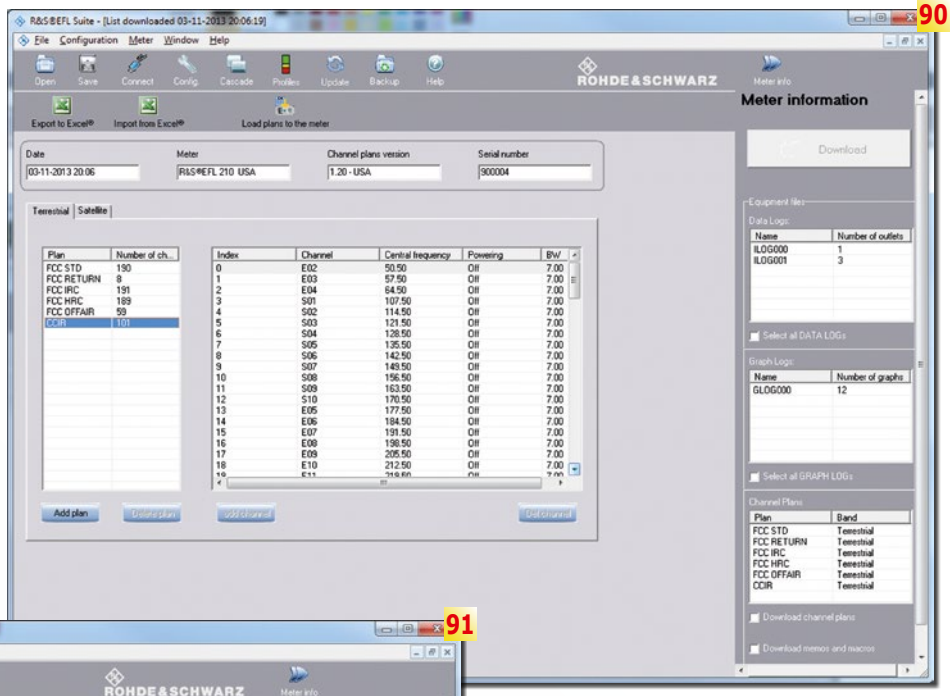
89. Just select which screen shots you want to include, using the "Mark to print" option. It is great that you can export these screen shots as regular pictures, too. This way you can use your own report templates, for instance using Microsoft Office products.

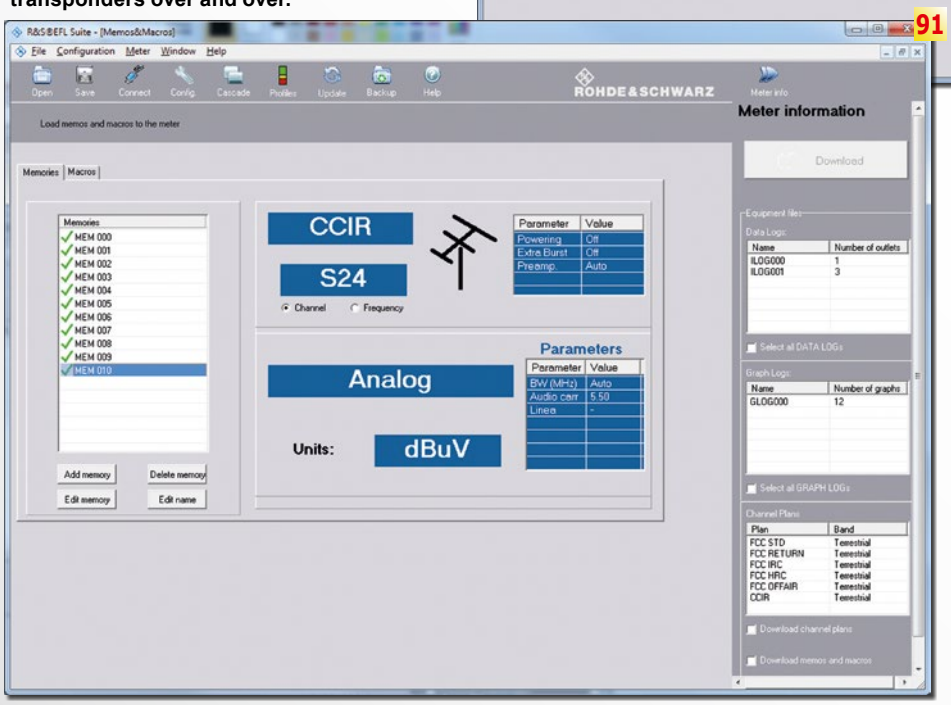
90. The R&S EFL Suite allows to edit the channel plans and of course you can create your own customer channel plans. This is required when you are working for a CATV provider, who uses specific transponder frequencies. Just program them once and off you go.

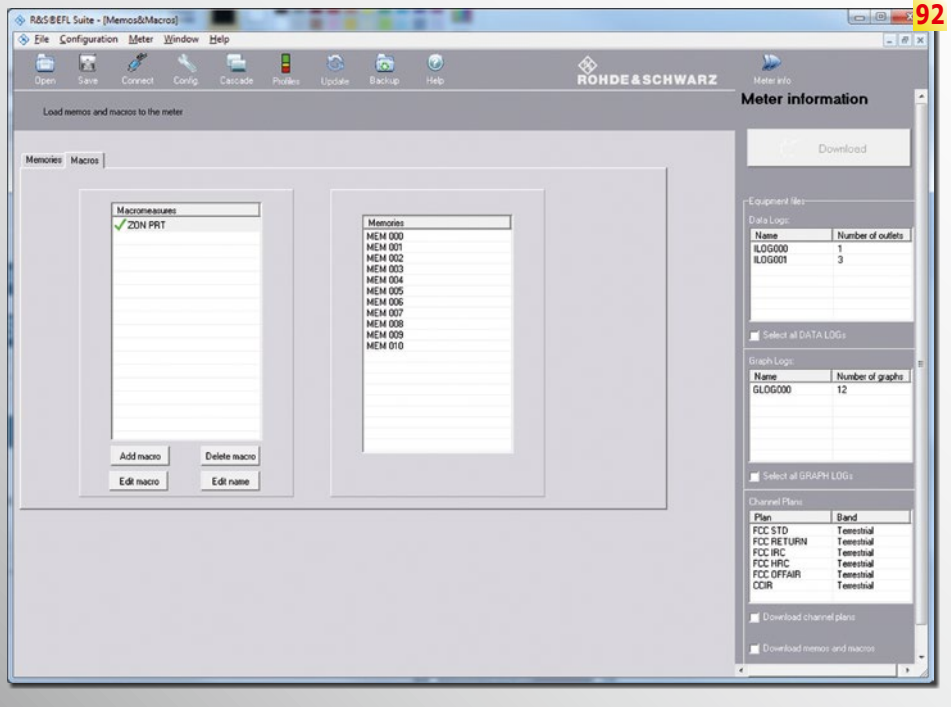
91. Another interesting feature of the R&S EFL210 is the possibility to create macros, which are basically frequency lists that you select to be automatically measured. In the first step you need to create a "Memory", which is basically a transponder. You need to configure the transponder by inputting its channel number or frequency value and specifying if it is an analogue or digital transponder.

92. Once you have your "Memory" definitions setup, you can switch to the Macros tab and create a macro. Select a name and put the required memories inside.

After uploading the memories and macros to the R&S EFL210, you can select the macro and execute it. The R&S EFL210 will then tune each memory and perform the measurements, storing the results automatically in the instruments memory. This is particularly useful, when you need to measure the same transponders over and over.







always be available to the installer to test the installation of a customer.

With the R&S EFL Suite two additional user-defined antennas can be set up in case other antennas would be used besides the R&S EFL-Z100 and the R&S HE-300.

The operation of the R&S EFL Suite is not at all complicated and doesn't first require reading a user manual even though a browser-based user manual is available. We really appreciated the import/export capabilities to Microsoft Excel.

In this way you're not dependent on the functionality of the R&S EFL Suite; you can, for example, also use Microsoft Word to create protocols. This would hardly be necessary since the protocols generated by the R&S EFL Suite actually look quite good and can even be supplemented by a company logo. Overall, we very much liked the R&S EFL Suite; you'll enjoy using it. There are still a few bugs in the current version but they will be corrected by Rohde & Schwartz in an upcoming update. For example, when the software is linked with the R&S EFL210, it incorrectly states that a new firmware update is available when in reality that update is only for the R&S EFL240 and R&S EFL340 models.

The R&S EFL210 signal analyzer is the ideal solution for cable operators and their subcontractors that are responsible for the installation and maintenance

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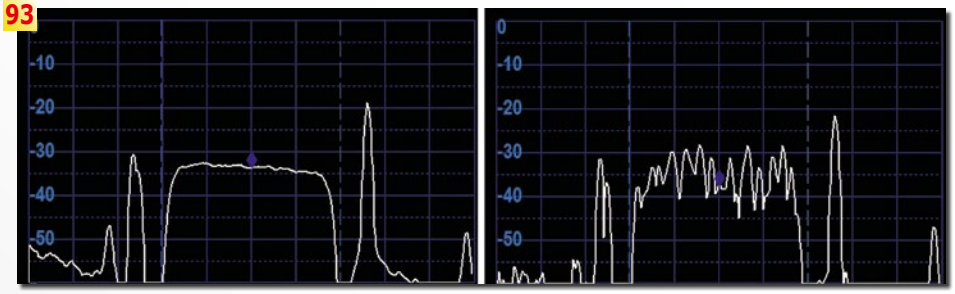
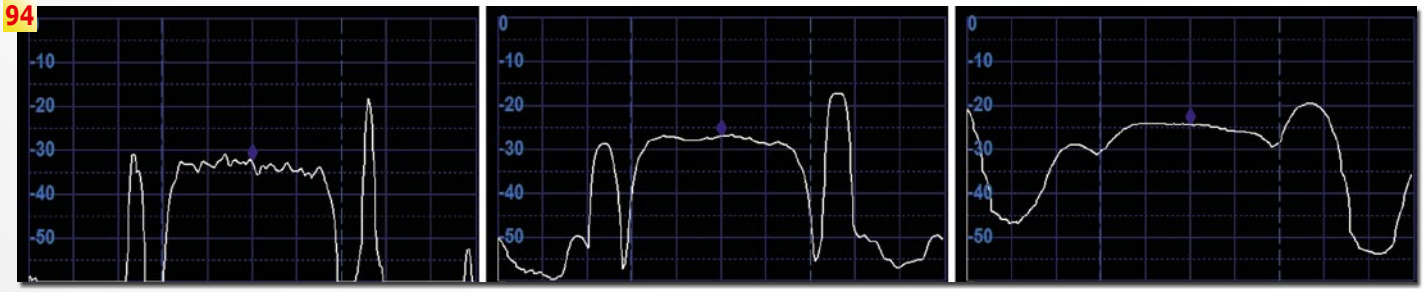
93. When the spectrum is shown in real time it only needs to render 25 to 50 images per second, which is the LCD screen's refresh rate. However, when looking at analogue or digital transponders the signal varies much quicker. This means that the spectrum analyzer shows the average or maximum signal level within the refresh rate period of the spectrum. Toggling the VBW Filter, you can actually determine the time period that is used to average the signal level. The left picture shows a VBW filter setting of 1 kHz, while the right one shows a VBW filter setting of 15 kHz. Which is better? That is up to the technician to decide: a lower filter will show a more averaged spectrum, which is easier to interpret, while a higher filter setting will show a more "nervous" spectrum, which shows more detail about what is happening on each single frequency. Notice how you can detect the carriers of the transponder. The downside is a more difficult-to-read spectrum, since transponders get harder to distinguish against the background noise.



94. The effect of different RBW Filter configurations: all pictures show the same transponder. On the left picture you see the result of using a resolution bandwidth of 200 kHz, the middle picture uses a resolution bandwidth of 800 kHz and the right picture has the resolution bandwidth set to 1.6 MHz. The bigger the bandwidth, the faster the refresh rate of the spectrum. A faster spectrum reacts quicker to any signal variation, allowing you to see things faster and to detect short timed signals. Don't worry with the R&S EFL210: all shown resolution bandwidths will be rendered in real time. These pictures are just to show the effect of the RBW filter. What is really important is to be able to adjust the RBW filter to the current span: if you are using a wide span, you want to use a higher resolution bandwidth to maintain the refresh rate of the spectrum high. If you are using a narrow span you want to have maximum resolution, instead. The R&S EFL210 excels in the spectrum analyzer mode.



of cable networks. In just a single device the signal, regardless if it's analog or digital, can be measured and displayed while at the same time a large assortment of functions are also available to measure leakage signals.

The fact that the R&S EFL210 comes with a spectrum analyzer that can display an enormous range of 2.5 GHz is unheard of in an analyzer of this class and definitely helps the technician create a picture of multiple frequency ranges.

As you would expect from a Rohde & Schwartz product, its measurement precision is extremely high and yet it's very easy to use. From its unique shape to the arrangement of all of its buttons, everything is just right. Given the ever increasing responsibility of the cable TV operators and installers in terms of compliance with maximum permissible interference, the R&S EFL210 is the ideal reference solution.

Spectrum Analyzer Operation and the Function of the RBW and VBW Filters

The R&S EFL210 signal analyzer comes with a professional and fully featured spectrum analyzer. Unlike most other standard satellite and cable analyzers, with the R&S EFL210 you can set up RBW and VBW filters to your personal requirements. But what are these filters exactly? In order to answer this question you first have to understand how a spectrum analyzer works.

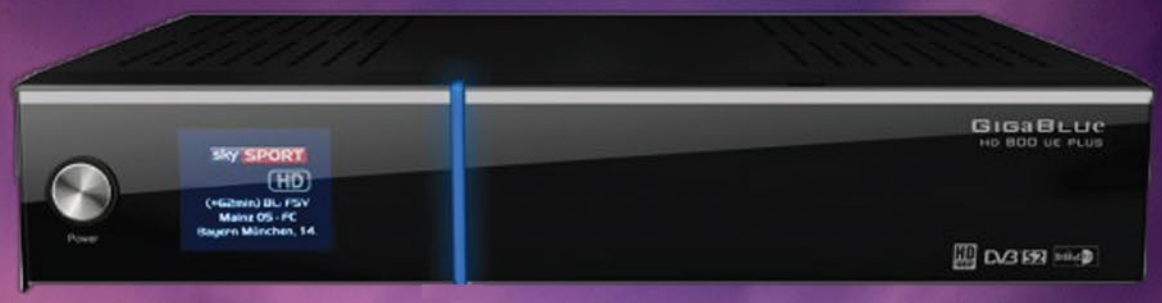
With the R&S EFL210 the HF input signal is converted to a small frequency range by a bandpass filter that is then digitized and inserted into the spectrum through Fast Fourier Analysis (FFT). This frequency range is continuously swept across the selected range. This spectrum analysis implementation is called „Hybrid Super Heterodyne FFT" and offers the best compromise between an analog spectrum (without FFT analysis and thus lower resolution and precision) and a pure „Realtime FFT" spectrum (FFT analysis across the entire frequency range, something that can only be accomplished with extremely high computing power and multiple parallel running FFT analyzers). In fact, the R&S EFL210 functions with a remarkable FFT bandwidth of 20 MHz. This makes it possible, for example, to simultaneously analyze the entire LTE frequency band.

The RBW filter (Resolution Bandwidth) specifies the frequency bandwidth that the bandpass filter allows to pass through. The smaller the frequency bandwidth, the higher the resolution of the resulting spectrum. But this higher resolution requires more time to calculate the spectrum and in turn more time to generate it. If, on the other hand, a larger frequency bandwidth is selected for the bandpass filter, the spectrum display is generated much more quickly but with a lower resolution.

With the R&S EFL210 the RBW parameter is automatically set so that the resolution of the spectrum is as close as possible to the resolution of the display: it doesn't make any sense to generate a spectrum with a resolution that is higher than the display itself can handle.

Naturally, the bandwidth of the R&S EFL210's RBW filter can also be set manually. This would make sense when, for example, two neighboring signals can only be differentiated with maximum resolution. The RBW filter can be set from 300 kHz to 6.4 MHz.

GigaBlue



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The VBW filter is a Video Bandwidth filter. Once the HF signal has passed through the VBW filter, it is digitized by the detector. The signal is digitized multiple times and, depending on the setting of the spectrum function, a maximum value or an average value is calculated. The video bandwidth sets the sensitivity with which two measured signal levels can still be differentiated. And just like before, the higher the sensitivity, the slower the generation of the spectrum display. The R&S EFL210 supports video bandwidths from 100 Hz to 1 MHz.

Measuring Satellite and Terrestrial Antennas with the R&S EFL210

Although the R&S EFL210 was not conceived for satellite antenna installations and doesn't come with a corresponding demodulator, it's still possible for the technician to set up satellite antennas with this analyzer. For one thing the R&S EFL210 can display the required spectrum from 950 MHz to 2150 MHz with every possible function in real time. The R&S EFL210 is also capable of supplying the necessary 14V and 18V for the LNBs as well as switching between vertical and horizontal polarization. The only thing missing is the 22 kHz signal to switch between the low and high bands. But it would be good enough to install and align a small satellite antenna. It's important to note that an installer working under contract to a provider who sets up both CATV and satellite reception systems would save themselves the cost of a second analyzer.

The same scenario exists with the sporadic use of the R&S EFL210 in aligning antennas for terrestrial digital TV. Here the excellent real-time spectrum would help and even amplifiers and active antennas could be used with the available 5V, 14V, 18V and 24V. If you need to set up antennas for DVB-T/T2, you could also use the R&S EFL210.

EXPERT OPINION

+

- **Allows a span over the whole 2.5 GHz frequency band**
- **Configurable RBW and VBW filters**
- **All common measurements available for spectrum: signal/power level, bandwidth, up to three markers**
- **Integrated CATV analyser with analogue and digital measurements (signal/power level, C/N, MER, BER, constellation diagram, etc.)**
- **Demodulator for analogue Radio and TV, MPEG-2 and MPEG-4**
- **Leakage measurement through waterfall diagram in selected frequency bands (FM, Aeronautics, VHF, UHF, LTE, GSM and WIFI)**
- **Includes directional antenna for aeronautic and LTE frequency band**
- **Allows to measure leakage to comply with EMI regulations**
- **Easy and intuitive operation**
- **Highest accuracy**

–

- **Does not allow to capture screenshots in Leakage mode**

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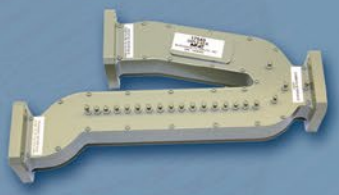
STL (950 MHz) / ISM (900 MHz) Diplexer

WiMAX & Radar Eliminator

Transmit Reject

Transmit Reject

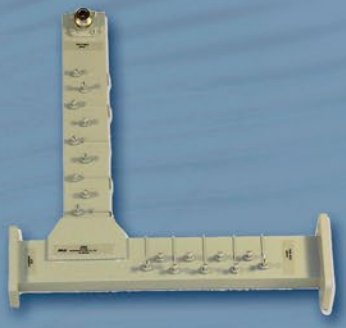


Diplexer

Transmit Reject

Receive Reject

DTV Transmit Mask



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Panodic DVD320

PANODIC
Digital World. Simple Life.

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- ***принимает все форматы видео***
- ***доступен также выходной видеосигнал 1080p***
- ***подходит также для пользователей с нарушением зрения***
- ***быстрый DVB-T поиск каналов***

DVB T

Entertainment Out of the Box – With a Single Box!

Even at first sight the build quality of the DVD320 is truly impressive. Once again, Panodic shows that receivers don't necessarily have to look bland, dull and uninspiring. What a welcome change! The front panel of this DVB-T receiver with integrated DVD player features the disc tray as well as three buttons for operating the device without the remote control. Added to that are a segment display and an easily accessible USB port. The back panel of the DVD320 sports the RF input and output sockets for DVB-T reception, plus a total of six RCA jacks for stereo audio, composite video and YUV, apart from an HDMI socket. Added to that is a digital audio output that is, however, only available as a coax socket without an optical counterpart.

The remote control that is shipped with the DVD320 has to take care of both receiver and DVD functions, which means the number of buttons is on the high side. Nonetheless, Panodic did a great job and whizzed up an easy-to-use layout which requires little to no familiarisation so that first-time users should also get the hang of it in next to no time at all. In general, the remote control is quite large due to the many buttons that are required for efficient operation.

While the level of workmanship and the build quality of the DVD320 deserve our highest praise we would have appreciated a second USB port on the back panel for a permanently attached external USB storage medium.

If you take the remote control in your hand for the first time you'll probably notice a key labelled DVD/STB right away. You might suspect why it's there, and you'll get proof as soon as you turn on the box. Rather than integrating DVD functions into the DVB-T receiver software Panodic has opted to neatly create two fully independent environments (DVB-T reception and DVD player) in a single box, using the same signal outputs. So the DVD/STB button on the remote is your point of departure and takes you to one of the two environments. The great thing is that you can switch between modes no matter what the box is currently up to. This interesting overall strategy deserves a closer look, which is why this test report also consists of two sections, dealing with DVB-T functions and DVD features individually.

When you switch on the DVB-T receiver for the very first time it wants to find out your exact reception region, as well as your preferred OSD language, video output resolution and aspect ratio. We did like the fact that the DVD320 supports all major European languages and also provides its video output in 1080p 50/60Hz quality, if desired. While this represents the top of the line video resolution, the following options are available as well: 480i, 480p, 576i, 576p, 720p 50 Hz, 720p 60 Hz, 1080i 50 Hz and 1080i 60 Hz. If you don't want to decide yourself you can also leave it to the box by selecting either "By Native TV" (highest supported resolution of the attached TV panel) or "By Source" (resolution of the source material). The initial set-up is completed with a channel search, which in our case only took two minutes and four seconds and detected all available DVB-T frequencies at our location.

The main menu of the DVD320 is of the classic kind, which means it is easy to navigate and makes for a straightforward user experience – just what we expect from Panodic. It goes without saying that the whole range of channel editing options are available, so that users can easily rename, move, sort, PIN-lock or delete individual entries. A

WS-6936

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

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

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

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

WS-6909
DVB-T&S COMBO METER

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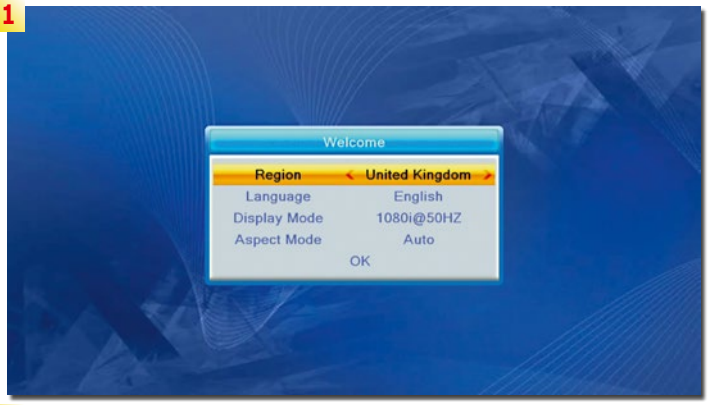

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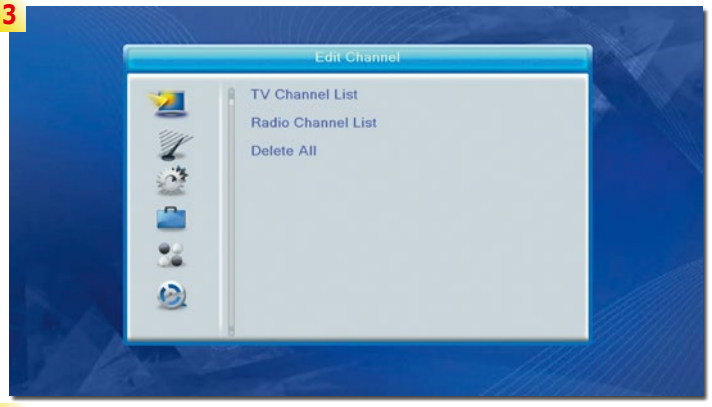

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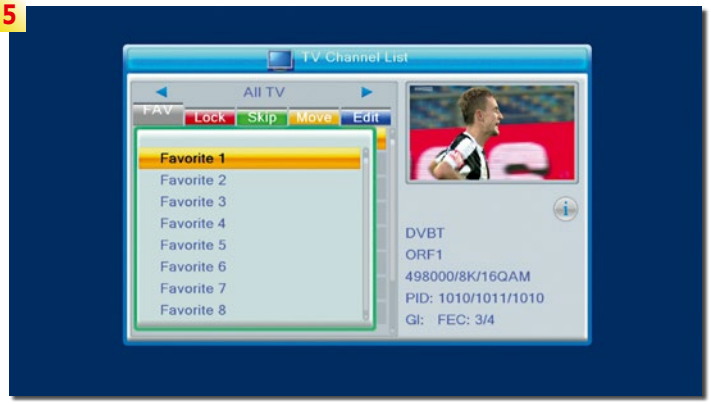

total of eight favourites lists can be set up so that each family member can customise his or her own list, or you may opt to create genre lists or be creative in any other way. If you use an indoor antenna with active signal amplification you'll be happy to know that the DVD320 can be set to provide the required voltage via the coax cable. The large range of personalisation options is completed by a number of OSD adjustments, the possibility to activate audio description of images by default and to turn on or off the automatic time-shift buffer.

During everyday use we noticed that the Panodic DVD320 reacts very swiftly to all commands sent from the remote control and that the OSD design makes for an above average user experience. Every time a new channel is selected the inserted info bar presents the title of the current and next event for a few seconds. Of course an electronic program guide (EPG) is available as well, showing the current and next events for five channels at a time. Since the DVD320 is a PVR receiver timer entries can be created right from EPG view by simply clicking on the event that should be recorded. Unfortunately, the number of timer entries is limited to eight events.

If you want to switch to another channel you can either press the OK button to call up the overall channel list or go to one of the favourites lists. New channels appeared in less than one second in our test, which adds tremendous fun to zapping. We also liked the smart integration and implementation of all PVR features: Up to two recordings can take place simultaneously while a third event is being watched live. Channels that are not available for live viewing due to recordings taking place automatically disappear from the channel list, so it's all a very straightforward affair of what you see is what you get. The Panodic DVD320 also comes with goodies such as an integrated OSD teletext decoder, dedicated menu buttons for language selection and subtitles, multi-picture mode for an overview of what's showing on different channels, and – last but by no means least – software updates via the USB port. MP3 music files as well as video files in the AVCHD, AVI, DivX, Flash, Full HD, MOV, MP4, MPEG, TS and WMV formats can be played back flawlessly and if you want to use your TV panel for a slideshow with your latest holiday photos we can confirm that both JPEG and BMP images work nicely and add the finishing touches to the already wide range of features of this Panodic box.

When compared with all the DVB-T options, the DVD mode of the DVD320 has not even half the features and functions. But then again, this was to be expected in the first place. We did appreciate the fact that the DVD player willingly accepted and played back the DVD+- R/RW, VCD, CD, CD-R and CD-RW formats, which leaves nothing to desire. In addition, it can be used as a fully-fledged multimedia jukebox for a wide range of file formats. In DVD player mode, the video output resolution can be set at 480p, 576p, 720p, 1080i and 1080p, or the DVD320 can be set to automatically use the

1. Initial set-up of the Panodic DVD320

2. DVB-T channel search

3. Main menu of the Panodic DVD320

4. Channel list editing

5. A total of eight favourites lists are available

6. The DVB-T receiver offers either an automatic or a manual search

7. Manual channel search

8. The automatic search can be restricted to free-to-air channels

9. Language settings

10. Adjusting the video output resolution

11. Setting the internal clock

12. A total of eight timer entries can be created

13. OSD settings

14. Favourites lists can be given individual names

15. Visually impaired users can permanently activate audio description of images

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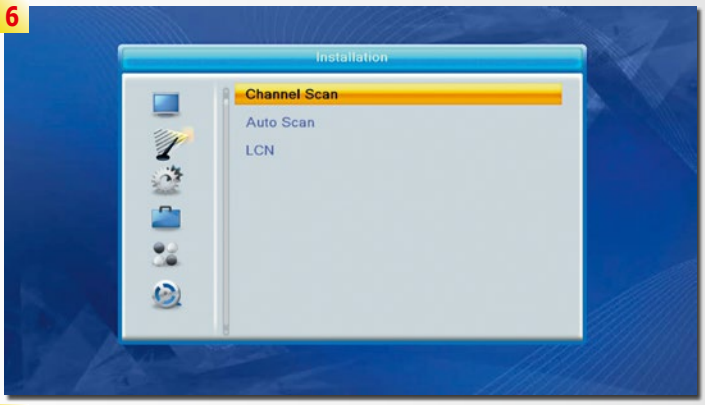

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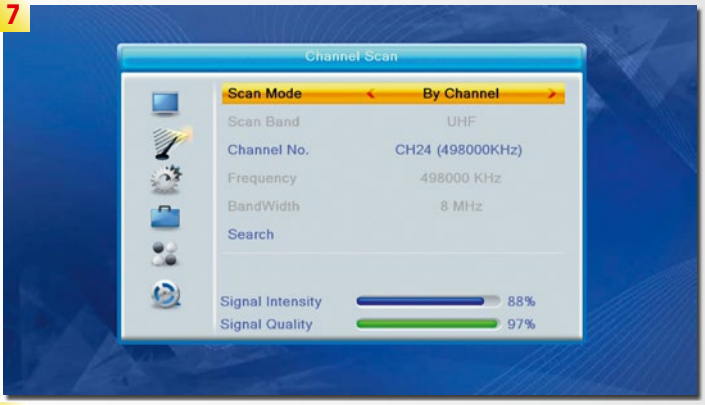

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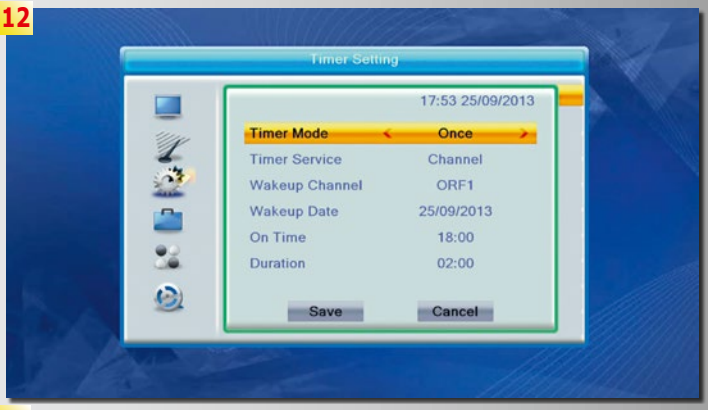

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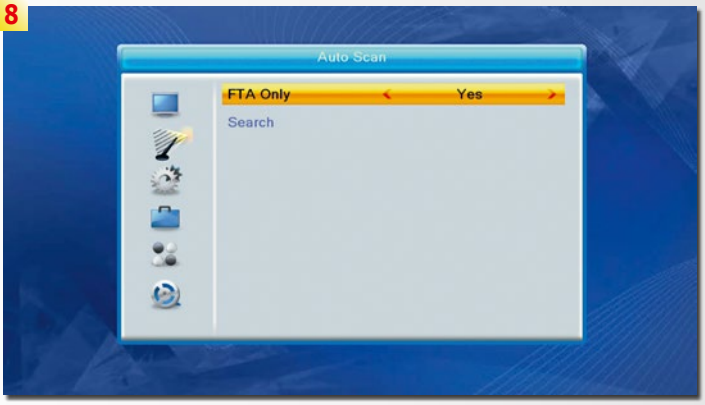

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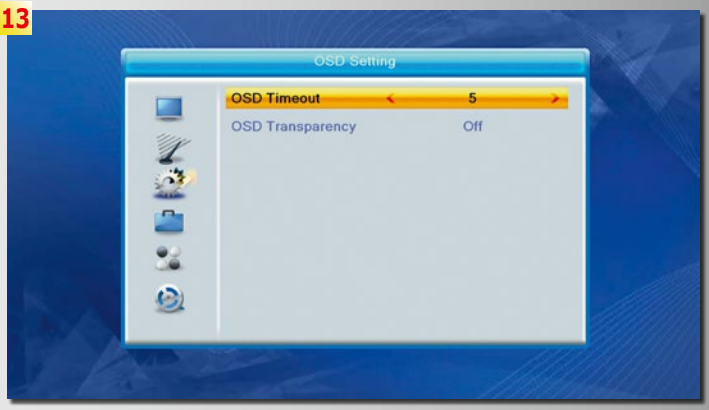

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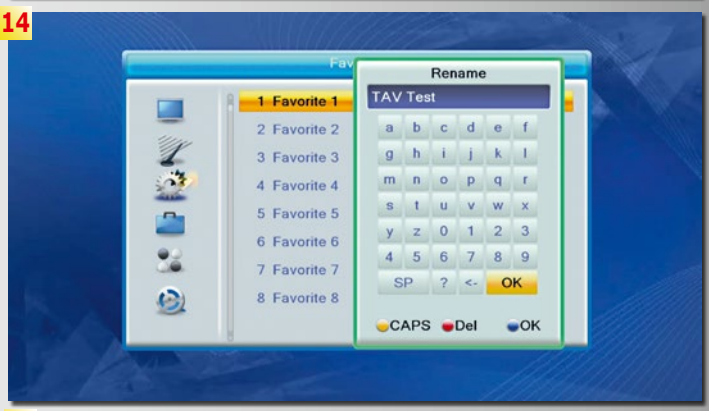

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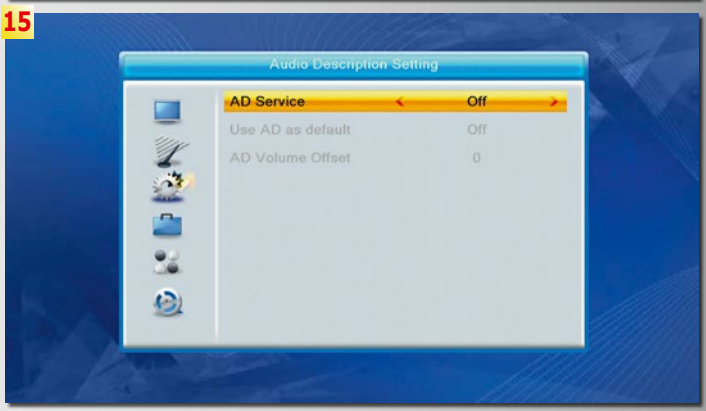

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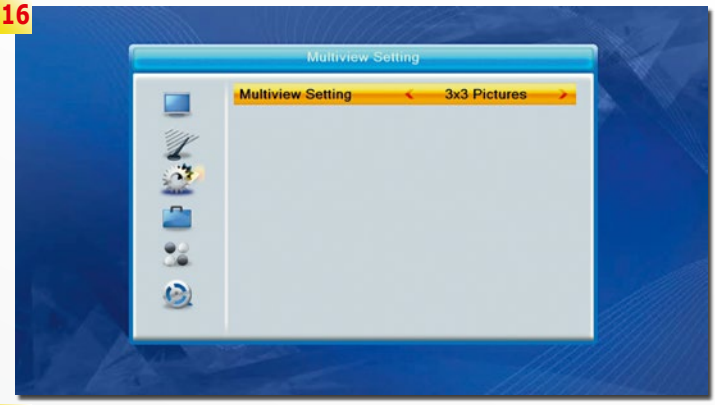

16. The video of several channels can be presented in multi-view mode
17. If an indoor antenna with active signal amplification is used, the DVD320 provides the required voltage right via the coax cable
18. Software updates of the Panodic DVD320 are possible through the USB port
19. The integrated media player handles a large variety of file formats
20. All tested video files were played back flawlessly
21. Overview of existing recordings
22. PVR settings
23. MP3 playback
24. M2TS video playback

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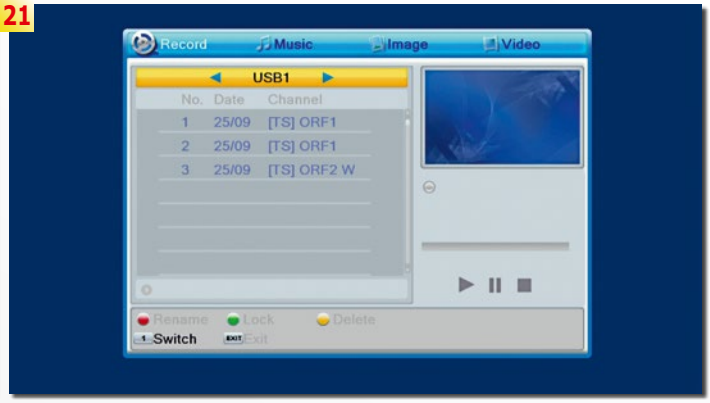

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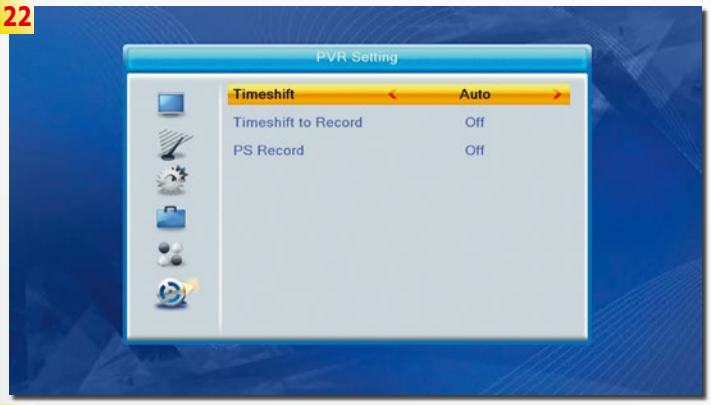

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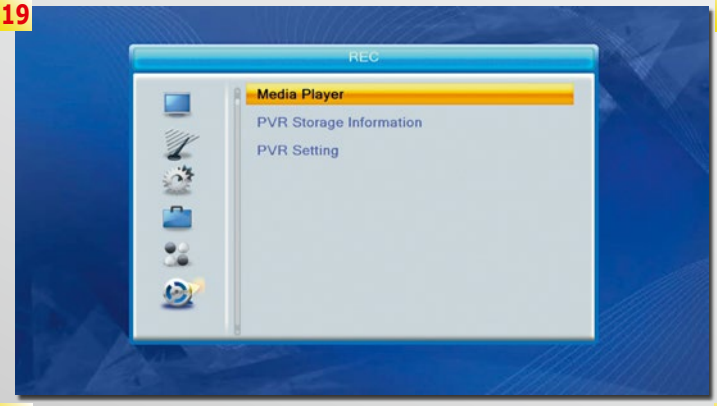

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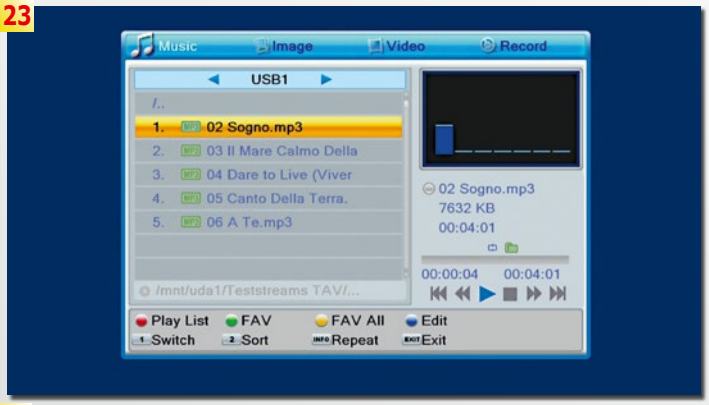

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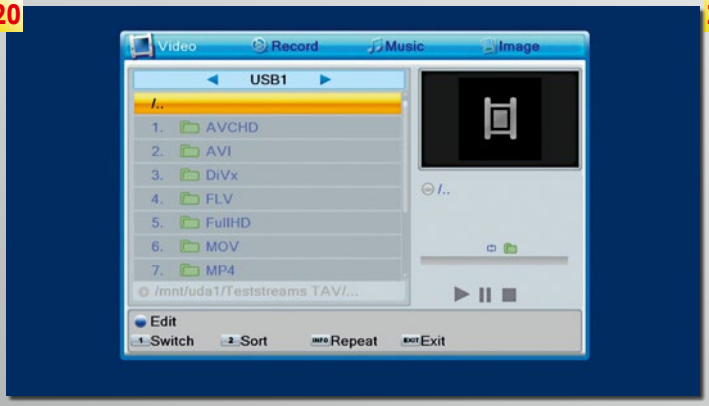

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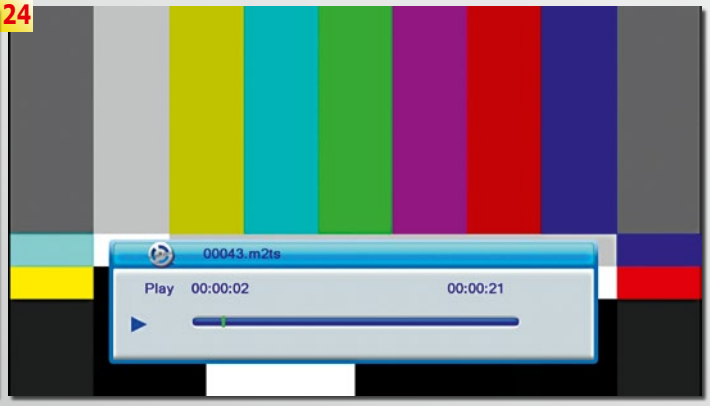

MKTECH

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

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

DVB-S2 Twin Tuner Box with Enigma2 & XBMC OS

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

Digital T2/S2/C Combo Meter

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

MKTECH
Gotech International Technology Ltd

Headquarters: 66 Yongda Road, Hongqi, Jinwan District, Zhuhai 519045 P.R.China
Tel: 0086-756-6801 600 Fax: 0086-756-6801 798 E-mail: info@gotechcn.com

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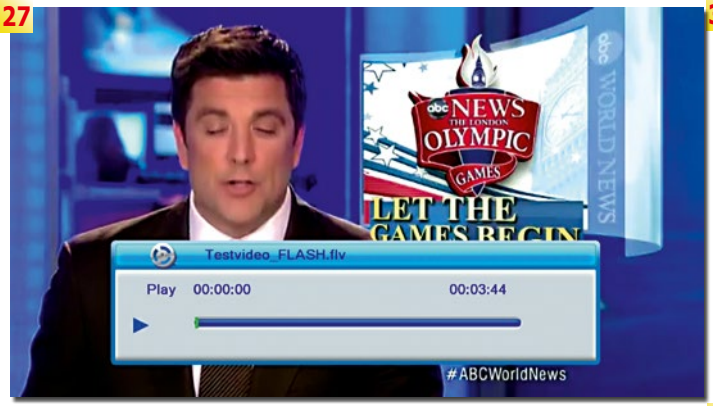
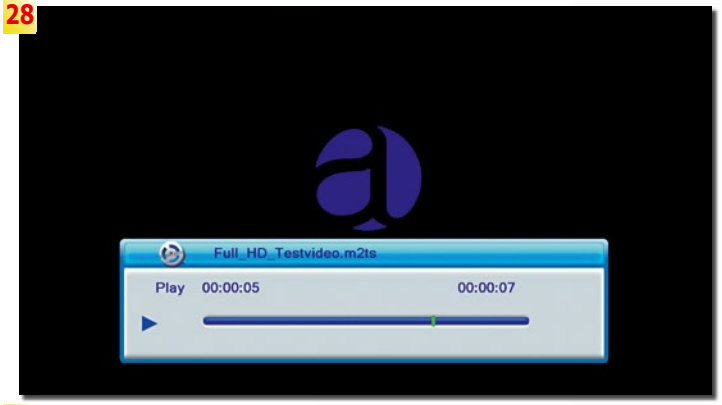
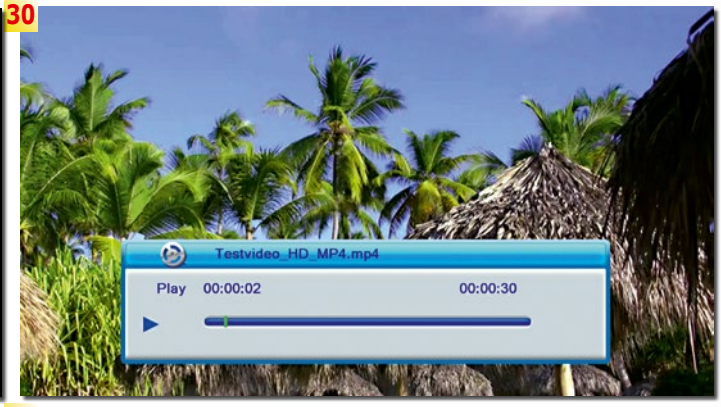
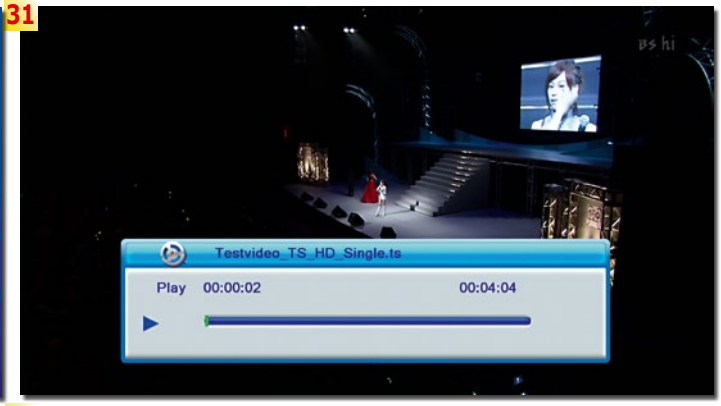
resolution of the DVD source material. While some options in regard to language settings are available, these are more limited than those in DVB-T mode. A child lock system can be activated and you may set the player to remember the last position of a playback so that you can continue from that precise point.

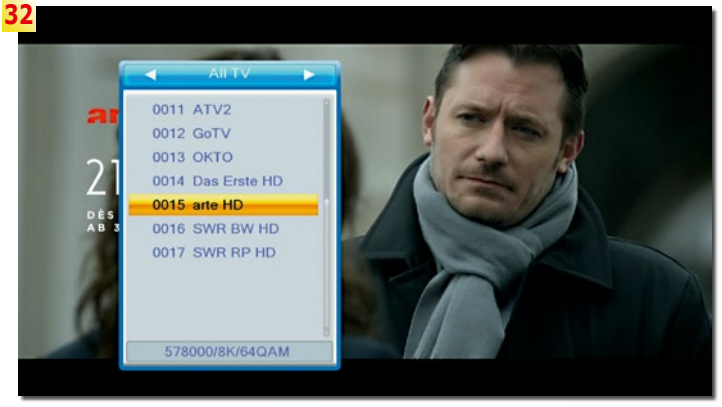
Never taking a manufacturer's word for anything, we threw a number of different DVDs and CDs, including rewritable discs, at the Panodic DVD320 and the box was happy with each and any of them. By comparison, many other DVD players we had used before were far less accepting, so it's thumbs up from us in











25. AVI video playback
26. DivX video playback
27. Flash video playback
28. Full HD video playback
29. MOV video playback
30. MP4 video playback
31. TS video playback
32. Channel list of the Panodic DVD320
33. The info bar shows the title of the current and next event
34. OSD teletext
35. Language selection
36. Choosing your preferred subtitles
37. EPG of five channels at a time
38. Multi-picture view
39. Every time a new recording begins the receiver shows the remaining harddisk capacity
40. Two recordings can be made simultaneously. When a third one is attempted an alert message pops up
41. Two recordings can be made simultaneously
42. All DVD functions, such as different menus, are available

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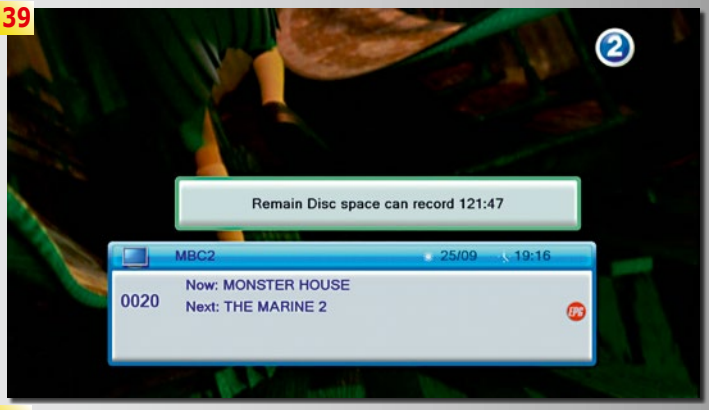

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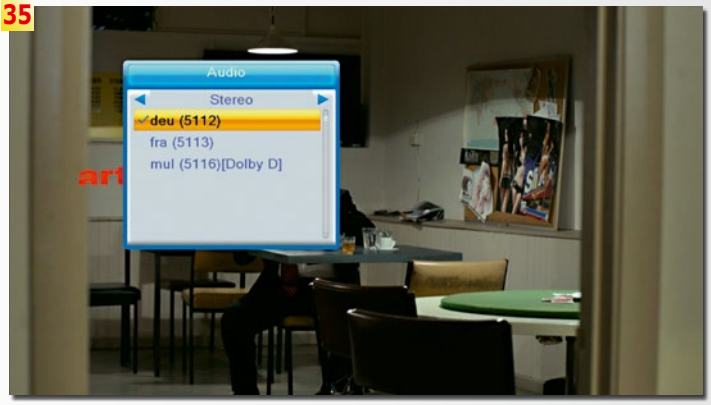

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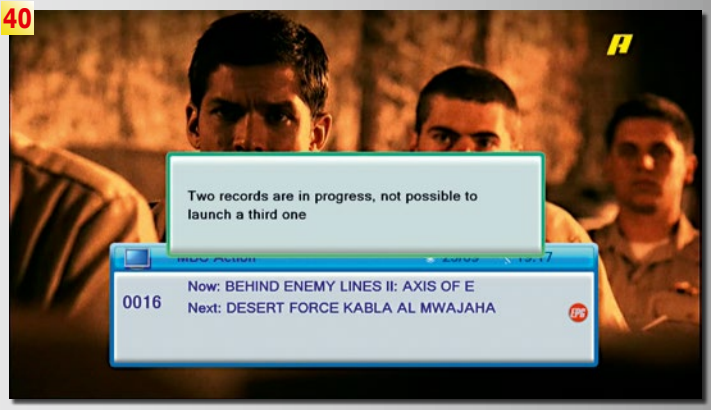

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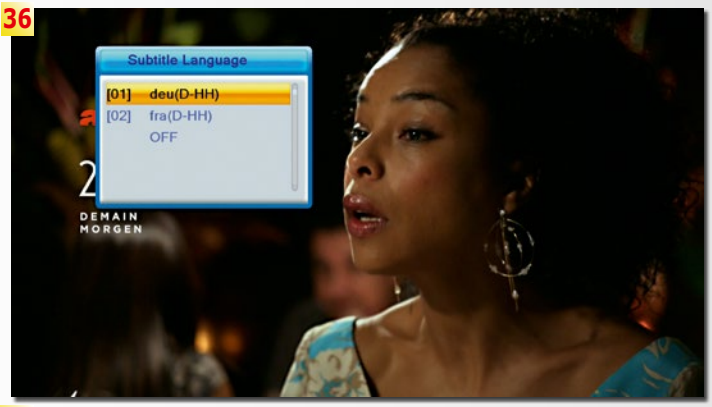

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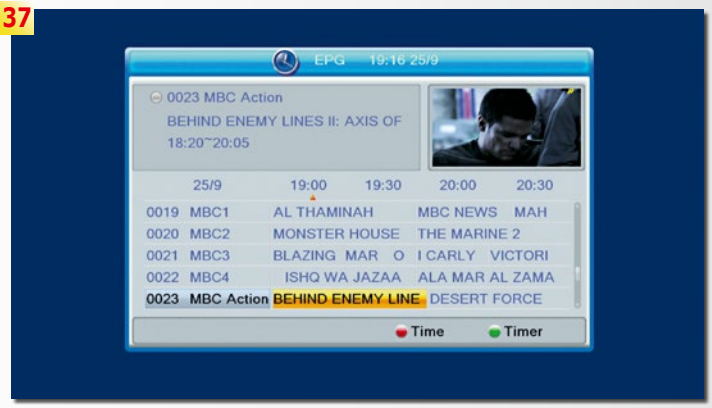

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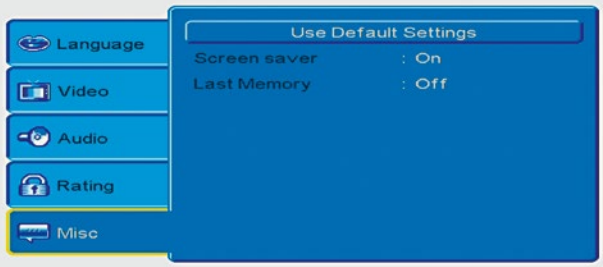
43. Language settings in DVD mode
44. Video output settings in DVD mode
45. Audio output settings in DVD mode
46. Child lock
47. If preferred, the DVD player memorises the position at which playback was last stopped
48. Both in DVD mode and in DVB-T mode video output can set at 1080p (Full HD)
49. Direct selection of DVD chapters
50. The Panodic DVD320 cannot only access multimedia content that is stored on a disc, but also process content fed from an external USB storage medium
51. Various video formats are accepted from an external USB storage medium in DVD mode

47



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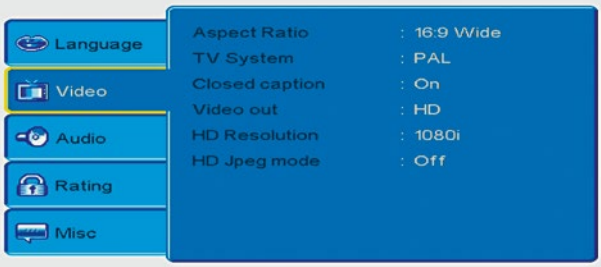

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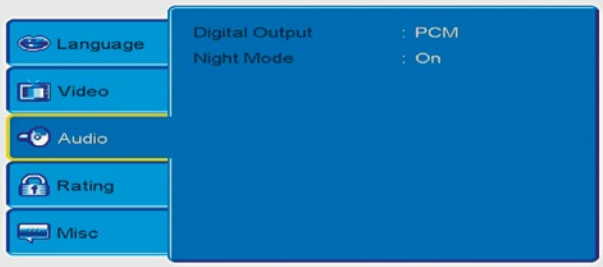

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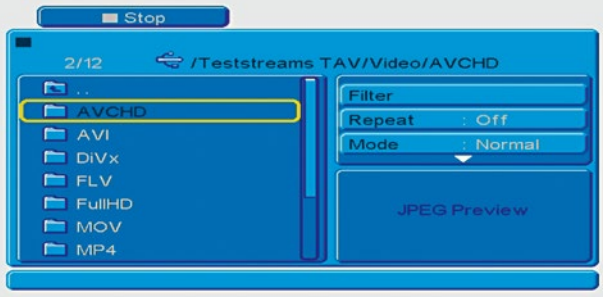

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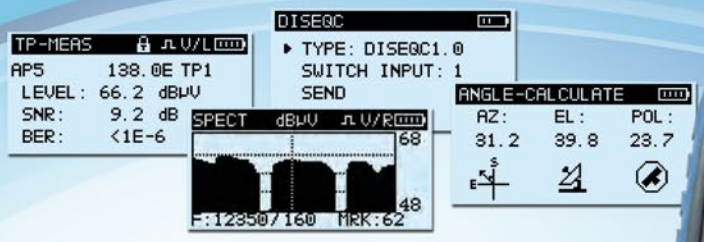

S30✓ Satellite Meter

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

S7000✓ TV Analyzer


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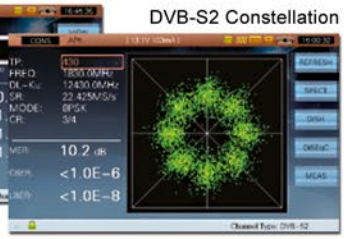
Spectrum

TR101 290 Three level Monitoring

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


DVB-T Signal


DVB-S2 Constellation

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

DEVISER

terms of compatibility. The remote control comes with dedicated buttons for calling up the DVD menu, chapter overview or for repeating a single or all tracks. With user-friendliness at such a high level you will hardly feel a need to look for the user's manual of the DVD320.

Our test revealed that both audio and video quality are nothing short of impressive. And thanks to its built-in USB port the Panodic DVD320 in DVD mode cannot only access multimedia content on discs, but can also be fed with content via this USB port. This is particularly convenient for those who have many ripped DVDs stored onto an external USB harddisk. Simply hook up your external storage medium and you're all set to party.

We should like to mention at this state that in DVD mode the DVD320 can play back audio files in the M4A, MP3 and WMA formats, while video files must come as AVI, MP4, MPEG or WMV only. This goes to show that Panodic has well and truly separated the DVB-T mode from the DVD mode. While both fall back on the same output sockets, we're still talking about two completely independent environments.

In summary, the DVD player turned out to be a reliable buddy for virtually all kinds of DVDs and CDs. It was even capable of playing back a slightly damaged disc that we tried out. And if you enjoy watching DVDs from all corners of the globe we've got another piece of good news for you: The tested DVB-T/DVD box plays back all region codes without any restriction at all.

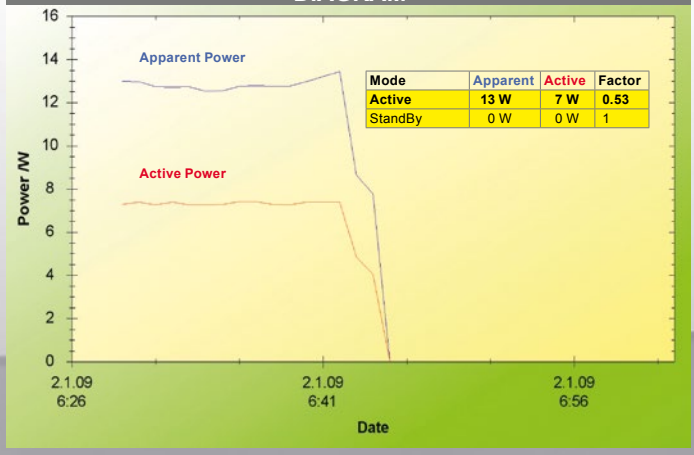
EXPERT
OPINION

+ If you want a DVB-T receiver plus DVD player in a single box, then look no further than the Panodic DVD320. We tested both modes and it always cut a fine figure. Thanks to its user-friendly and logical operation it is a perfect match not only for techies. We also noticed its very low power consumption in standby mode – which could hardly be measured at all.

– The DVB receiver currently only accepts DVB-T signals, the DVD player is not compatible with the Blu-Ray standard.

MORE ABOUT THIS COMPANY
www.TELE-audiovision.com/12/03/panodic

ENERGY
DIAGRAM



Active use during the first 15 minutes, followed by 15 minutes in standby mode.

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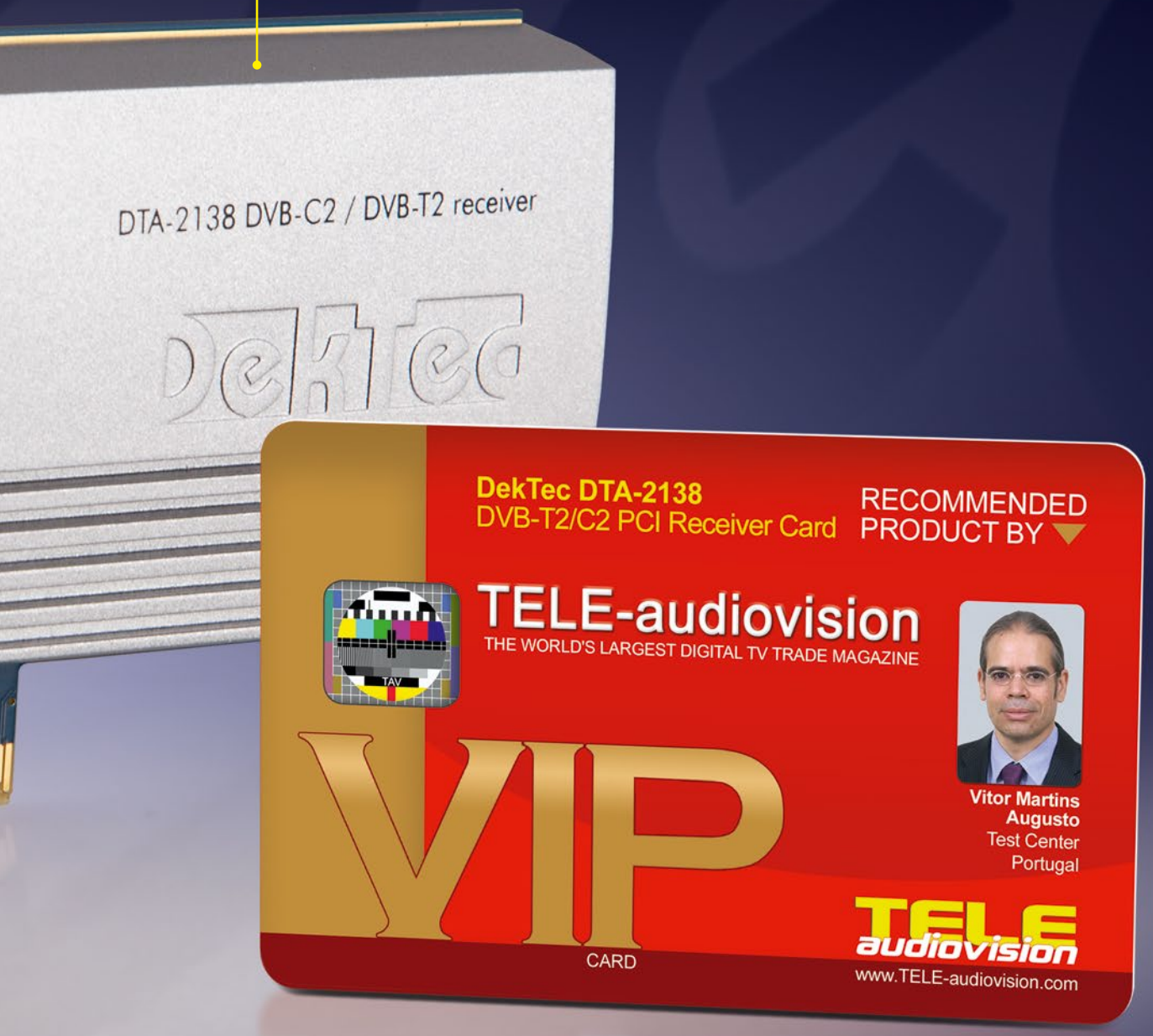
ROHDE&SCHWARZ

DekTec DTA-2138

- ***принимает DVB-C, DVB-C2, DVB-T и DVB-T2***
- ***идеально подходят для мониторинга DVB-C2 и DVB-T2 телевизионных сетей***
- ***основанная на аппаратных средствах демодуляция – не влияет на производительность ПК***
- ***предоставляет информацию на уровне РЧ-сигнала; MER, BER и L1 параметрах***
- ***DekTec API – для программирования и компилирования персонализированных приложений***



Professional DVB-C2/DVB-T2 card for PCI Express

TELE-audiovision readers have come to know and appreciate DekTec as a specialist for digital signal measurement. The range of products on offer includes PCI, PCI Express and USB-based receivers for existing digital TV signals worldwide, as well as corresponding modulators to create all those signal types from scratch. Added to that are software applications for Windows which can be used to analyse, modulate, demodulate and even multiplex signals – without requiring an IT degree from their users. What's more: Any combination of DekTec hardware and software can be chosen, since they are all designed to work with each other no matter how you match them.

And if you also add the new DTA-2138 card to the existing DekTec range, you'll arrive at a fully-fledged system for carrying out all imaginable professional tasks. The DTA-2138 is a PCI Express card with built-in DVB-C2/DVB-T2 receiver, which of course is also compatible with the DVB-C/DVB-T transmission standards. It comes in a box that – in addition to the card itself – includes an adaptor sheet so that the DTA-2138 can be installed in standard PC cases as well as in small-size cases and blades.

Contrary to this adaptor sheet, firmware and suitable applications for the DTA-2138 are not shipped with the card by default, but can be downloaded from DekTec's website. There you will also find the software developer kit (SDK) complete with the DekTec API. Watch out for a dedicated report on the API in one of the upcoming issues of TELE-audiovision.

DekTec recommends the following applications for its DTA-2138 card:

- DtTS Television
- DtGrabber+ Recording
- MuxXpert Real-Time Multiplexing
- StreamXpert TS Analyser

All of these applications have to be purchased and must be licenced individually. We can also recommend the DtInfoTool software which gives you detailed information on all installed DekTec components and comes with handy tools for configuring all components as well as for updating the firmware, if required. Actually, one of the signature features of DtInfoTool is its firmware update alert: Newly added features and functions as well as bug fixes are listed in an exemplary way so that users can decide whether or not an update makes sense on a case-by-case basis. Updates are never forced on anybody, which is another exemplary strategy by DekTec. What's more, all installed licences can be called up with this software, and new licences can be imported.

DtTS Television

This is an easy-to-use application for displaying TV channels. Any available transponder can be selected from one of the installed DekTec cards and its content will appear on screen quick as a flash. Both window and full-screen mode are available and obviously you can zap up and down the list or call up the required channel directly. Compared to fully-fledged TV applications such as DVB Viewer, this piece of software does not come with additional features like teletext or an EPG. But then again, DtTS Television serves an entirely different purpose.

Professionals have different requirements than your average John Public. One of those prerequisites is reliable operation 24/7. With the

New

USB Recorder & Player

DESING

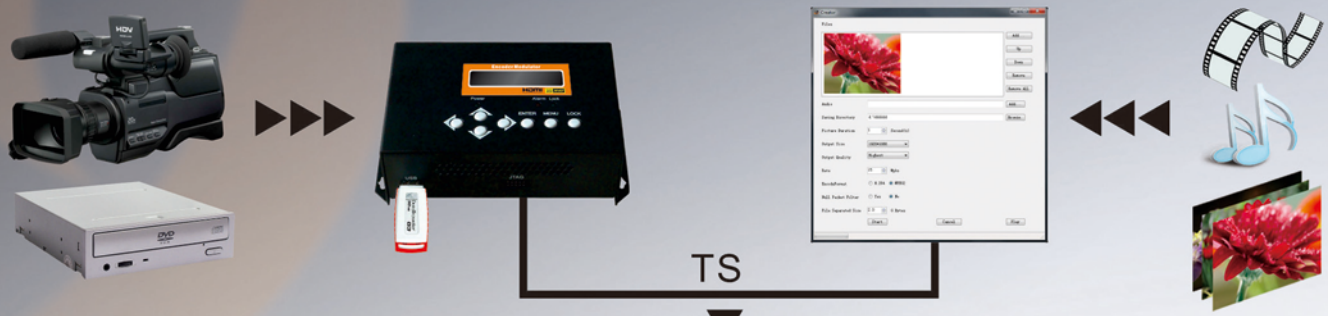
NDS3554 HD to Digital RF Encoder Modulator with USB

New AC3 Audio coding

NDS3556 CVBS SD to Digital RF Encoder Modulator with USB

NDS3556 HD Video to Digital RF Encoder Modulator with USB

NDS3557 USB to Digital RF Modulator



TS Recoder and Save:

NDS355X can encoder the source video to*.ts files and save them through the USB flash drive.

- Connect the signal source to NDS355X and start encoding process.
- Start the record process and save the TS generated to the USB flash drive.

***.ts Video Creation Software**:

Users can also create*.ts videos containing pictures, videos and music with our creator software on a PC and save them into the USB flash drive.

- Drag the files to "Creator" application. Formats supported include:
  Image:JPG, PNG, BMP, GIF
  Audio:MP3, WAV
  Video:WMV, MPG, Mp4, TS, AVI.....
- Start the conversion process to generate*.ts videos

TS Playback:

Insert the USB flash drive with*.ts videos in NDS355X and play back the content in an easy way.

A single video can be up to 2G in size and multi videos can be played on a loop.

USB Flash Drive Specifications Required: • Standard:High Speed 2.0 • File System:FAT32

www.dsdvb.com

DESING

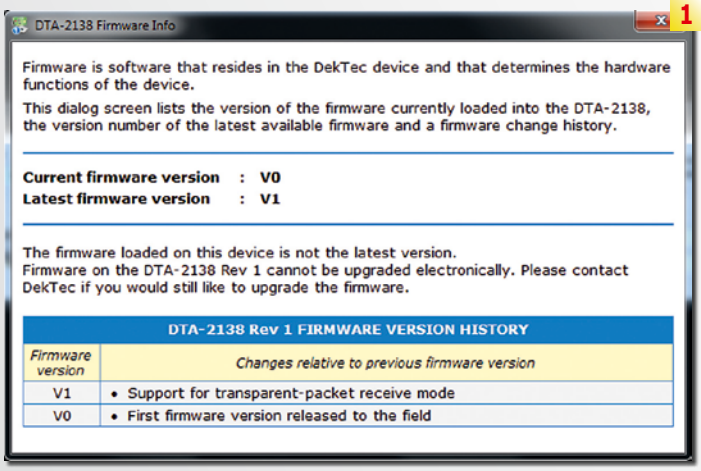
Chengdu Dexin Digital Technology Co.,Ltd

No. 10 adn No. 12 Wuxing Fourth Road, Wuhou District, Chengdu 610045, Sichuan, China
Tel:+86-28-85558928,+86-28-85550524,+86-13882088846 ■ Fax: +86-28-85585255
http://www.dsdvb.com/english ■ E-mail:sunyu@dsdvb.com

DTA-2138 you need not worry about overheating, since the entire card acts as a single solid cooling element. Our test proved that the card does not heat up significantly even under heavy use, which means it can easily be removed and re-installed without causing burns. As a pleasant side effect, electrostatic discharge is also reduced considerably.

If you expect channel lists and different search modes, DtTS Television is not for you. Frequencies need to be entered manually, which is just the way it has to be in professional environments. After all, this application is designed for test scenarios that call for quick and efficient evaluation of specific frequencies without having to first go through a settings editor and channel search.

One of the draw cards of DtTS Television is the fact that you can launch the application any number of times concurrently, even if only a single card is installed in your



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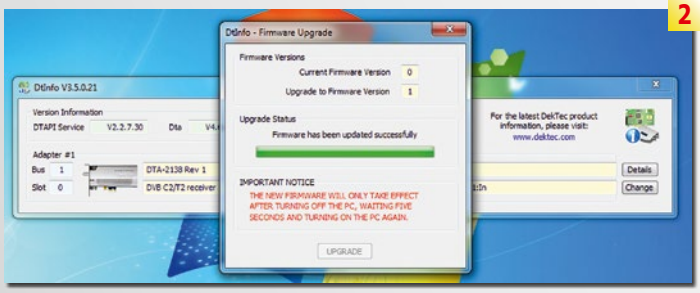


2

1. Just fit the DTA-2138 in an empty PCI Express slot and install the drivers. You don't even have to select between different driver archives, because Dektec offers one single installation to cover all their products. To check if everything is OK, use the free DtInfo utility. In my case DtInfo informed me that a new firmware was available. Clicking on the Info-button reveals this window, showing the changes of the new version. It is nice that DekTec does not force you to update drivers and in some cases DekTec explicitly alerts you which incompatibilities may result with custom software.

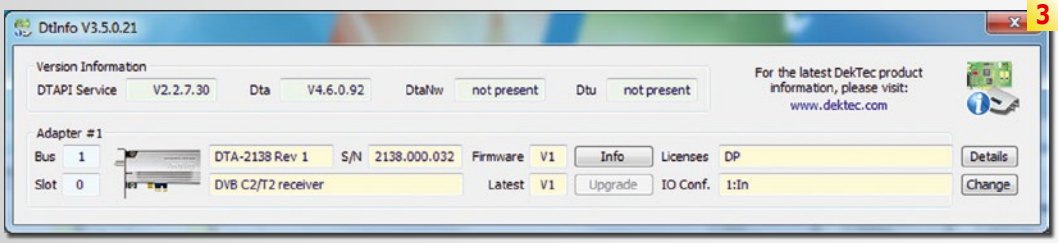
2. Of course I updated the firmware immediately, if not just to see how it works. However, there is not much to tell here: it just worked flawlessly.

3. now DtInfo shows that the computer is fitted with one DTA-2138 Rev 1 card running with the latest firmware release. You can consult and import the software licenses with this software, too.

4. DtTV is DekTec's TV player application. In the upper left corner you select the device (in this case I only have the DTA-2138 installed on my computer) and chose the reception parameters. The toolbar underneath (you can move it wherever you want) allows the selection of the desired channel.

5. DtTV can be started in as many concurrent sessions as you want. The best of it is that different sessions can share the same tuner. This allows you to setup a live TV mosaic. Even better is the fact that I did not notice any slowdown on my test computer, despite using just a Core 2 Quad CPU with 2 GB RAM and no dedicated graphics card.

6. Excerpt from the beginning of an MIB table, which is part of the DtGrabber+ installation. The full MIB table comprises more than 6000 lines of software code and is responsible for defining the functions of the SNMP control software.



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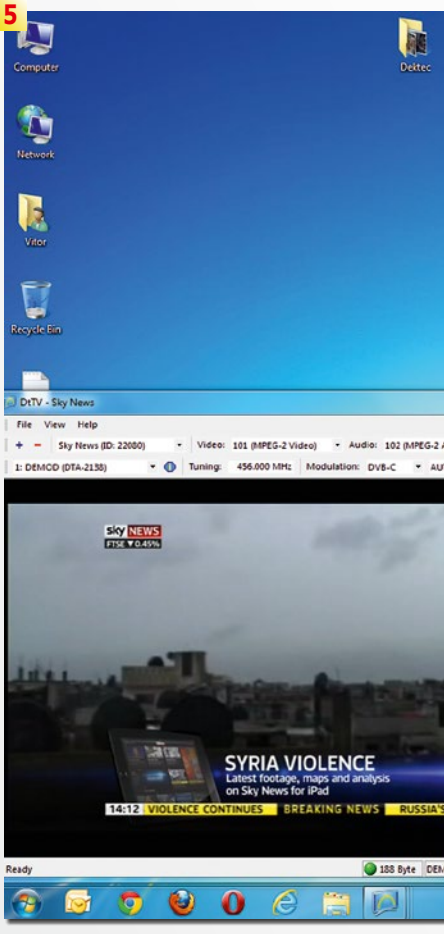


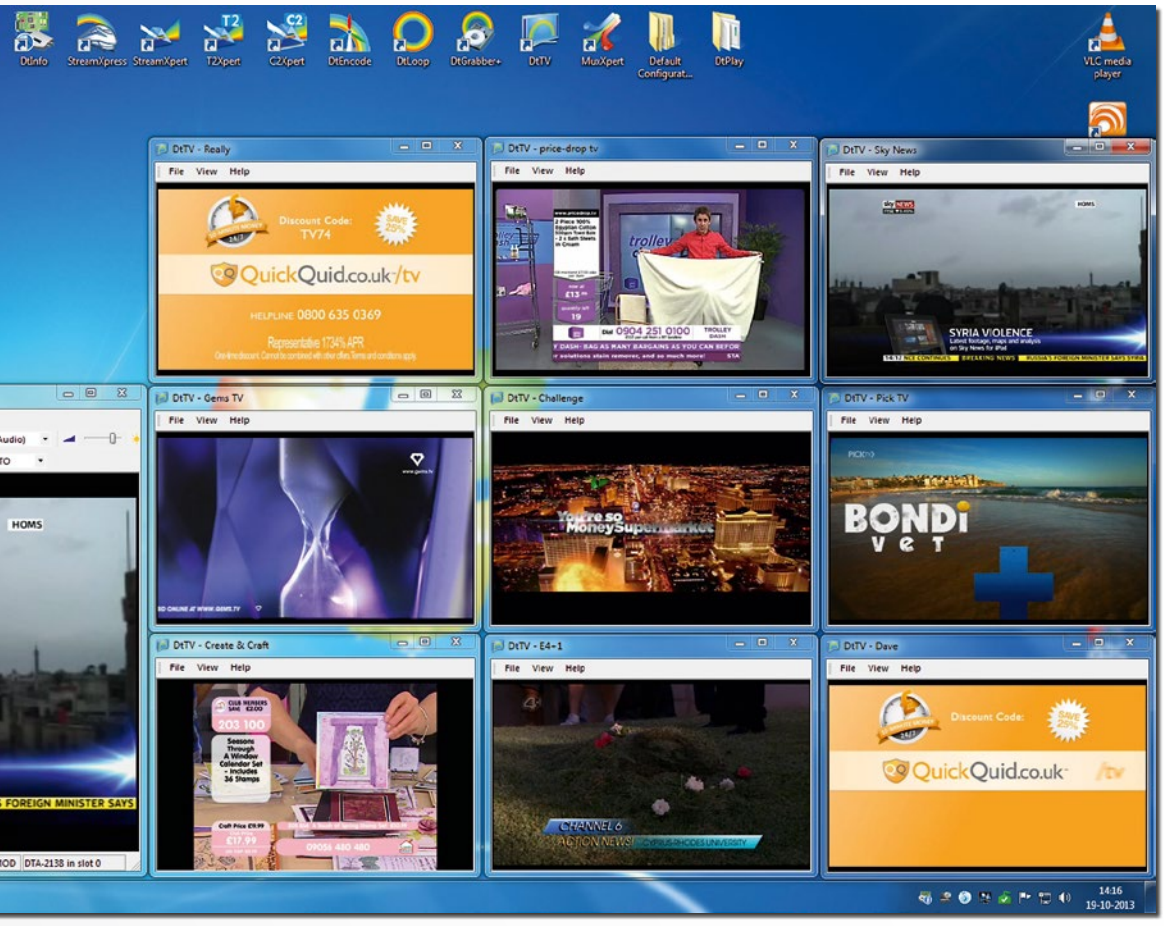
5

PC. Each instance appears in a separate window that does not interfere with others so that an overall impression of different channels on the chosen transponder can be created. This feature even gives you the option of launching the application for each single channel on a transponder, thus creating a live mosaic view. There's only one word for it: brilliant! Additional windows can be enlarged if required and the only limit is your PC's processing power. At any rate, with DtTS Television being a lean and streamlined piece of software and with the DTA-2138 card not requiring CPU capacity for demodulation, you should be able to go a long way before bringing your PC to its knees. To give you an impression of how far you can go: During our test I was able to open up to ten windows with ten live channels using an ageing Intel Core 2 Quad PC with 2 GB of RAM. Talk about efficiency!

6

```
        dtGrPlus OBJECT IDENTIFIER ::= { dektecDigitalVideoBV 4 }

-- #=============================================================================#
-- #                                                                             #
-- # 1st instance of DtGrabberPlus                                               #
-- #                                                                             #
-- #=============================================================================#

        dtGrPlusInst1 OBJECT IDENTIFIER ::= { dtGrPlus 1 }

    -- #=========================================================================#
    -- #                          Traps / Notifications                          #
    -- #=========================================================================#

        dtGrPlusInst1Traps OBJECT IDENTIFIER ::= { dtGrPlusInst1 1 }

            dtGrPlusInst1TrapInfoMessage OBJECT-TYPE
                    SYNTAX      OCTET STRING (SIZE(0..200))
                    MAX-ACCESS      read-only
                    STATUS current
                    DESCRIPTION
                            "Information Notification Message"
                    ::= { dtGrPlusInst1Traps 1 }

            dtGrPlusInst1TrapWarningMessage OBJECT-TYPE
                    SYNTAX  OCTET STRING (SIZE(0..200))
                    MAX-ACCESS  read-only
                    STATUS current
                    DESCRIPTION
                            "Information Warning Message"
                    ::= { dtGrPlusInst1Traps 2 }

            dtGrPlusInst1TrapErrorMessage OBJECT-TYPE
                    SYNTAX  OCTET STRING (SIZE(0..200))
                    MAX-ACCESS  read-only
                    STATUS current
                    DESCRIPTION
                            "Information Error Message"
                    ::= { dtGrPlusInst1Traps 3 }


    -- #=========================================================================#
    -- #                          Objects definitions                            #
    -- #=========================================================================#
```

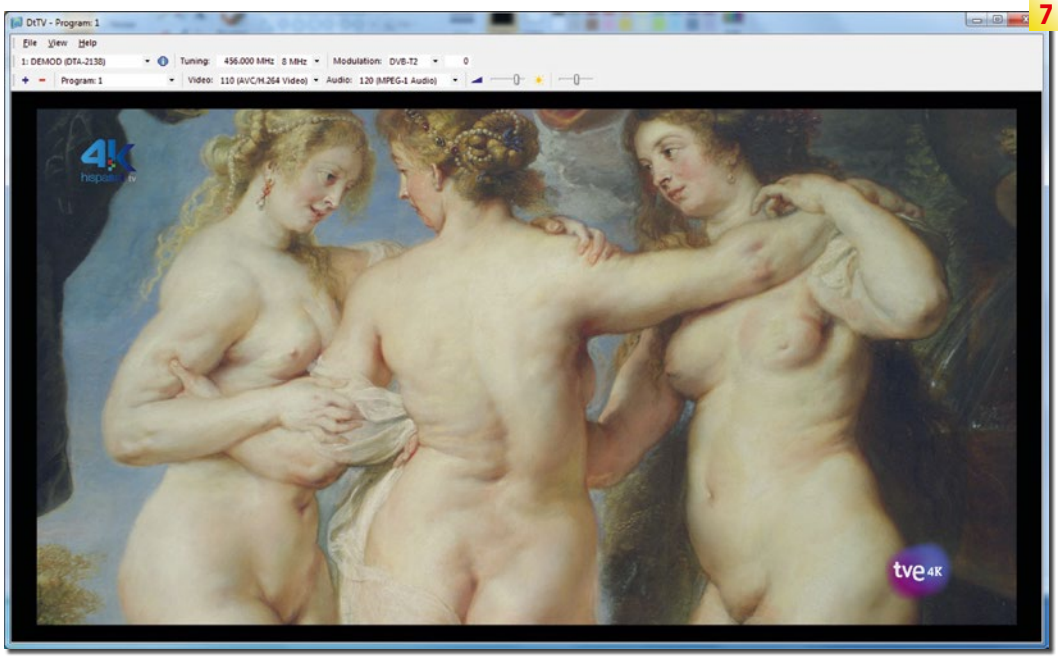
and while I was at it I wanted to check out whether the UltraHD test transponder of HISPASAT (30.0W) could be passed on as a DVB-T2 modulation as well. It is in a situation like this that you thank heavens for DekTec with its many different hardware components that can be shuffled and combined to your heart's content. For my particular job all I had to do is match the new DekTec DTA-2137C card – which features a DVB-S2 receiver with two ASI IN/OUT interfaces that can be freely configured – to the DTU-215 Gold USB modulator. This combination did the trick and modulated the UltraHD transponder from DVB-S2 into DVB-T2. MuxXpert was used on the software side. This is a software multiplexer that can be configured through XML files and allows any combination of input-output stream multiplexing. So what did I get out of all this? Well, nothing less than perfect reception of the UltraHD test channel that has been modulated into a DVB-T2 signal. And the best part? Even my rather weak PC could handle and display the signal flawlessly.



DtGrabber+ Recording

This is your number one choice for recording a transport stream. DtGrabber+ Recording takes the transport stream from any DekTec card that is installed and saves it as a TS file. As an alternative, a network transport stream (IPTV) can be recorded as well. This setup allows to use the DTE-3137 receiver from DekTec, for example, which is an autonomous professional satellite receiver for DVB-S2 that feeds the received transport stream into the network. Thanks to its small size it is wonderfully suited for rack installation in a control cabinet. If you want to find out more about this excellent device please have a read of our test report that was published in TELE-audiovision 11-12/2012.

After I had installed DtGrabber+ Recording on my test computer, the software detected the DTA-2138 card right away and allowed me to modulate the received signal into DVB-C, DVB-C2, DVB-T or DVB-T2. Here, too, we found that the application is not only extremely easy and self-explanatory to use, but also does not require a lot of processing power and therefore hardly affects your PC's resources. After a double-click on the application icon it is ready for use more or less immediately. If you're inclined to assume now that so much ease of use might ultimately affect the range of available



7

7. Taking it to extremes: what you see is Hispasat's (30.0W) UltraHD demo transmission, received with DekTec's DTA-2137C, re-multiplexed with DecTecMuxXpert and modulated with DekTec's DTU-215 Gold. The resolution was 3840x2160.

functions and features DekTec proves us all wrong once more. The application can be fully remote-controlled, offers timer-based recordings and alert messages if something goes wrong.

Professional users, in particular, will look for the SNMP function of DtGrabber+. SNMP is short for Simple Network Management Protocol and since SNMP is an industry standard every SNMP software will be able to control SNMP-enabled devices, irrespective of the manufacturer.

A Management Information Base (MIB) defines all functions of the various devices so that SNMP components can communicate with each other. DekTec offers the DtGrabber+ application complete with an MIB table which is saved into the program directory.

Once that information is imported into whatever control software is being used, DtGrabber+ becomes fully integrated into the existing system.

What's more, not only DtGrabber+ as an individual application joins the existing environment, but also all DekTec hardware components identified by DtGrabber+.

If, for example, DTA-2138 creates an error alert, DtGrabber+ will instantly cause a so-called trap, which means a control message is sent to the SNMP control software via UDP port 162. The control software in turn will show the data package according to the MIB definition or will initiate specific task sequences, depending on the SNMP control software that is used.

This way a text message can be sent to the mobile phone of the technician in charge, for example.

MuxXpert Real-Time Multiplexing

MuxXpert Real-Time Multiplexing is the name of an application that allows multiplexing and forwarding any input signal. The feed signal may originate from the tuner or the ASI interface of a DekTec receiver and is then either saved onto the hard disk or provided via IPTV, ASI or a DekTec modulator. The sky's the limit when it comes to the number of combination options, which is why DekTec has taken a somewhat unconventional approach when it comes to working with the application: Configuration takes place with the help of XML files, which can be edited and adjusted with any XML editor. If you now want to create your own XML file from scratch with all required configuration parameters, you first have to dig a little deeper and educate yourself about different ways of creating clearly-structured and purposeful XML files. Thankfully, DekTec provides default configuration files for all of its combination options, and if need be those default files can be edited and adjusted to meet specific demands.

The main benefits of that approach are that it firstly takes the configuration phase offline and secondly gives users virtually endless possibilities for creating their own

From left to right: the DekTec DTU-215 VHF/UHF Modulator to generate HFsignals from 47 MHz to 1000 MHz in any conceivable digital modulation, the DekTec DTE-3137 rack-mounted DVB-S2 to IP and ASI internet receiver - ideal to forward DVB-S2 transponders over network, the DekTec DTA2137C DVB-S2 satellite receiver card with dual LNB inputs and two ASI ports (can be configured as input or output) and finally at the far right the DekTec DTA 2138 DVB-T2/C2 receiver card.

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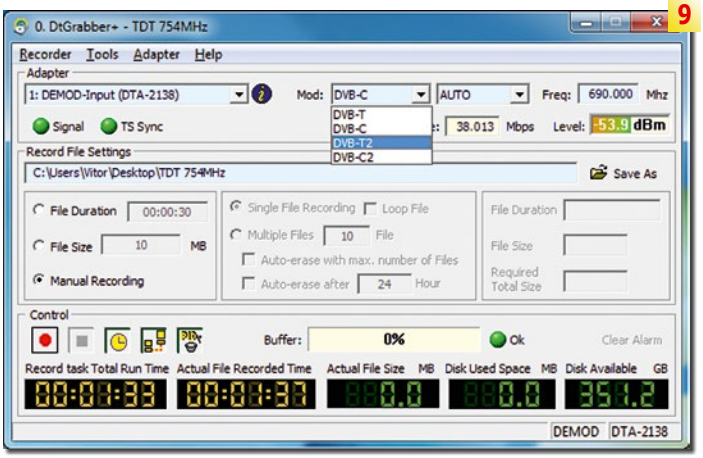

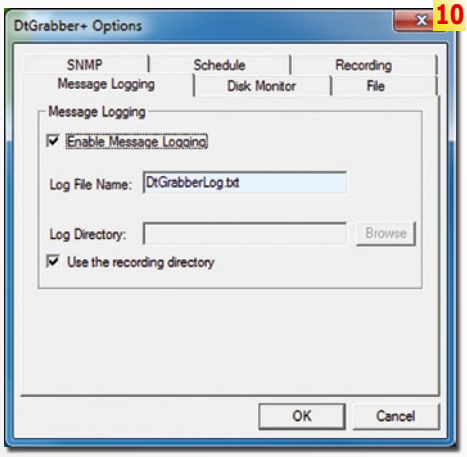

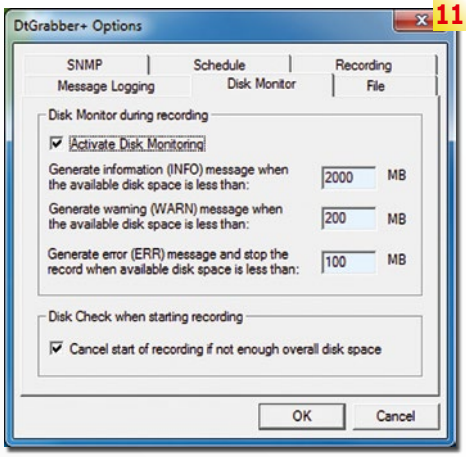

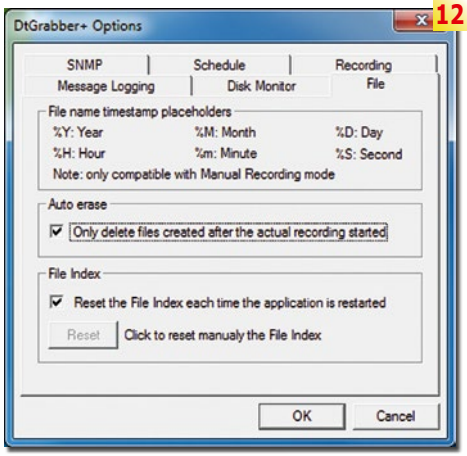

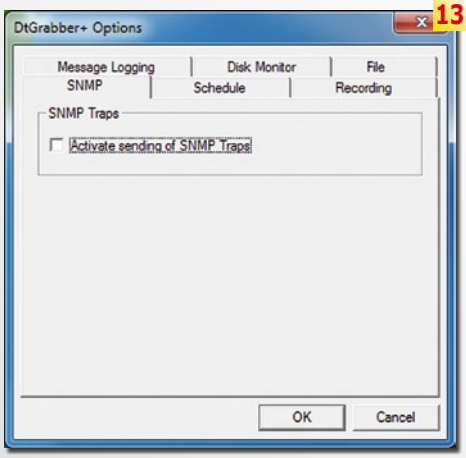

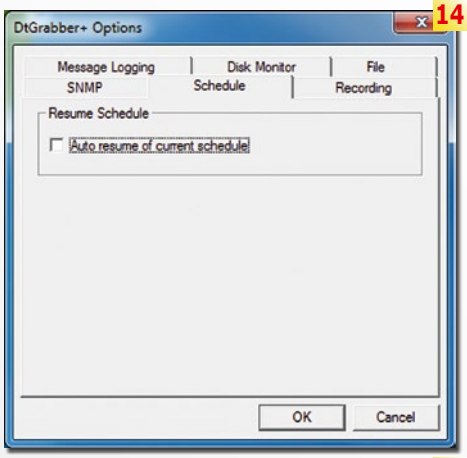

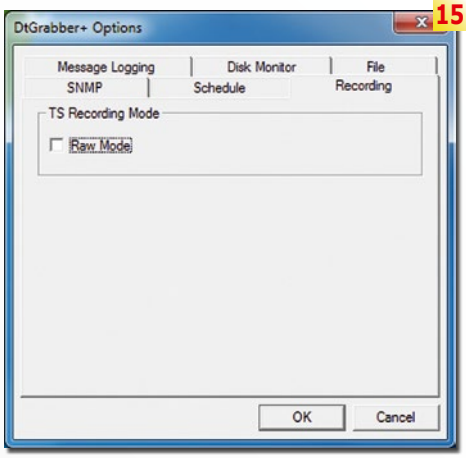

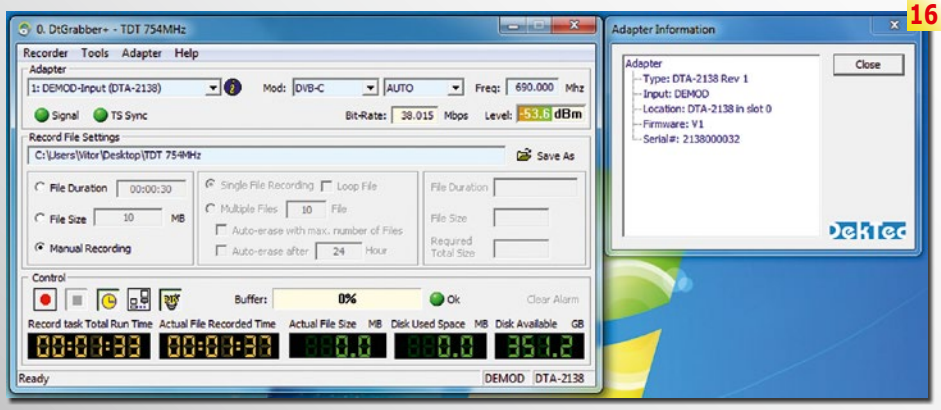

8. DtGrabber+ is a tool to record Transport Streams. It does not matter where those streams come from: just select the appropriate adapter or IP address and you're set to go. In this case, the selection is obvious: the DTA-2138 is the selected input adapter.

9. Recording can be started and stopped manually, by means of a timer or remotely. For the currently active adapter, you can select between available modulations and then set the reception frequency. Most other reception parameters are set automatically.

10. For professionals, logging is important to backtrack what went wrong in case of an error. DtGrabber+ offers such logging into simple text files, which is the best format, as it can be easily processed further on.

11. When it comes to record Transport Streams to hard disk you have to be careful to not fill the hard disk up to 100%, as this could cause severe system problems. Again, DtGrabber+ offers comprehensive functionality to alert before such a situation happens.

12. Files can be created with automatic naming and you may automatically erase old files.

13. IT professionals never sleep and use smartphones, which are always connected to the internet. It makes all sense that you can send SNMP traps, if something goes wrong.

14. Here you configure if you want to resume a recording schedule automatically.

15. Should the Transport Streams be stored in raw mode? This will write all empty PIDs with lots of &H00 bytes, increasing file size. You normally would skip those PIDs, but when you want to have a 1:1 recording of the output, the check box needs to be validated.

16. Is the hardware working? Just call the Adapter Information window! Yes all is working fine.

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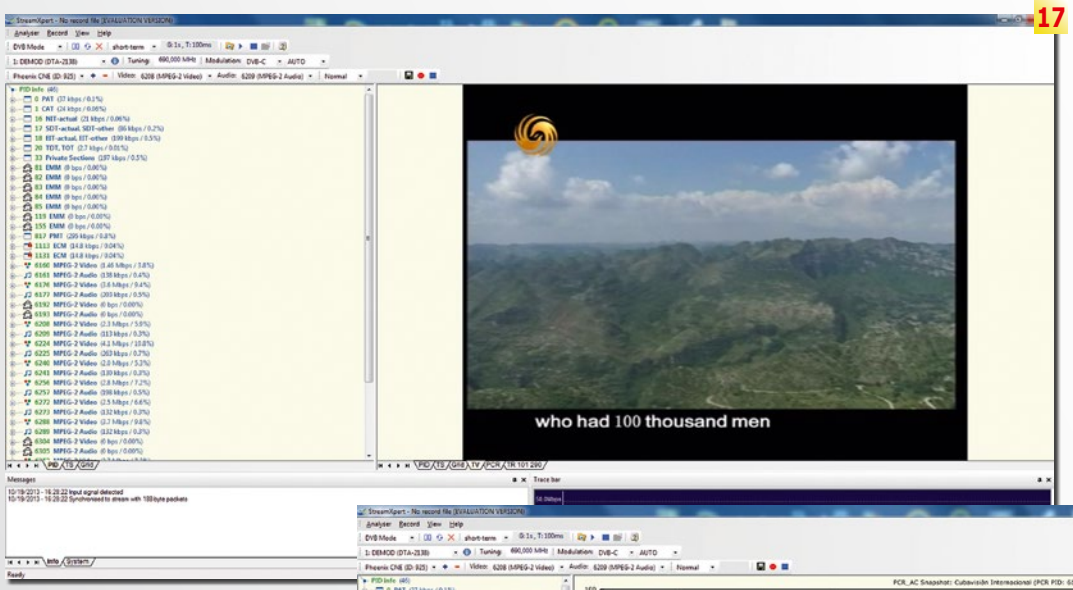

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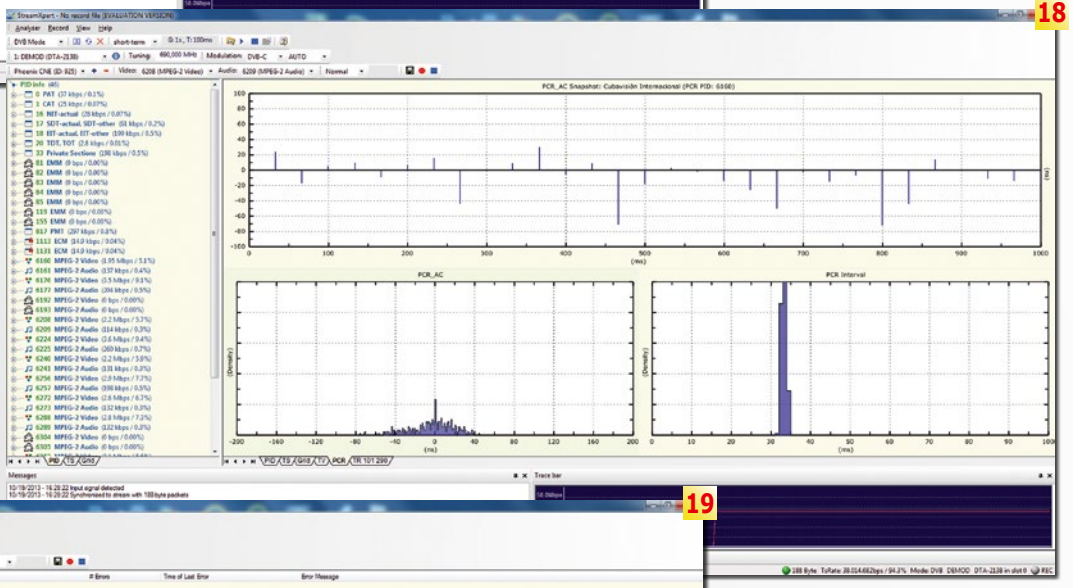

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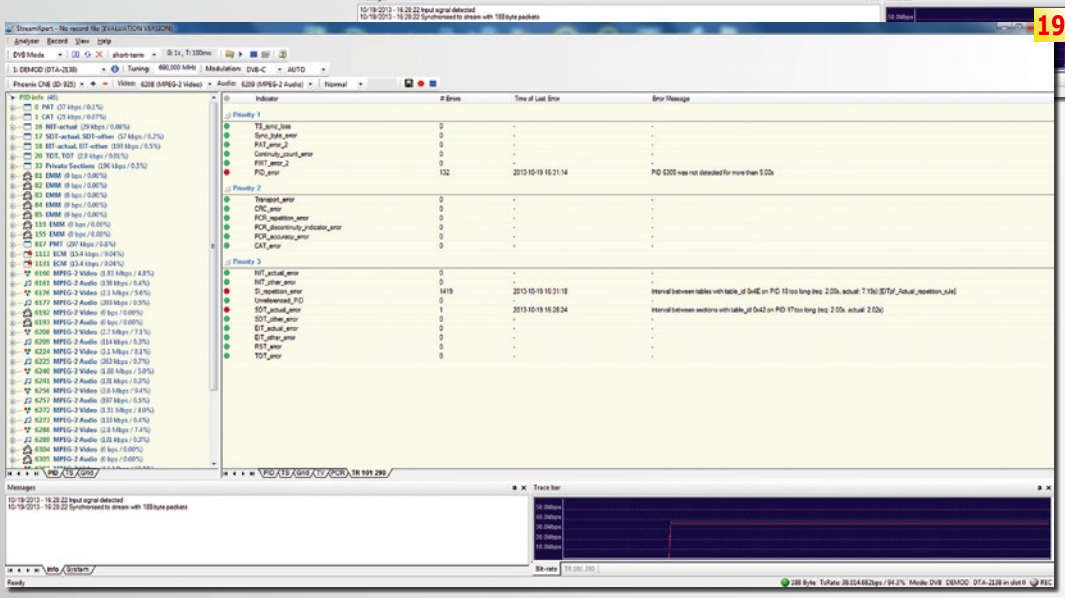


19

17. StreamXpert is a full TV analyzer software, which allows to simultaneously display the live picture. The window is neatly organized and gives quick access to the huge amount of data contained within a Transport Stream.

18. PCR stands for Program Clock Reference and is used to keep i.e. the audio and video data synchronized. It should be present at every 100 ms and its jitter (deviation from this time interval) should be within +/- 500 ns. Monitoring this parameter can be crucial to detect jitter introduced by receivers, multiplexers, modulators, etc.

19. TR 101 290 represents the technical report called "Digital Video Broadcasting; Measurement guidelines for DVB systems" by JTC/EBU/CENELEC/ETSI. This tab allows to overview the most important parameters at one glance.

20. Dissecting the Transport Stream...

21. The window can be fully customized. Just drag each element to where you want it.

setup environment. In addition, it is possible to build up a whole library of XML configuration files for different jobs. Need an example? Just imagine you have both a DTA-2138 (DVB-C, DVB-C2, DVB-T and DVB-T2) and a DTA-2137C (DVB-S, DVB-S2 and ASI-IN/OUT). MuxXpert Real-Time Multiplexing allows you to quickly and easily compile an XML configuration file for multiplexing a DVB-T2 channel with a DVB-S2 channel and for providing that newly created stream via the ASI OUT interface while at the same time saving the stream on the heard disk for logging and monitoring purposes.

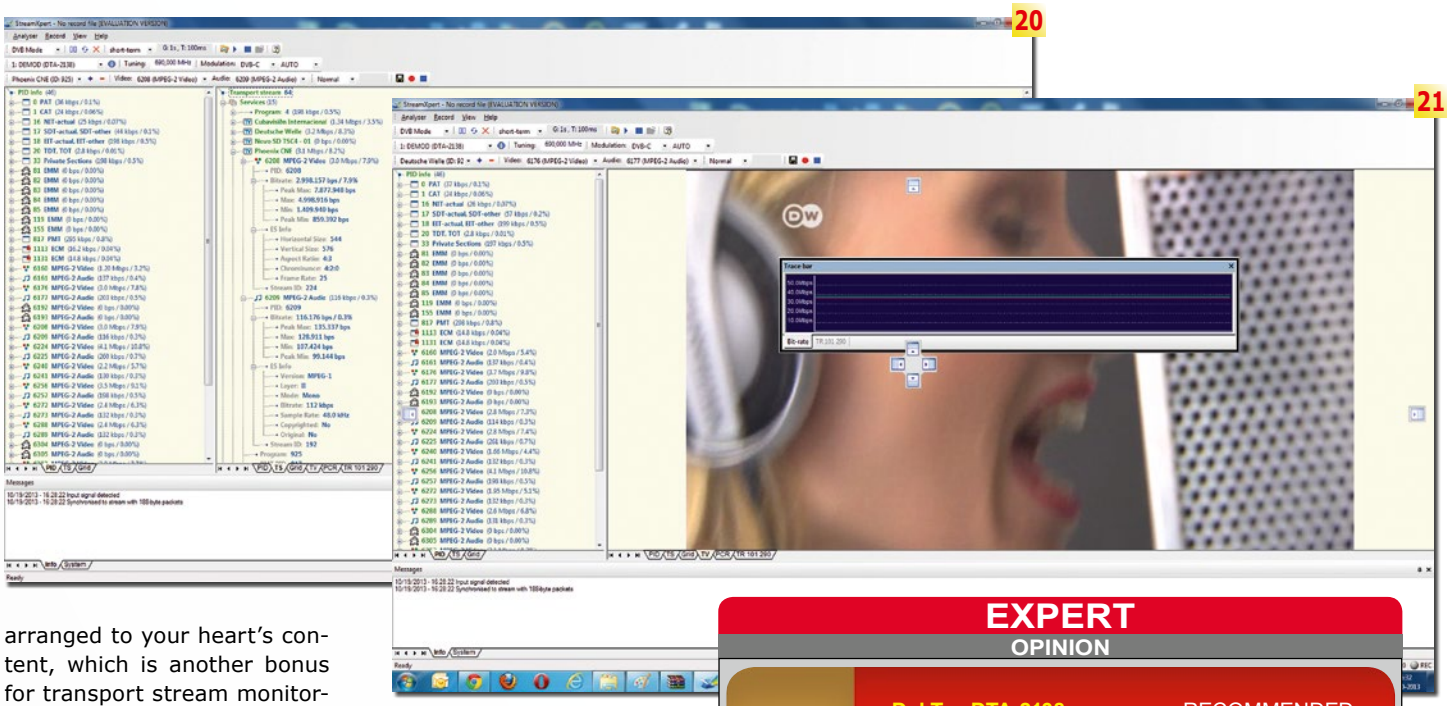
StreamXpert TS Analyser

Apart from all other possibilities, the DTA-2138 is also perfectly suited for analysing transport streams. To this end, DekTec provides the StreamXpert TS Analyser application. Once again, this piece of software is not designed for the DTA-2138 exclusively, but will work with all other DekTec products that can provide a transport stream.

StreamXpert TS Analyser instantly detects the DTA-2138, which can then be selected as input adapter. Once that is taken care of, all you need to do is select the desired modulation type and enter the specific frequency, much like with the other applications mentioned above. All remaining parameters are adjusted automatically so that the transport stream becomes available in next to no time at all.

If required, all transponder stream parameters can be displayed, which is why the application window is divided into two main sections. In the left section you can choose between PID, TS or grid presentation, while the right section features tabs for PID, TS, grid, TV, PCR and TR 101 290 display. Any combination of tabs can be shown side by side, which makes for a very streamlined and meaningful arrangement with all required information available at a single glance.

The current bit rate is simultaneously shown as a graph in real time. Being a Windows-based application, all window sections can be moved and



arranged to your heart's content, which is another bonus for transport stream monitoring and analysis.

Conclusion

The DTA-2138 is one more link in DekTec's impressive product range. With this new addition it is now possible to feed DVB-C2 and DVB-T2 signals into a DekTec system. During our test we never encountered any problems or unexpected behaviour of hardware or software components. Even when we tried to push the limits with very weak signals, reception remained reliable. What impressed us most was the fact that even with the HF input signal being switched off and on again frequently, the DTA-2138 card apparently could not care less and just kept working. There was not a single software freeze throughout our entire test and we applaud DekTec for such an achievement, which is truly out of the ordinary. We have had other TV applications before that needed to be re-launched numerous times until the card did not react any longer and the operating system had to be re-started to get everything going again. Many TV cards simply cannot handle HF signal interruptions. The DTA-2138 definitely is not one of them, since it performed just as intended and never required a system re-start.

Thumbs up for DekTec and its latest product.

EXPERT OPINION

+

- **Very robust: no crashes during whole test period, despite severe test conditions**
- **Little CPU load caused due to Hardware-based Demodulation**
- **No overheating**
- **Card provides RF level, MER, BER and monitoring of L1 parameters for measurements**
- **Free programming interface (API) provided by DekTec**

–

- **None**

DekTec Products

DekTec has a multitude of products in store for testing receivers and digital TV components at large. Two of those products are the DTU-215 modulator and DTE-3137 satellite receiver. Both devices were featured in test reports published in previous issues of TELE-audiovision:

http://www.TELE-audiovision.com/TELE-satellite-1201/eng/dektec.pdf

http://www.TELE-audiovision.com/TELE-satellite-1211/eng/dektec.pdf

Антенна Yagi U-PA UHF

- ***очень хорошее исполнение***
- ***очень широкий луч***
- ***идеальна для локального приема***
- ***вполне сравнима по своим свойствам с гораздо большей внешней антенной***
- ***удобный для дома дизайн***

Small But Surprisingly Efficient

Terrestrial TV does not offer as wide a channel choice as satellite TV, but it has other strong points, namely in most countries among the terrestrial channels you can find the local tv channels providing information on what is going on in your neighborhood. Another strong point is that setting up a terrestrial antenna can be a simple and easy-to-do task.

"Can be" does not mean "always is". If you want to install a multi-element yagi antenna with complex reflectors your antenna setup will become a rather complex one. That's why many people prefer simpler solutions and small compact TV antennas are becoming more popular. Generally, they cannot offer as good performance as a full size multi-element yagis but if you live not very far from the TV transmitters they can ensure a quite solid reception while being very simple in installation. And, if nicely designed, they can be more esthetic than yagis.

The Yagi U-PA fits all of the above. Its size is quite small: 35 x 13.5 x 12.5 cm and it is very light – ca. 0.6 kg. It can be used either indoors or outdoors. In the latter case you simply attach it to a pole with two butterfly nuts, which are part of the package. You do not need to use any further tools.

Its double panel radiators are completely hidden in a plastic enclosure so in fact the antenna does not look even like an antenna. That is especially nice when you opt to use it indoors rather than outdoors. The antenna is available in white or black color.

And what about the technical specifications of the Yagi U-PA? The manufacturer promises a reasonably wide frequency range of 470 ~ 770 MHz (UHF channel 13 through 69) and a good gain: 4 ~ 5 dB. Its Half Power Beam Width (HPBW) is very large: 76°. This means that when it receives a signal located +/-38° off its center line the antenna output will be attenuated only by 3 dB compared to the signal coming directly from the front. Thanks to this uncommon feature this antenna in many cases will be suitable to receive not just one but two or more TV transmitters that are located in a similar direction from your home. And this means, of course, more channels to watch, without moving the antenna to another direction.

The Yagi U-PA is not symmetrical – it has a front and a back. If you turn it around (180°) it will attenuate the signal by 9-12 dB. In this aspect it is similar to a multi element yagis.

Speaking of multi element yagis: we decided to use one as our reference antenna for comparison. Of course this big yagi had much more superior parameter specifications. Its gain was 9 ~16.5 dB and thus 4 ~ 12.5 dB better than the Yagi U-PA. We decided to measure both antennas to check if the difference was not greater than our theoretical calculations.

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Transmitter Frequency [MHz]	561	634	666
U-PA Antenna Output Power [dBµV]	57	55.2	50.4
Multi-element Yagi Output Power [dBµV]	60.5	59.8	56.9

Table 1: Antenna Measurements - Gain

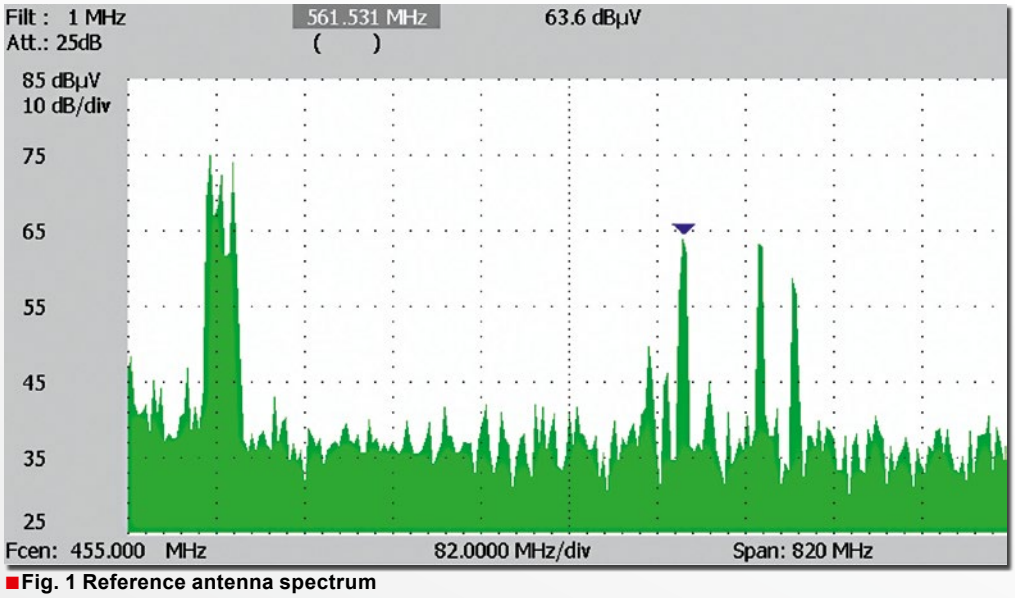

Fig. 1 Reference antenna spectrum

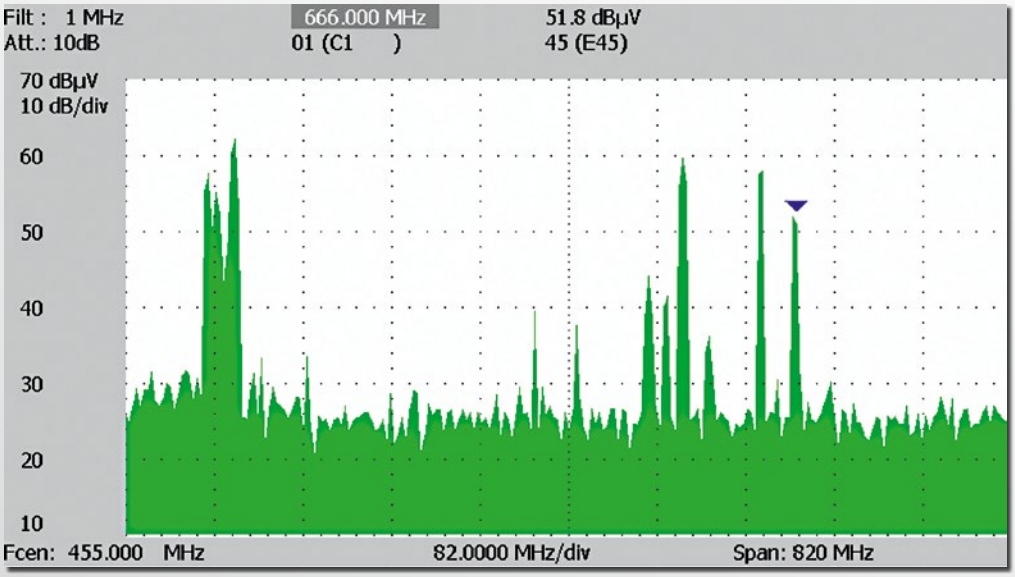

Fig. 2 Yagi U-PA antenna spectrum

Transmitter Frequency [MHz]	561	634	666
U-PA Antenna MER [dB]	31.8	31.9	25.4
Multi-element Yagi MER [dB]	33.2	32.7	31

Table 2: Antenna Measurements - Quality

As can be seen in Table 1, the difference in antenna gain was from 3.5 to 6.5 dB. This means much less than what we expected from the specifications. This point clearly goes to the Yagi U-PA!

Then we observed the full spectrum at the output of the Yagi U-PA and the output of our reference multi element yagi. As you can see in the pictures, the difference is indeed surprisingly small.

Please note: at the left hand side of the picture you can see the VHF radio band. None of these antennas is suitable for the reception of this band – so the difference between them does not matter. What counts are the three peaks in the right hand side of the spectrum which are 561, 634 and 666 MHz, representing the terrestrial UHF transmitters available at our test location. It is clearly visible in the screen shots that the difference between the antennas is just a few decibels, matching the results of the channel power measurements we did before.

Naturally, if the signal at the antenna output is weaker, than its separation from noise decreases. We measured MER for both antennas to evaluate quality of the output signals.

MER was almost equally good for the YAGI U-PA as for our much bigger reference antenna for 561 and 634 MHz. Only for the third lower power transmitter at 666 MHz we noticed a deterioration of the signal quality. However, it still had almost 4 dB (3.9 dB) noise margin. So, even in worse weather conditions you should not be afraid of loosing the service.

To sum it up, the Yagi U-PA performed very well for its class. If you receive a signal from typical local TV transmitter you can expect solid reception within a distance of 30 km or so around the transmitter site. If you put the antenna indoors the practical range will decrease to 20 ~ 25 km.

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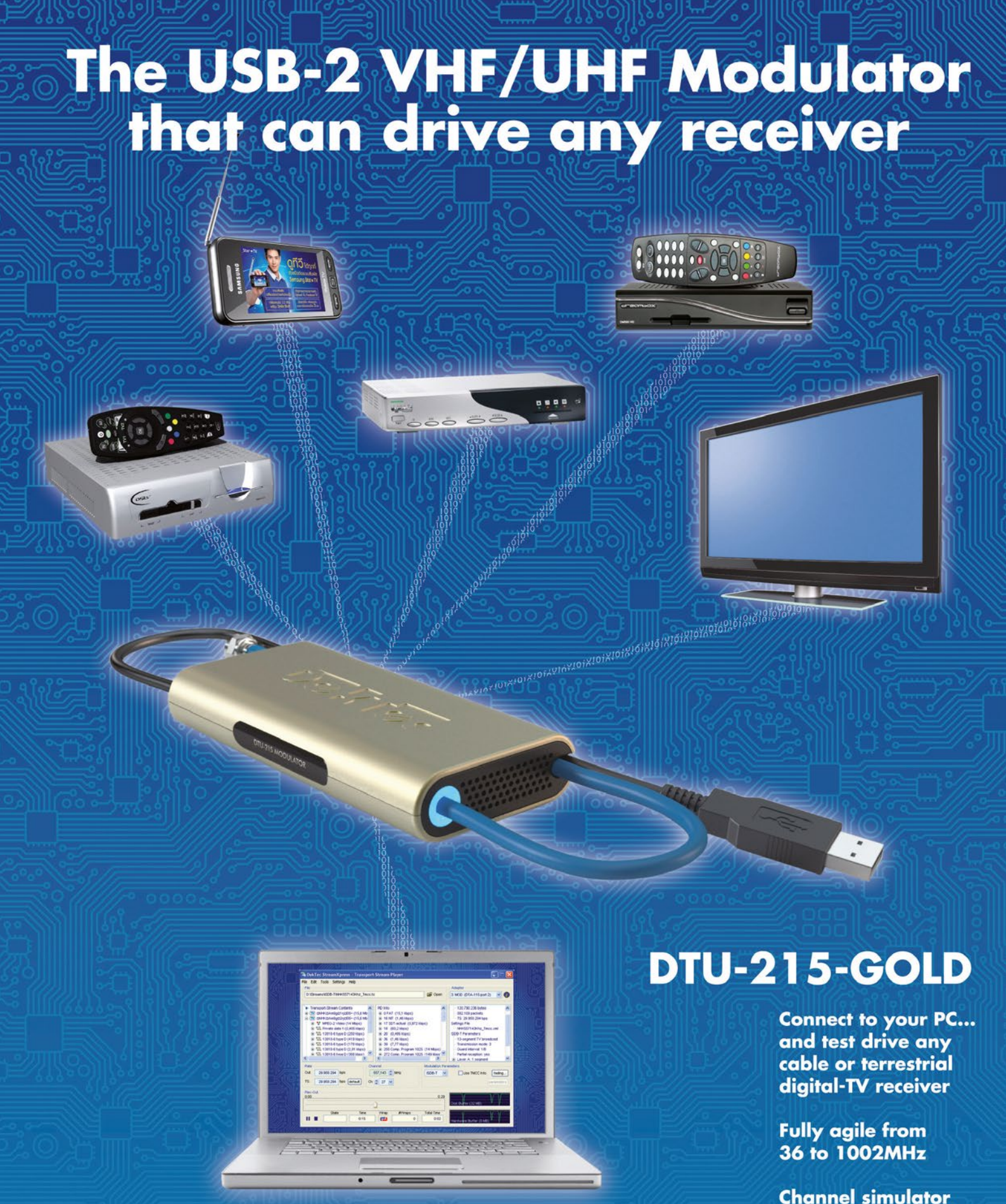

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EXPERT OPINION

Yagi U-PA
UHF Terrestrial Antenna

RECOMMENDED PRODUCT BY

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- **Small compact size and weight**
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- **Large HPBW allowing reception of a few transmitters at different azimuths**
- **Surprisingly good signal gain despite its small dimensions**

–
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Function	DVB T & DVD Player Receiver
DVB T2/LAN	— / —
PVR	—
S-Video/HDMI	— / •
Scart/Digital Audio	— / —

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Panodic DVD320
Perfect companion for watching terrestrial TV and content on discs and external storage media.

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

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/14/03/panodic

Read TELE-audiovision Test Report

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

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Skyworth HS1H014
Easy to use receiver for the whole family

eco friendly 0.62 power factor
Energy Efficiency Rating
Tested by TELE-audiovision

TELE-audiovision International Magazine

Expert Opinion

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

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AMIKO MINI HD
Perfect successful receiver in small format

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Expert Opinion

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

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

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Expert Opinion

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Manufacturer	Gotech
Website	www.gotechcn.com
Function	DVB S2 & ISDB-Tb 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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MKTech IS1-19HD
Well equipped for Satellite and local TV in South America

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Energy Efficiency Rating eco friendly 0.59 power factor tested by TELE-audiovision

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	— / —

INNOVATION TELE audiovision AWARD 07-08/2013

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

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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	• / •

TELE audiovision AWARD 07-08/2013

MKTechHD
Fully featured Mini Scart Receiver with HDTV via HDMI

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

MKTECH

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

TELE audiovision AWARD 05-06/2013

Changhong Smartcenter
Very successful hybrid receiver for digital TV

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CHANGHONG

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

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

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

TELE audiovision AWARD 03-04/2013

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

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Expert Opinion

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

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

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TELE audiovision AWARD 01-02/2013

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

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

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

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

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INNOVATION TELE audiovision AWARD 11-12/2012

Jiuzhou DTP2100
Cutting-edge receiver thanks to Android operating system

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

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

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

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

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

TELE audiovision AWARD 09-10/2012

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

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

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

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

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

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

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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 FFT display

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

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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

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

TELE audiovision AWARD 09-10/2013

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

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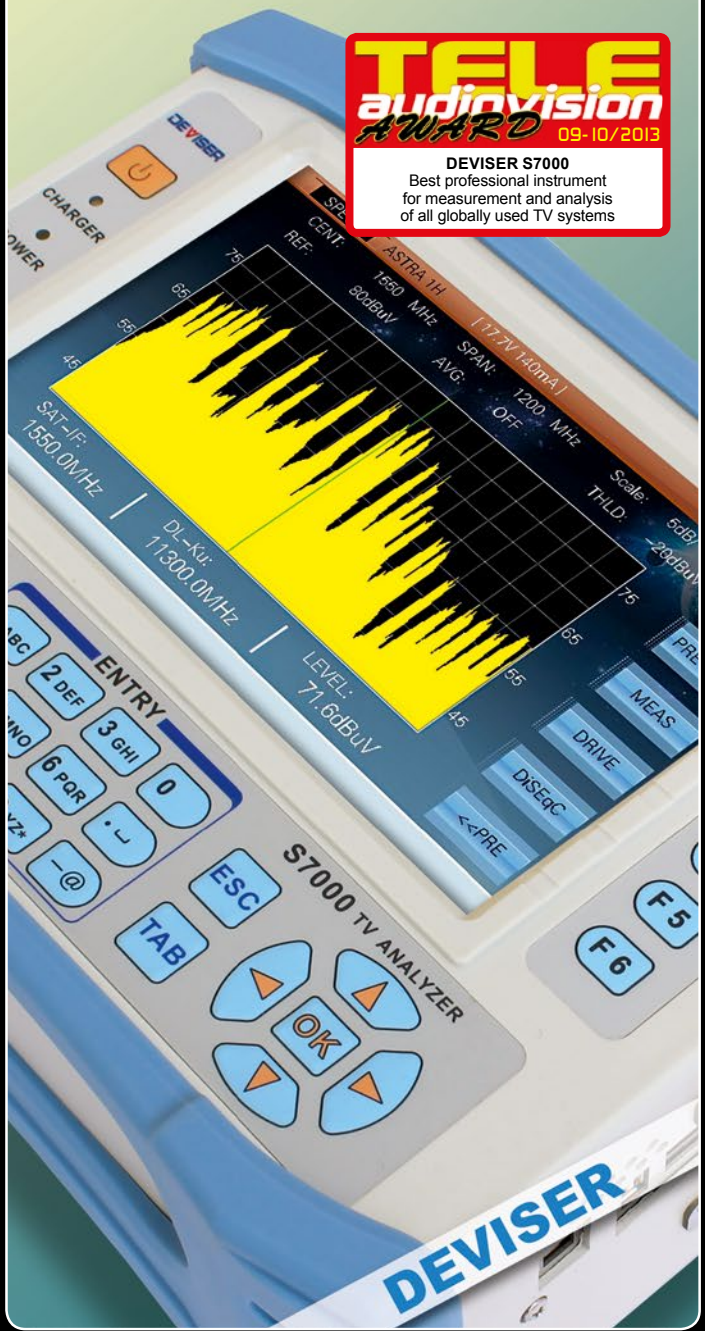
Manufacturer	Tianjin Deviser Electronics Instrument
Website	www.devisertek.com
Function	Professional TV Signal Anaylzer
Frequency Range	5 - 1050 MHz (TV); 950-2150 MHz (Satellite)
Video Output	HDMI
Built-in Monitor	7" TFT LCD, 800×480 pixels



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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

TELE audiovision AWARD 05-06/2013

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

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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

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

SATLINK

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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

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

HORIZON

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Frequency Range	-43 dBm ~ +25 dBm
Video Output	—
Built-in Monitor	LCD display

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Manufacturer	SPAUN Electronic
Website	www.spaun.com
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Frequency Range	950-2150 MHz
Video Output	—
Built-in Monitor	4.3" TFT LCD display (16:9)

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Function	HDTV PVR Satellite Receiver with Internet Media Center
DVB S2/LAN	— / •
PVR	•
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
S-Video/HDMI	— / •
Scart/Digital Audio	— / •

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

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

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

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

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

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

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

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

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Expert Opinion

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

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

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Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report


Manufacturer AZBox
Website www.azbox.com
Function HDTV DVB S DVB S2 Miniature HDTV Linux Receiver with Multimedia Features
DVB S2/LAN • / •
Channel Memory unlimited
DiSEqC 1.0 / 1.1 / 1.2 / 1.3 / USALS
S-Video/HDMI — / •
Scart/Digital Audio — / •
TELE audiovision AWARD 09-10/2012
AZBox mini ME
Excellent mini-receiver with Network features - ideal for a home network
TELE-audiovision International Magazine
Expert Opinion
www.TELE-audiovision.com/12/09/azbox-mini-me
Read TELE-audiovision Test Report
AZBOX mini me
ANT IN
LOOP
S/PDIF
LAN
HDMI
Recovery
USB
e-SATA
YPbPr
Normal Boot
A/V
BRAND AZBOX
MODEL miniMe
DISTRIBUTOR OpenSAT Lda.
Energy Efficiency Rating
eco friendly
0.57
Power factor
tested by TELE-audiovision
AZBOX

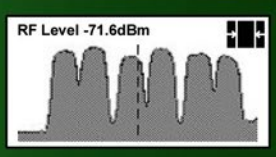

Manufacturer Logitech
Website www.logitech.com
Function IPTV Receiver
TELE-audiovision International Magazine
Expert Opinion
www.TELE-audiovision.com/12/03/googletv
Read TELE-audiovision Test Report
HDMI IN
IR Blasters
HDMI OUT
SPDIF
Power
LOGITECH

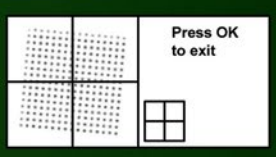
HORIZON

For a reliable solution!

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

Introducing the HD-CM+





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

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

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

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

Phone:
+44 (0)1279 417 005

Email:
sales@horizonhge.com

www.horizonhge.com

AWARD WINNING

21ST CENTURY

THE BEST CABLE TV EQUIPMENT OF

这些是获得最高奖的产品

Manufacturer	DekTec
Website	www.dektec.com
Model	DTA-2138
Function	Professional DVB-C2/DVB-T2 card for PCI Express
Frequency range	42 - 880 MHz
Input sensitivity	-90 ... -20dBm
Transmission Standards	DVB-C2, DVB-T2, DVB-C, DVB-T
Bandwidth	5/6/7/8/10MHz

TELE-audiovision International Magazine

Expert Opinion

www.TELE-audiovision.com/14/03/dektec

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TELE audiovision AWARD 03-04/2014

DekTec DTA-2138
Ideal PC card for professional longterm analyzing of digital tv

DEKTEC

Manufacturer	macab
Website	www.macab.tv
Model	Macab Catline TVB-02
Function	TV to RJ-45 filter with a built in adjustable, high performance amplifier with equalizer
Frequency range	47–862 MHz
Flatness	±0,75 dB
Impedance	Input: 75 Ohm; Output: 100 Ohm
Gain (47-860MHz)	35 dB (max)
Noise	<8 dB
Output level	122 dBµV (DIN45004B); 107 dBµV (42Ch CENELEC)
Connectors	Input: F-female; Outputs: RJ-45 female

TELE-audiovision International Magazine

Expert Opinion

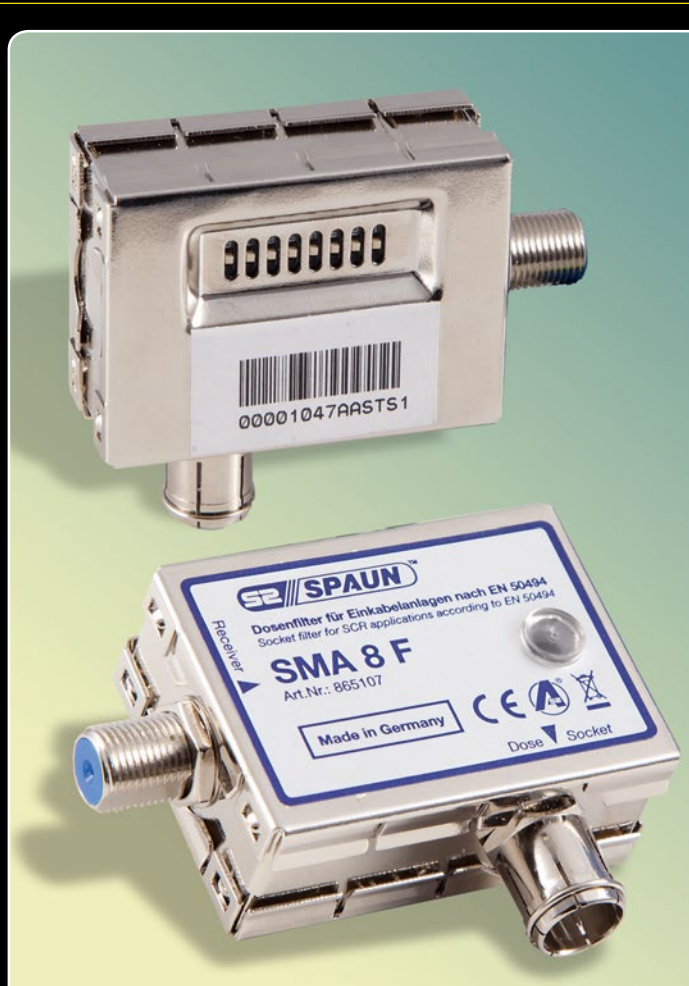
www.TELE-audiovision.com/14/01/macab

Read TELE-audiovision Test Report

INNOVATION TELE audiovision AWARD 01-02/2014

Macab Catline TVB-02
Clever solution to use network cables to distribute TV signals

MACAB



TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

Manufacturer	Spaun
Website	www.spaun.com
Model	SPAUN SMA 8 F
Function	Filter for SCR Distribution System
Inputs/Outputs	1/1
Through loss	1 dB
Ambient temperature	-20 ... +50 °C
Dimension (mm)	61 x 49 x 19

TELE audiovision AWARD 01-02/2014

SPAUN SMA 8 F
Enables the creation of an error-tolerant SCR distribution system

SPAUN

Manufacturer	Perfect Vision
Website	www.perfect-vision.com
Model	PV6-PV, PV6UE-UM, PV6UE-05, PV6U-EUR
Function	F Connectors for Coax Cable
Model	PV100
Function	Durable Hand Compressor for Standard 21.0mm Connectors
Model	VT200
Function	Professional Compression tool: can be used with series 59, 6, 7 and 11 coaxial cable as well as 320QR mini hard line cable

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

TELE audiovision AWARD 01-02/2014

F Connectors for Coax Cable
Ideal solution for perfect coax cable connections

PERFECTVISION

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

TELE-audiovision International Magazine

Expert Opinion

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

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TELE audiovision AWARD 11-12/2013

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

WORK MICROWAVE

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

TELE audiovision AWARD 01-02/2013

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

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 11-12/2012

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

DEKTEC

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

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

TELE audiovision AWARD 09-10/2012

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

SPAUN

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

TELE-audiovision International Magazine

Expert Opinion

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

Read TELE-audiovision Test Report

TELE audiovision AWARD 06-07-08/2012

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

GLOBAL INVACOM

TELE audiovision AWARD 06-07-08/2012

SPAUN BluBox 16
Great leap forward in headend technology

TELE-audiovision International Magazine

Expert Opinion

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

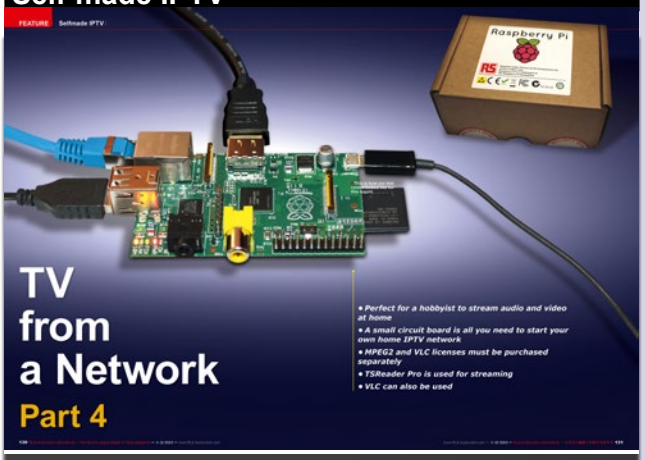
Read TELE-audiovision Test Report

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

SPAUN

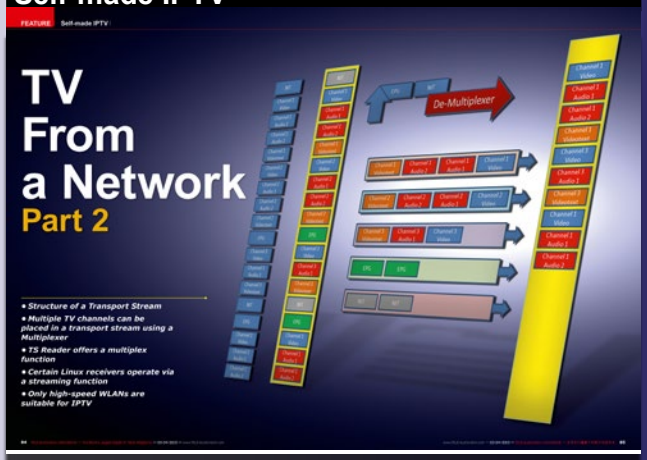
Take Advantage

Self-made IPTV



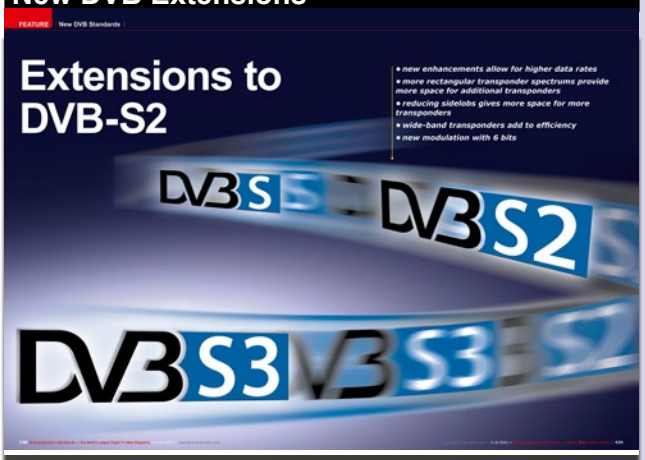
www.TELE-audiovision.com/TELE-audiovision-1311/eng/feature-satip4.pdf

Self-made IPTV



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

New DVB Extensions

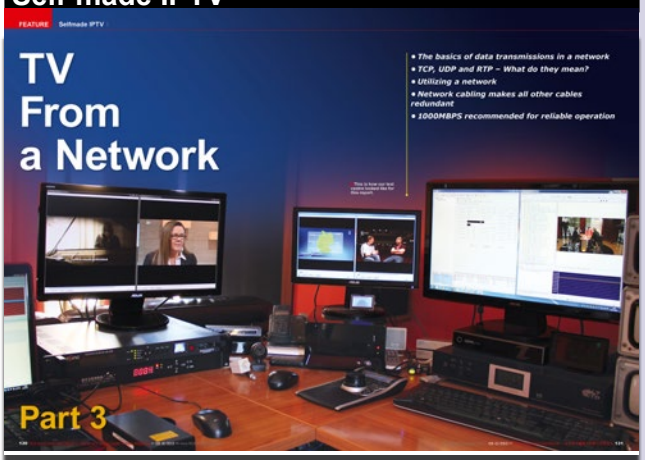


www.TELE-audiovision.com/TELE-audiovision-1311/eng/feature-dvbs3.pdf

Ultra High Definition

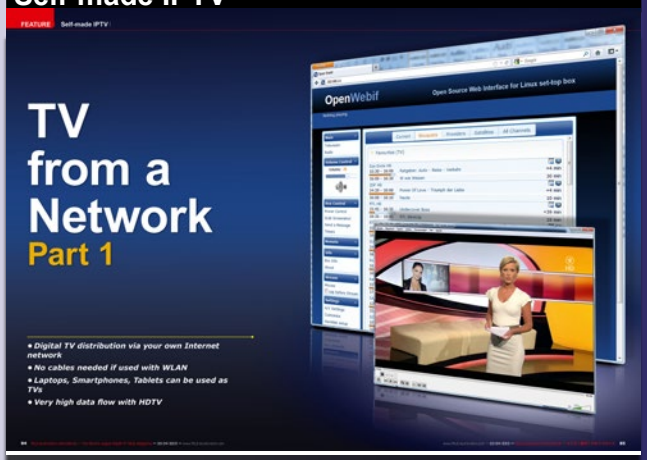
www.TELE-audiovision.com/TELE-audiovision-1307/eng/feature-hevc.pdf

Self-made IPTV



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

Self-made IPTV

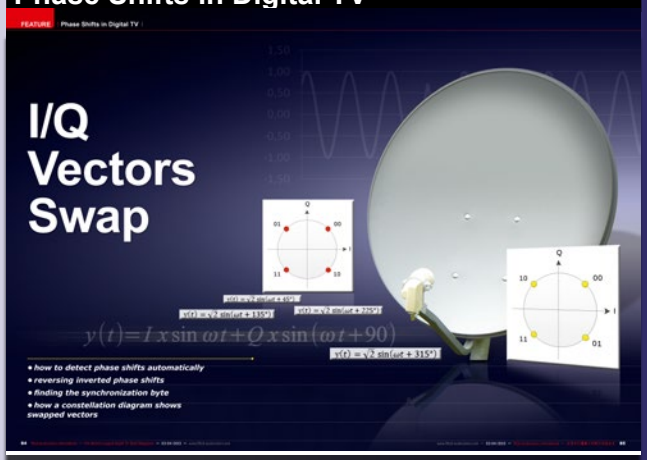


www.TELE-audiovision.com/TELE-audiovision-1305/eng/feature-satip1.pdf

Ultra High Definition TV

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

Phase Shifts in Digital TV



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

Digital Terrestrial TV - 2nd Level

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

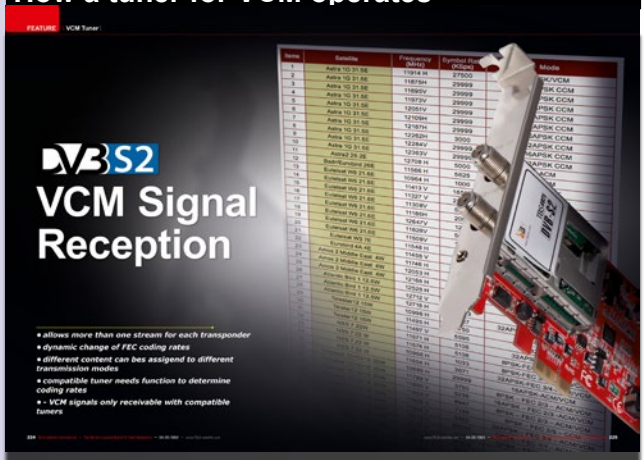
DVB-S2: Hide the SD inside the HD

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

The Secret Special Transmission Modes

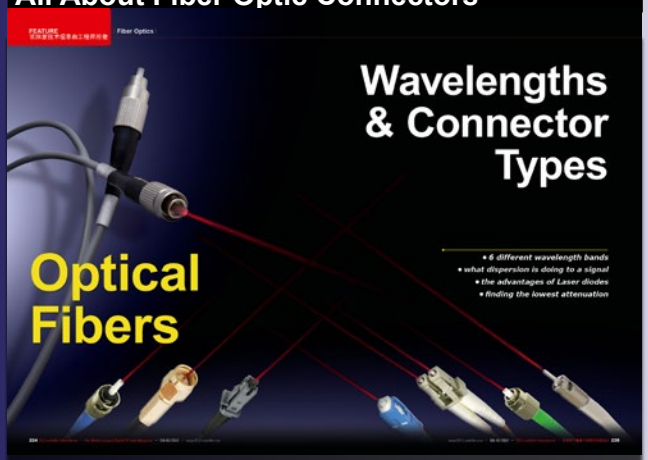
www.TELE-audiovision.com/TELE-satellite-1209/eng/feature-transmission.pdf

How a tuner for VCM operates



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

All About Fiber Optic Connectors

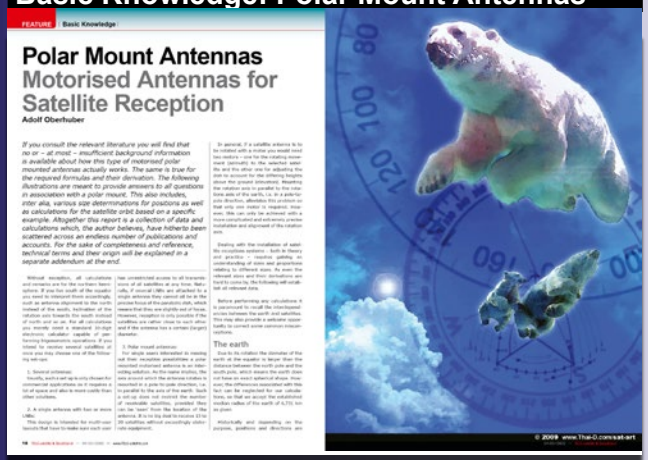


www.TELE-audiovision.com/TELE-satellite-1209/eng/feature-optical.pdf

DVB-S2 MIS Reception with VCM/ACM

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

Basic Knowledge: Polar Mount Antennas



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

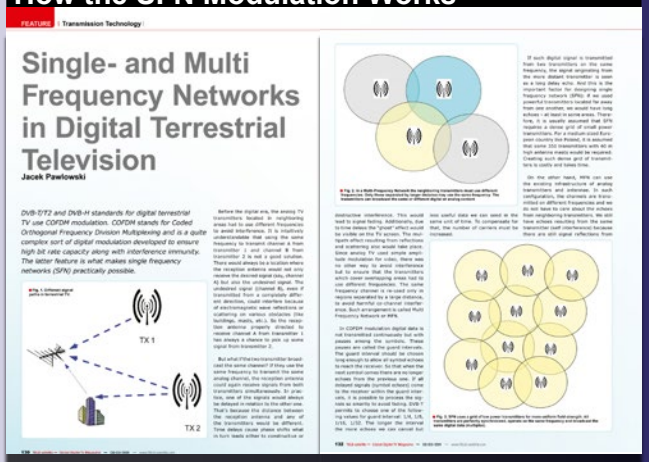
Automatic Creation of 3D

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

How a Silicon Tuner Works

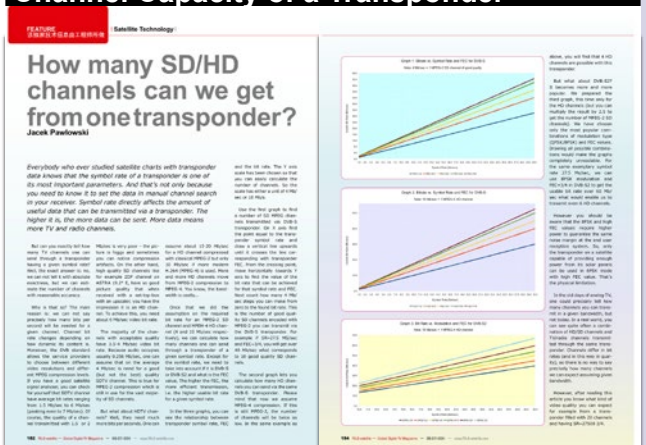
www.TELE-audiovision.com/TELE-satellite-1107/eng/silicontuner.pdf

How the SFN Modulation Works



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

Channel Capacity of a Transponder



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

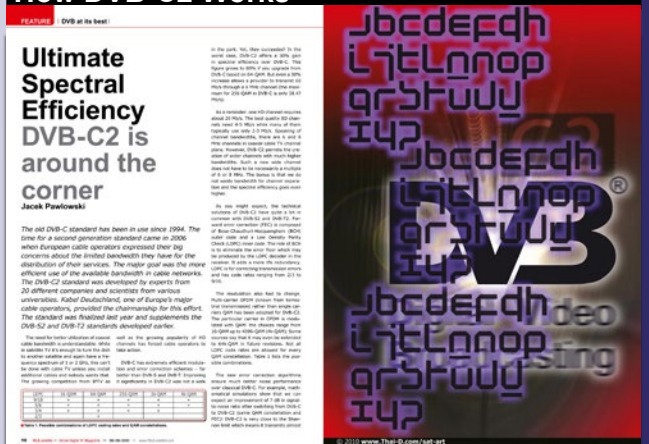
How HbbTV Works

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

CI+ and HD+Encryption

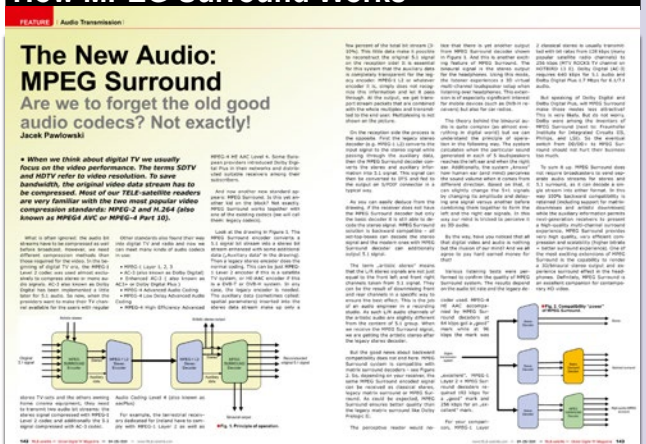
www.TELE-audiovision.com/TELE-satellite-1107/eng/CI+HD+.pdf

How DVB-C2 Works



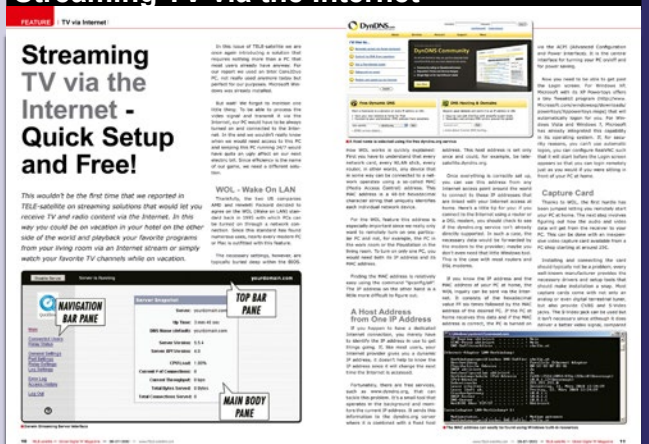
www.TELE-audiovision.com/TELE-satellite-1009/eng/dvb-c2.pdf

How MPEG Surround Works



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

Streaming TV via the Internet

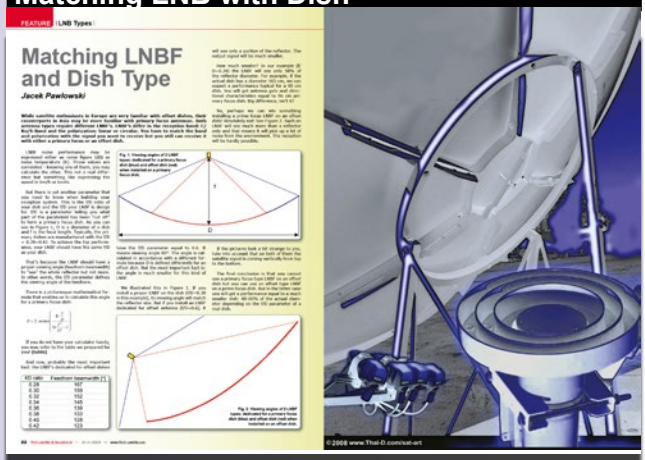


www.TELE-audiovision.com/TELE-satellite-1007/eng/streaming.pdf

Testing Horizon to Horizon Actuator

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

Matching LNB with Dish

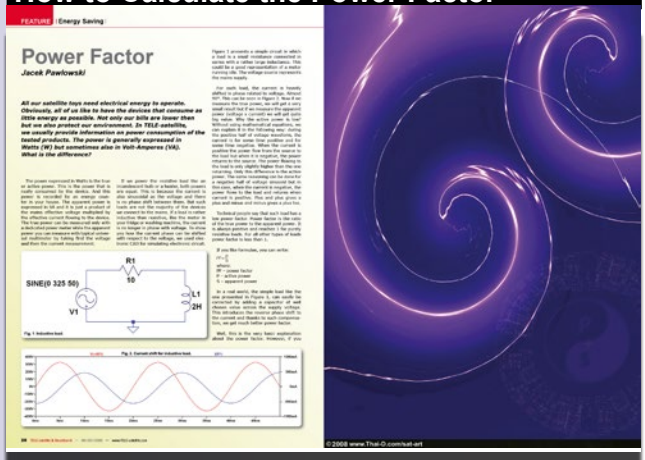


www.TELE-audiovision.com/TELE-satellite-0811/eng/lnb+dish.pdf

How SCR Works

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

How to Calculate the Power Factor

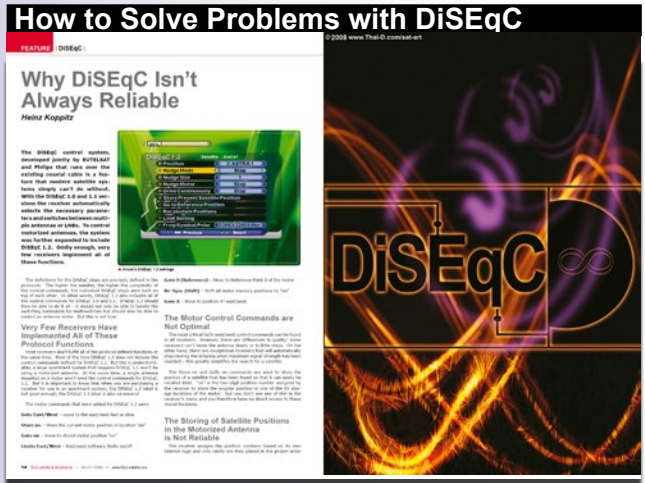


www.TELE-audiovision.com/TELE-satellite-0809/eng/powerfactor.pdf

How Decoding Works

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

How to Solve Problems with DiSEqC

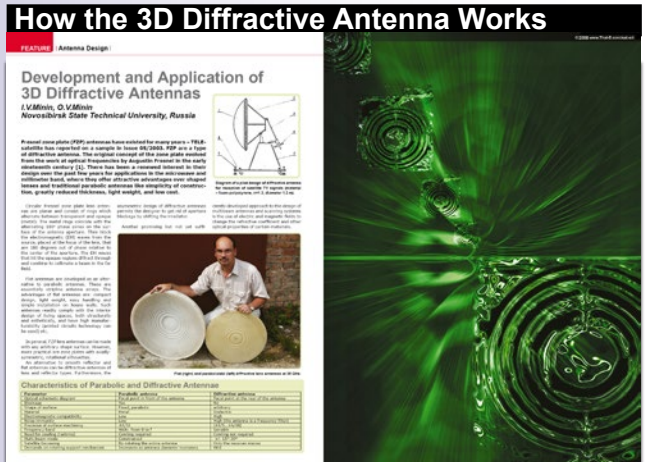


www.TELE-audiovision.com/TELE-satellite-0807/eng/diseqc.pdf

How ABS-S Works

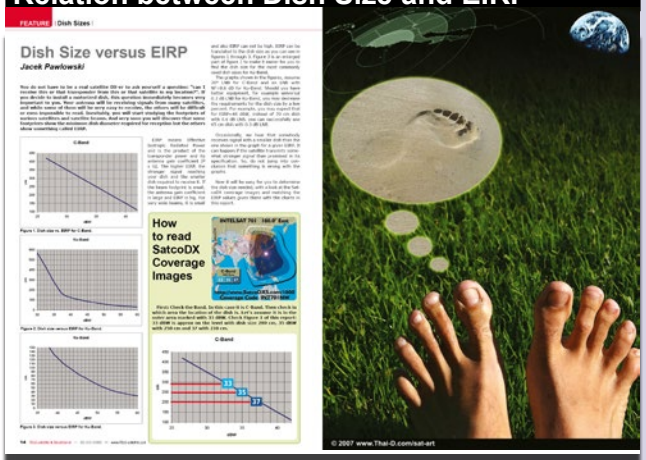
www.TELE-audiovision.com/TELE-satellite-0903/eng/abs-s.pdf

How the 3D Diffractive Antenna Works



www.TELE-audiovision.com/TELE-satellite-0805/eng/3ddiffractive.pdf

Relation between Dish Size and EIRP

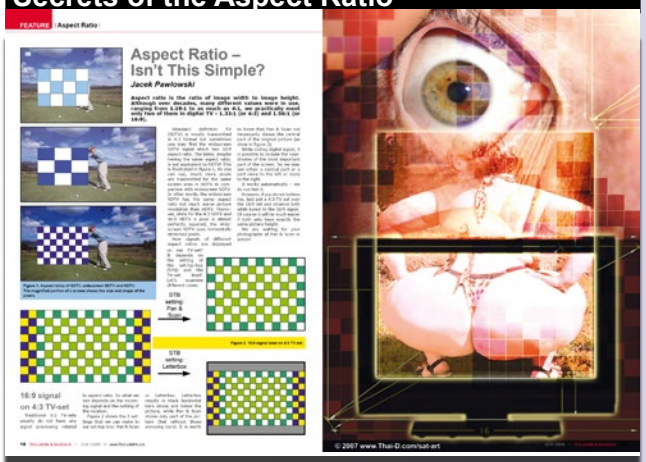


www.TELE-audiovision.com/TELE-satellite-0803/eng/dishsize.pdf

How MPEG Works

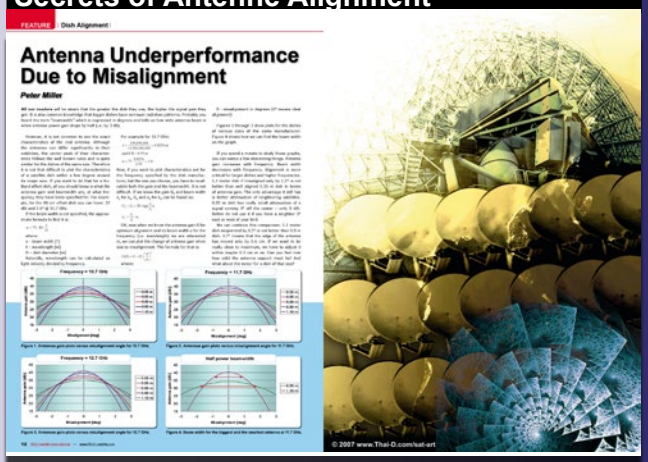
www.TELE-audiovision.com/TELE-satellite-0707/eng/mpeg.pdf

Secrets of the Aspect Ratio



www.TELE-audiovision.com/TELE-satellite-0801/eng/aspectratio.pdf

Secrets of Antenne Alignment



www.TELE-audiovision.com/TELE-satellite-0705/eng/performance.pdf

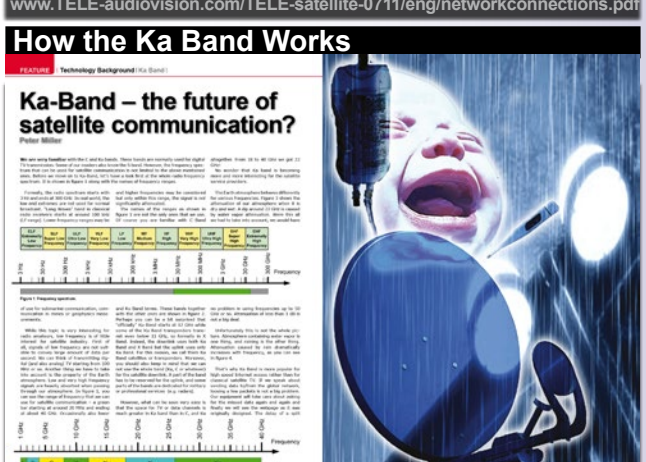
How the Network Connection Works

www.TELE-audiovision.com/TELE-satellite-0711/eng/networkconnections.pdf

The Secrets of HDMI

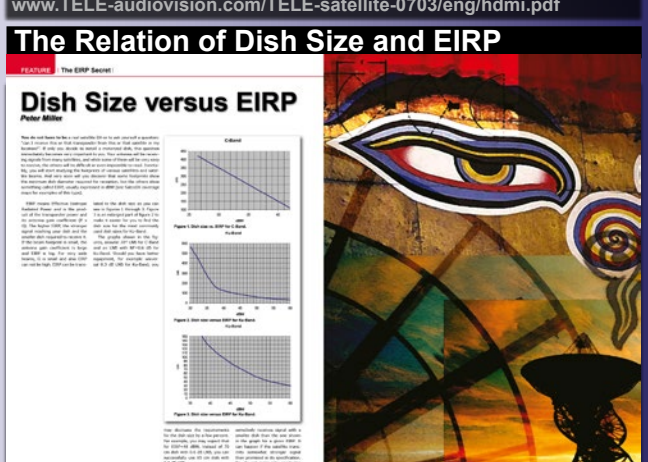
www.TELE-audiovision.com/TELE-satellite-0703/eng/hdmi.pdf

How the Ka Band Works



www.TELE-audiovision.com/TELE-satellite-0709/eng/kaband.pdf

The Relation of Dish Size and EIRP



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

Эффект снежного кома

- *один шаг в свое время, может привести к постоянному успеху*
- *исключительное качество, благодаря использованию SMC стекловолокна*
- *можно производить офсетные, PDA и сегментные спутниковые тарелки любых размеров*
- *большой выбор даже для небольших покупок*
- *гарантирует очень длительный срок службы для своих тарелок*

■ The new company headquarters of Hwadar in Dongguan.

The story of a dish manufacturer taking one step at a time

What happens to a snowball rolling down a hill? Right, it grows bigger and stronger. This basic principle of nature is also one that Wang Dan, General Manager of dish manufacturer Hwadar, is committed to. And just like a rolling snowball grows bigger, Hwadar has also become a major and -above all -successful business in real life.

Yet, running a company requires much more commitment and planning than simply pushing a ball, and in order to find out how exactly Wang Dan has achieved

Wang Dan is both General Manager and shareholder of fiberglass satellite dish manufacturer Hwadar.

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1

1. The snowball effect. General Manager Wang Dan pointing at Chinese characters explaining the snowball effect, which is his guiding principle for running the company.

all this, we met him in his executive office at the company's new headquarters in Dongguan.

Dongguan is located roughly halfway between Shenzhen and Guangzhou, which is also the capital of the Chinese province of Guangdong (known by many as Canton). The area boasts a strikingly beautiful natural landscape with a number of extensive nature reserves. One of the most impressive features of the region is lake SongShan, right in the middle of a vast park.

Not far from that tranquil place is a high-tech industrial park with Hwadar new company headquarters and production premises - Dongguan Dongshi New Material.

But let's not lose sight of our snowball analogy. Hwadar was first formed in 1988 when introduced the technology and production equipment from Prodelin. Prodelin high-quality dishes had always been made of fiberglass, and Hwadar has not changed that elementary material choice since. "We use SMC as our base material," Chief Enginner Zhong Zhi Ming tells us. SMC is short for Sheet Moulding Compound and refers to fiberglass mats delivered as 3 mm thick endless stacks and from which satellite dishes are formed with the help of hydropress under high temperature and pressure.

SMC mats are sourced from Chinese company Zhenshi Group (www.zhenshi-group.com), which became the world's largest fiberglass producer in 2008. With Hwadar being a major bulk buyer for Zhenshi Group fiberglass the next logical step was to arrange a closer cooperation between the two companies. So the snowball grew bigger again. "In 1996 Hwadar only owned 2 press machines, nowadays Hwadar posseses dozens of professional equipment and assets worth over one hundred million yuan, which all attributes to the long-term unremitting efforts, hardwork, and win-win cooperation based on the Snowball effect," Wang Dan - a member of staff at Hwadar since 1996 - explains.

By cooperating with a global leading fiber glass manufacturer, Hwadar is able to get the highest quality materials and quality assurance.

Hwadar not only produces satellite dishes from fiberglass but also additional products which use the same source material, such as housings for satellite uplinks and innovative small weather-proof houses for meteorological stations. Sports enthusiasts will be surprised to find out that table tennis tables as well as boards for basketball baskets are also manufactured at the very same site.

"50% of our output consists of satellite dishes, which are available in diameters ranging from 35 cm to 3.7 m," General Manager Wang Dan continues. "In the year 2012 we produced a total of 200,000 satellite dishes, 80% of which had a diameter of 45 cm."

The current plant equipment can handle an annual output of one million dishes. But this figure alone does not do justice to the actual capacity of the production facility, since it also includes large segment and panel dishes.

"Our range of large dishes is designed for professional and commercial customers, since the quality of the material we use is exceptional."

General Engineer Zhong Zhi Ming tells us why this is the case: "Contrary to metal dishes, our SMC fiberglass satellite dishes don't get rusted and can have a much longer service life, which is typically above 10 - 15 years. What's more, our high-temperature and heavy-pressure shaped reflectors always keep their shape and are very buckling resistant with high accuracy, which is especially relevant for the Ka–band and Vsat antennas. This way, SMC dishes made by Hwadar boast excellent accuracy, high performance and durability with a longer service life, thanks to fiberglass."

This now brings us to the core of the matter: For many years price has been the deciding factor for or against a certain satellite dish. These days, however, it's all about quality. Ideal conditions for

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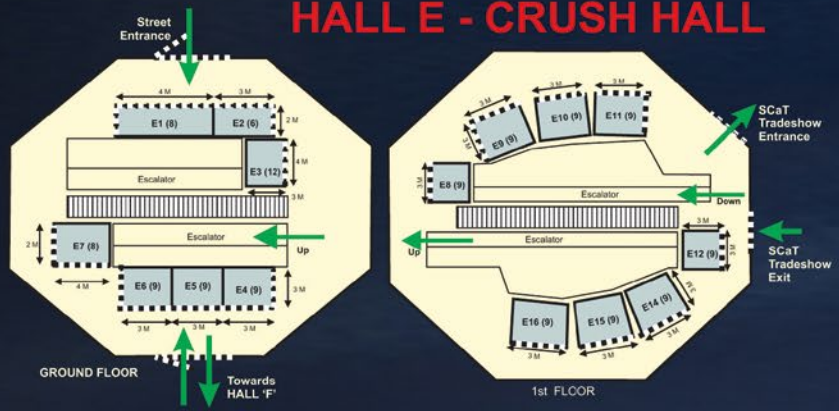

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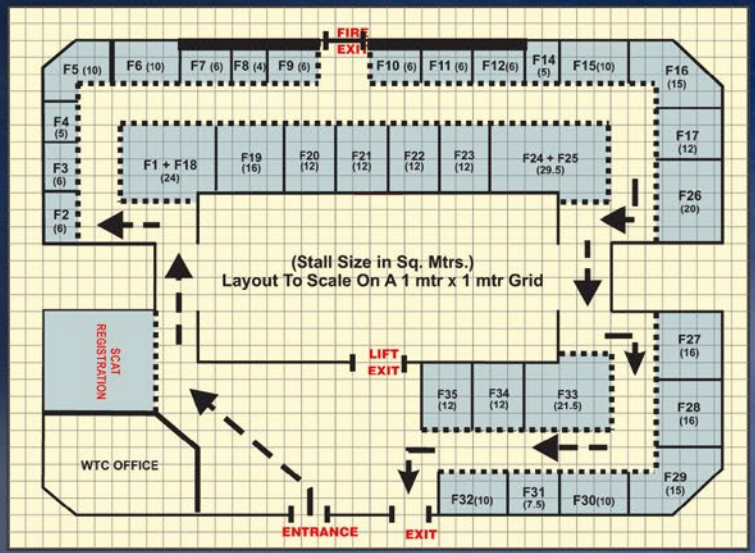

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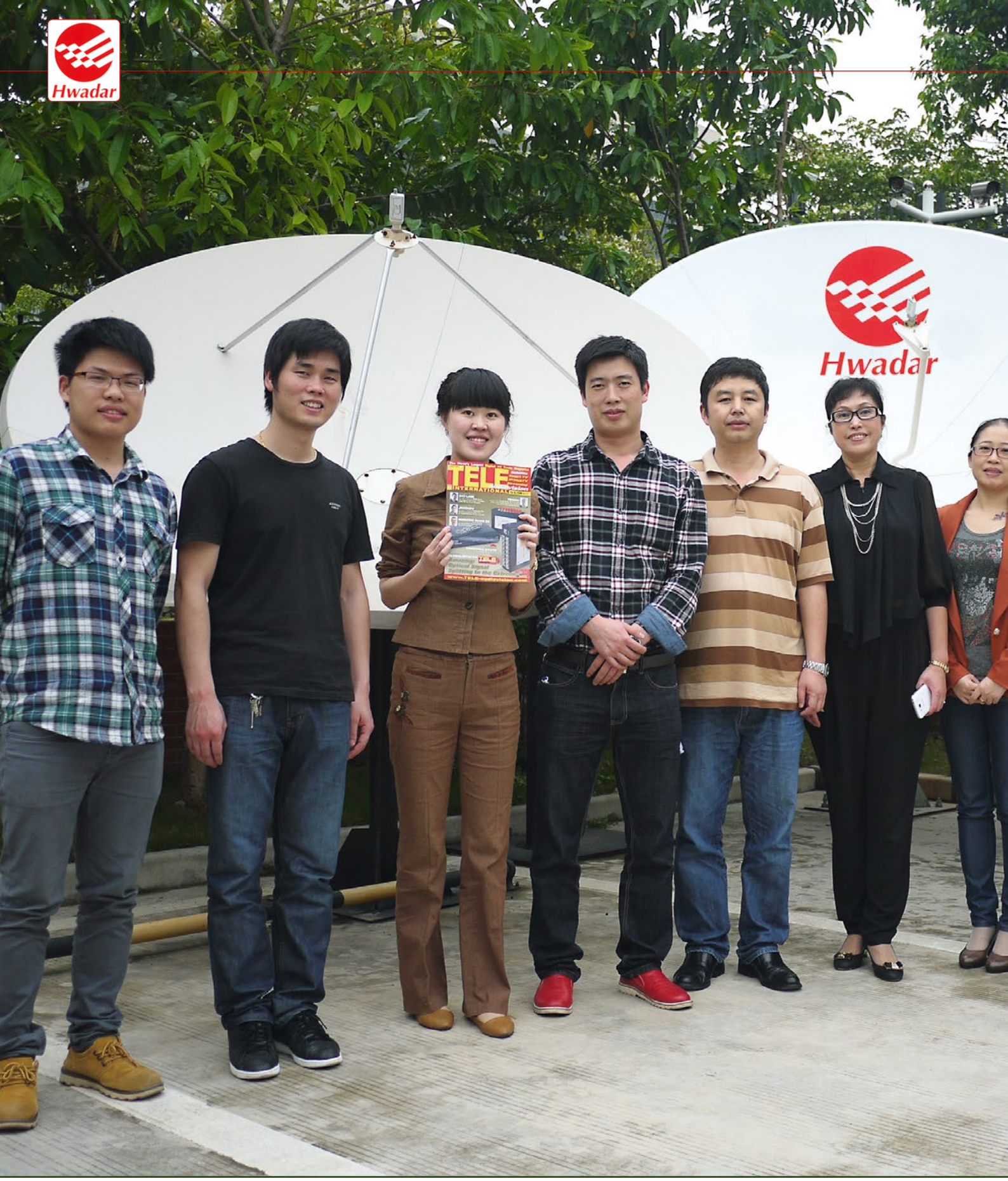

the snowball effect as practiced by Hwadar: The more focus is placed on quality, the more customers will consider fiberglass dishes.

Professional customers have done that for some time already, but now even private end users begin to shift the focus of their attention to quality. This in turn means demand for smaller dishes is on the rise as well, a more than welcome development for a company like Hwadar.

So how can you obtain a high-quality SMC satellite dish from Hwadar ? Do you need to be a wholesale organisation or distributor ordering truckloads worth of dishes? Well, requests like that are certainly very welcome, but the sales department will be happy to deal with smaller inquiries as well. After all, just like a snowball starts with only a handful of snow.

"Even a minor initial job can lead to more substantial follow-up orders at a later stage," says Monica Wang, Business Supervisor for international contacts. Monica will be happy to receive

■The Hwadar sales team. Monica Wang can be seen with an issue of TELE-audiovision in her hands. She is the point of reference for all international inquiries.

■Chief Engineer Zhong Zhiming and his newly designed 1.2m Ku-band dual-reflector Receive/Transmit antenna.

any requests at monicaw@hdsmc.cn.

It is clear to see that General Manager Wang Dan does not only rely on the snowball effect when creating and expanding his company, but also for selling his products.

And it is a rewarding experience to see a small snowball becoming a major force on the market.

Hwadar

1. Dongguan is well known for its many natural reserves. SongShan Lake Park is the most prominent of them.

2. Small selection of Hwadar products. Obviously, TELE-audiovision is particularly interested in the satellite dishes that can be seen in the foreground. Dong Shi, however, uses the same SMC source material for also producing table tennis tables, boards for basketball baskets and innovative meteorological stations (as can be seen in the background).

1

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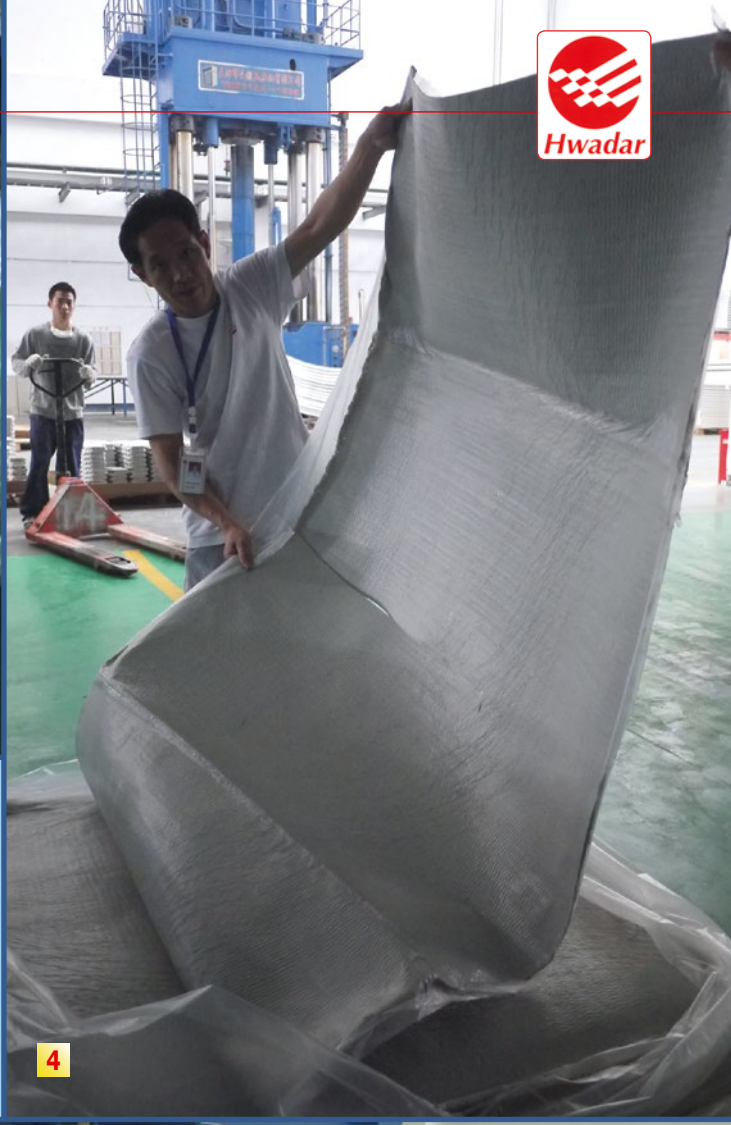


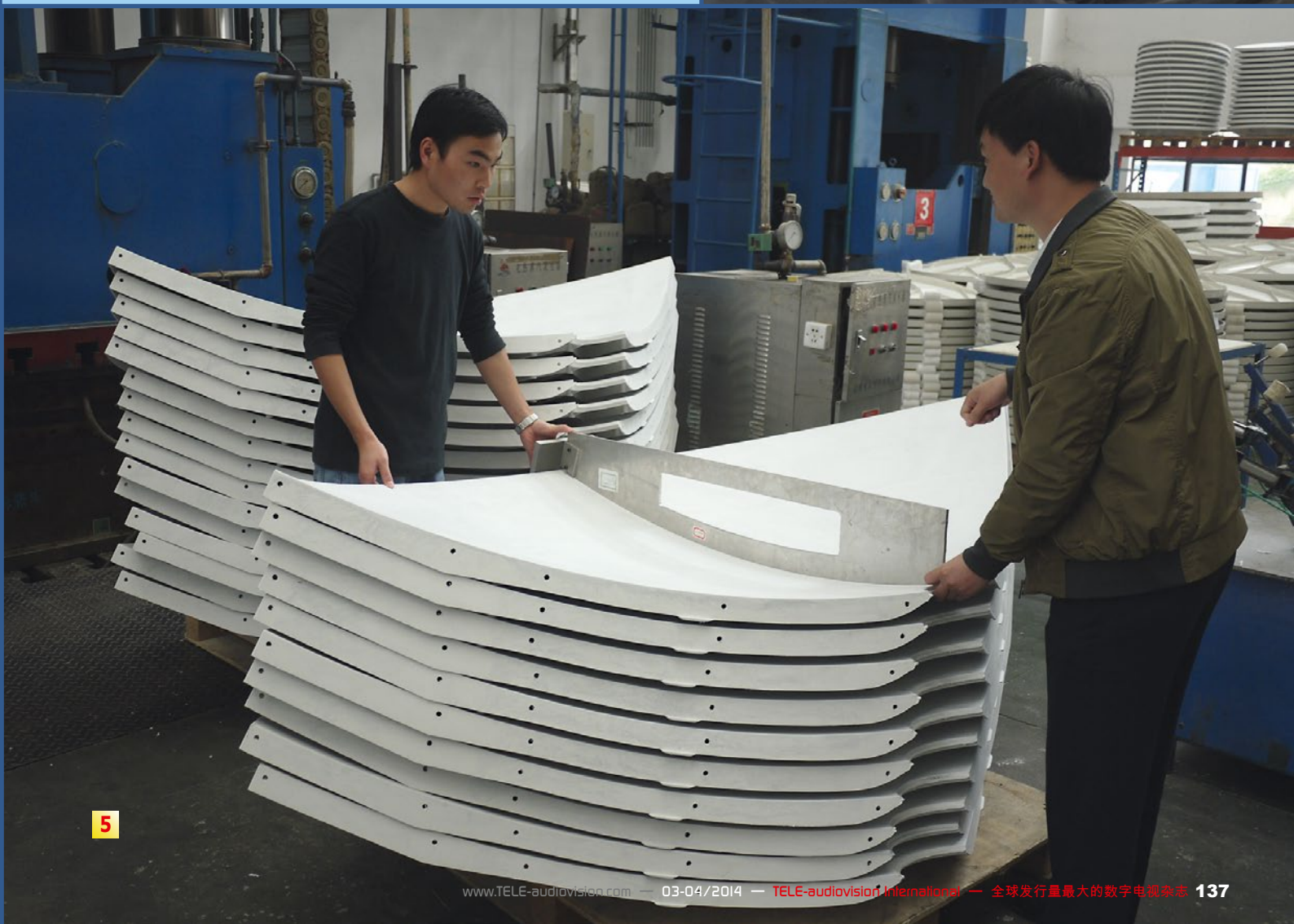
1. Three Hwadar heavy-duty presses. The one on the left is a 2,500-ton press, the one in the centre is a 1,500-ton press and the smaller one is a 500-ton press.

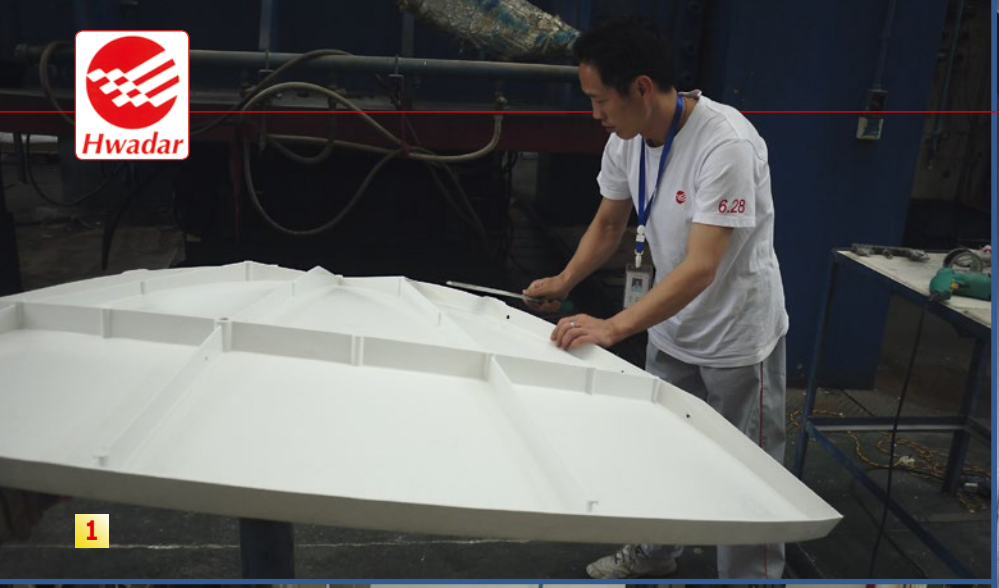
2. The presses seen here are used by Hwadar for smaller satellite dishes and various small components. Each of those 15 presses at the Hwadar production facility operates with a 315-ton pressing force.

3. 900 kg of source material on a palette from Zheng Shi Group.

4. The palette consists of endless SMC mats. The material comes with a thickness of 3 mm, is heated to 150°C and then pressed into the mould.

5. Quality check of freshly pressed SMC dish segment. Three of these segments add up to create a 2.4 m antenna.





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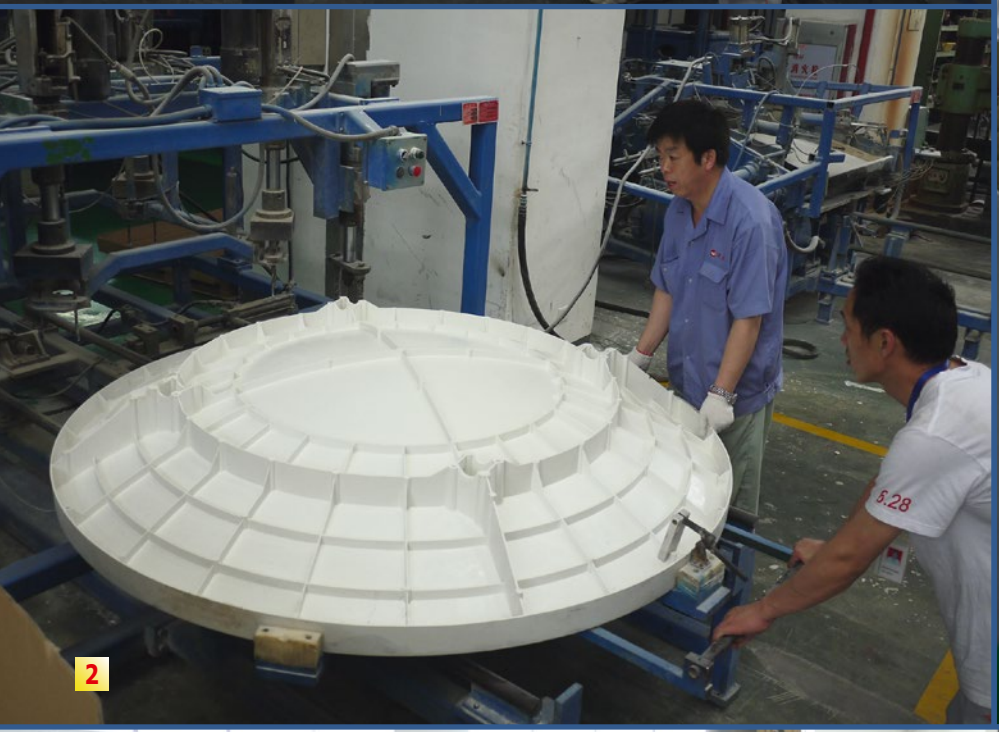

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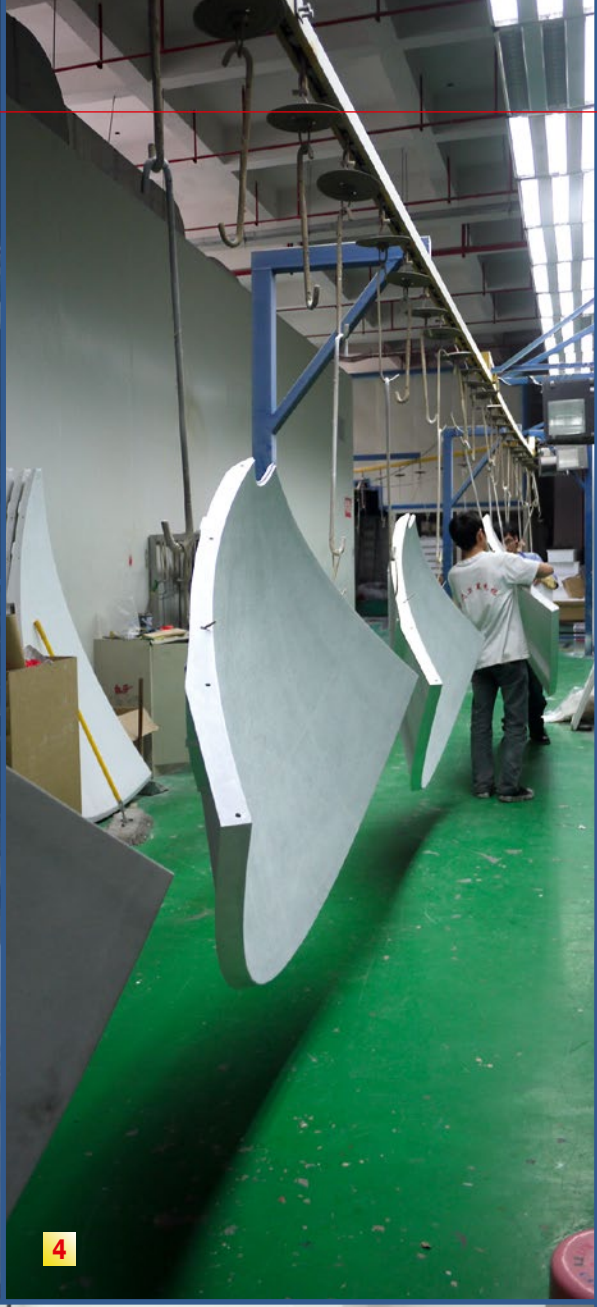

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1. This worker uses a rough file for deburring a freshly pressed SMC dish segment.

2. How do you install a satellite antenna? Right, there must be holes for attaching the dish to a pole, for example. This machine drills holes into the dish. First, the dish is put into place by hand. Once that is finished the machine drills a total of eight holes into the dish which are then used to mount the dish at the respective location.

3. Press moulds for all varieties of satellite antennas can be found in the huge mould storage. In practical terms, this could be called the actual core capital of the company.

4. Dish segments are first prepared for coating and then positioned on the conveyor belt. The belt has a length of 380 m and takes 40 to 50 minutes for a full cycle. During that time the satellite dishes are cleaned, sprayed with paint and dried. After that, they are ready for packaging.

5. Cleaning and pre-treatment of segments.

6. The spraying guns work fully automatically and evenly apply the protective coating onto the segments.

7. Finished satellite antennas waiting for shipment.

TELE System Electronic работает для Бразилии

■TELE System Electronic do Brasil moved into this modern industrial estate in north-western Sao Paulo in October of 2012.

- ***самый большой поставщик полных систем приема для Бразильских провайдеров платного ТВ***
- ***знание технологических тонкостей позволяет моментально реагировать на постоянно меняющиеся требования рынка***
- ***превосходно оборудован для упаковки и отгрузки товаров в больших количествах***
- ***основной упор делают на Бразилию – как на самый большой рынок в Южной Америке***

Serving Brazilian DTH Providers

Large satellite TV operators with branded reception equipment usually outsource the actual procurement and manufacturing of products such as satellite antennas, LNBs, cables and receivers to independent third-party companies. All technical specifications are drawn up by the providers, with external manufacturers being then responsible for delivering products that meet those precise requirements. As far as the huge market of Brazil is concerned, TELE System has become the supplier of choice for all major Brazilian pay TV operators. Such a huge success could not be achieved overnight, and to find out how TELE System has developed into such a dominant market player we travelled to Jundiai. This is where TELE System is renting large warehouse facilities in a very modern industrial estate.

Marco Szili is the General Manager of TELE System Electronic do Brasil, and he is our first point of contact for learning more about the company. "TELE System was originally founded as a manufacturer of satellite dishes in Italy, back in 1989. By 1997 export of satellite antennas to Brazil had reached volumes that called for the establishment of an affiliate branch in Sao Paulo, even though at the time it only consisted of a warehouse." Things turned exciting from there, beginning with in-house production of satellite antennas in Brazil all the way to then moving antenna production to China and Malaysia.

Right from the very beginning TELE System has always made a point of offering full-scale systems as a one-stop-provider. This is how the company eventually came into touch with the country's major pay TV providers, a development that ultimately propelled TELE System right into top position for this particular market segment. General Manager Mar-

Marco Szili is the General Manager of TELE System Electronic do Brasil. The packaging for a complete reception system for one of Brazil's pay TV providers can be seen in the background. Both the individual composition of the sets and the products themselves come from TELE System.

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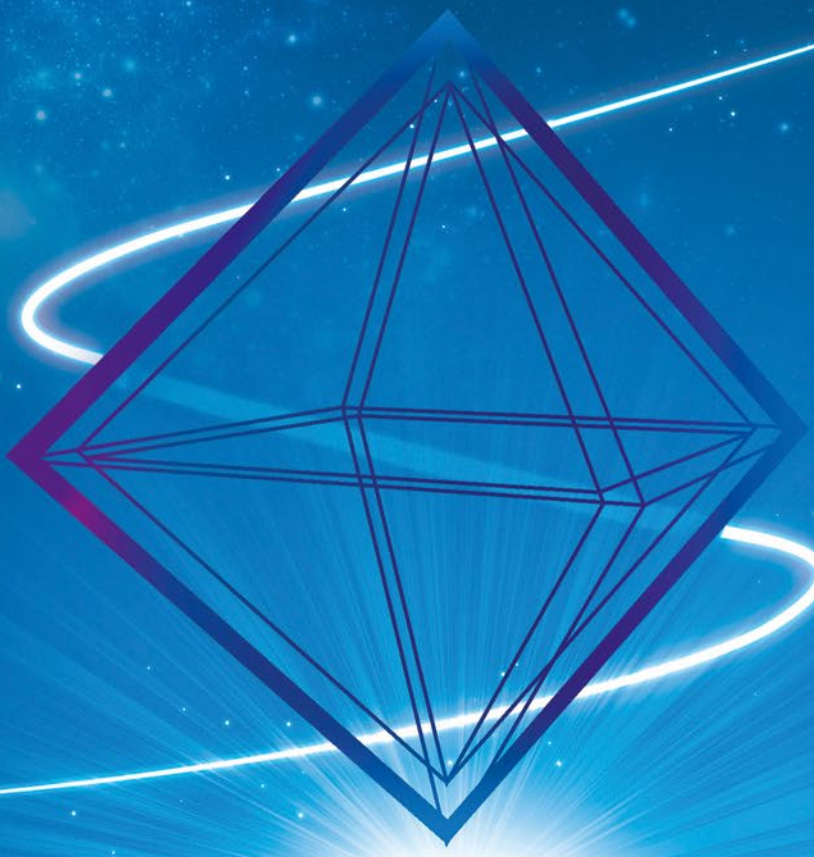

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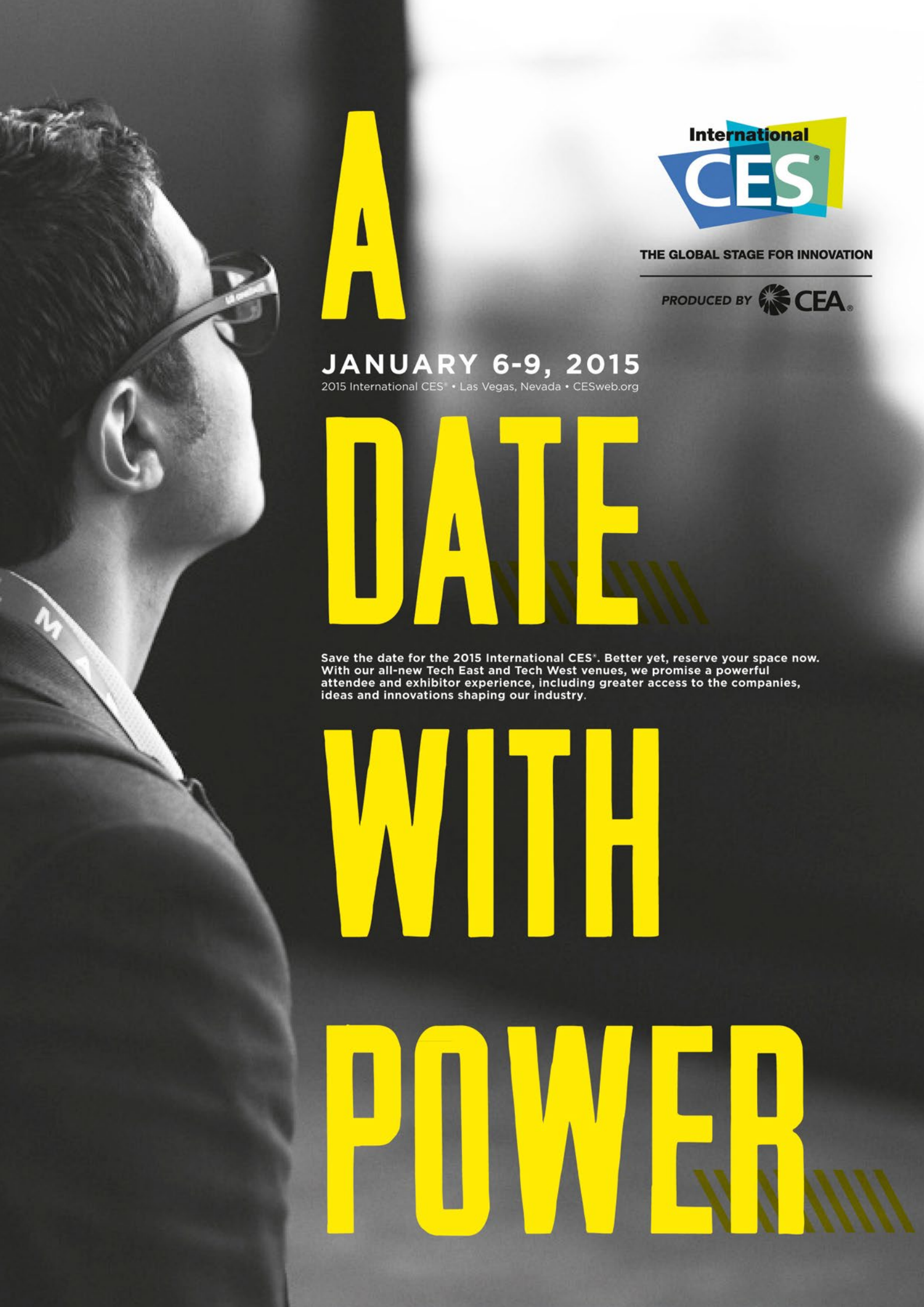
co Szili runs down a list of his customers for us: "We supply reception systems to Sky, Claro, GVT and Oi here in Brazil." And to also set the figures straight, Marco Szili has the subscription numbers for each of those four providers. "Sky has a customer base of more than five million, Claro more then three million, Oi has some 800,000 subscribers and more than half a million watch GVT."

While GVT may have the smallest subscriber base of the four, it offers a cutting-edge advantage. Jonathan Gregory, head of Engineering and Operations, has the details: "We developed a special switch for changing between satellite reception and IPTV on behalf of GVT." And what's that all about? "GVT offers content over both satellite and IPTV, and since all subscribers are connected to both systems anyway, GVT receivers come with a rather unique feature: As soon as there is a problem with the satellite signal – during heavy rain, for example – the receiver automatically switches over to IPTV reception." What a clever feature, with TELE System Electronic do Brasil a major development partner.

Looking into the future, TELE System Electronic do Brasil is mildly optimistic, even though there's no point in denying the current state of affairs. Quantities will decrease, that much is for sure. Quality and service, on the other hand,

Visitors are greeted by the TELE System receptionist.

TELE System Electronic do Brasil rents three large warehouses in this industrial estate. A total of 6,500 square meters are available to the company.



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1. Jonathan Gregory is responsible for the Engineering and Operations division. Originally from England, he moved to Brazil in the 1970s. Jonathan has been a regular reader of TELE-audiovision for many years.

2. Marcos Santos is the head of R&D at TELE System. Here he can be seen performing so-called burn-ins for a range of receivers to test their reliability.

3. The antennas are almost identical – apart from the branding for different pay TV operators.

2

are two driving forces that should be able to counter lower production volumes and make sure the company stays ahead of the competition. General Manager Marco Szili digs a little deeper for us: "Currently, some 80% of our turnover is generated with pay TV providers, 12% come from independent retailers and installers, and the remaining 8% are sourced from trading, mainly with terrestrial ISDB-TB receivers." In Brazil, analog terrestrial TV will be phased out between 2015 and 2018. "We expect increased demand for ISDB-TB receivers during that period," states Marco Szili. "We're very flexible in everything we do, and we have changed our strategy and our product line-up more than once in the past to remain the leader of the pack." Marco Szili is convinced that future challenges and constantly changing technical requirements will also be met with continued success.

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4. Administration staff can be found in bright and modern offices.

5. TELE System technicians repair receivers and check out new prototypes.

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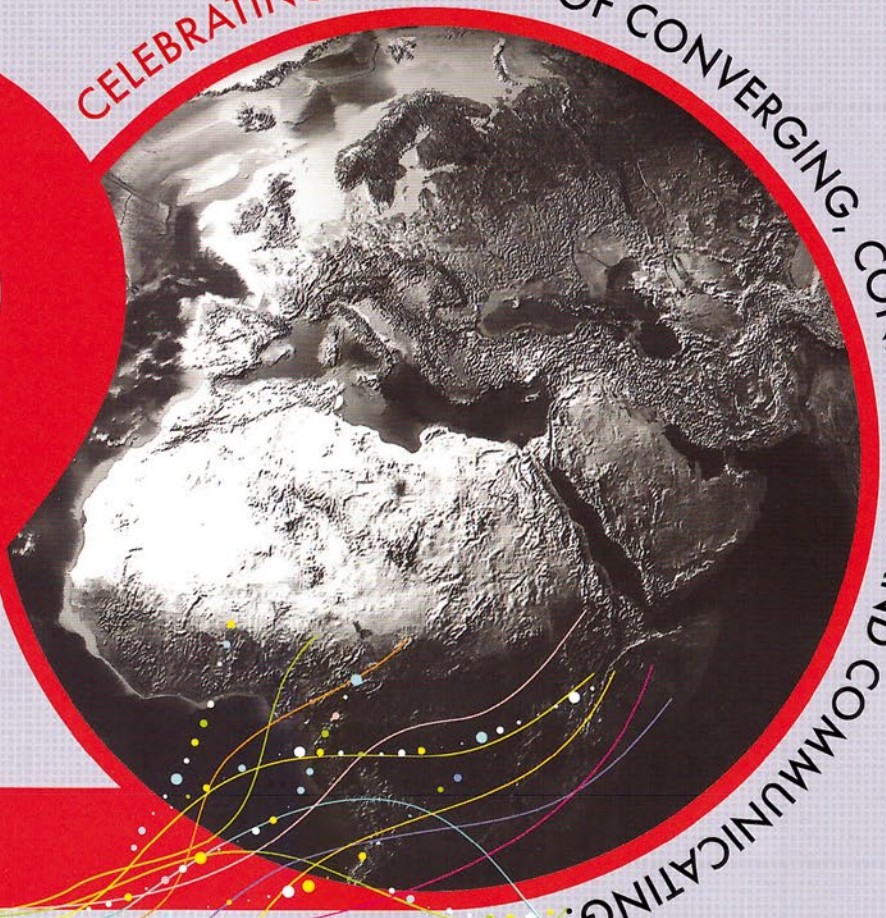

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6. Small parts for antenna installation are packaged here.

7. Individual small parts kits are available for each pay TV operator. Examples on the wall indicate to the packagers which items belong to which kits.

8. While the satellite antennas themselves are all identical, each pay TV operator requires its own brand name on them. Jonathan Gregory explains the process: "We use UV colours, which means the colours only dry under ultraviolet light. This way we don't need a heat chamber and we don't need to worry about keeping our colour trays in working order all the time, since UV colours don't dry up."

9. View of the huge warehouse. Satellite antennas and associated items are piled up and then packaged into complete sets, depending on the demands of each pay TV operator.

8

9

The Decision Makers in Worldwide Digital TV Industry

according to TELE-audiovision's Company Reports

Hwadar, China - Fiberglass Dishes

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

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QM Qualified

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Wang Dang

Sales
Monica Wang

Chief Engineer
Zhong Zhiming

- 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

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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

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Software
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- Light version available at no cost since 2002
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BSD, Brazil - Digital TV Internet Forum

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- Largest Digital TV Internet forum in Brazil
- Reaches 400,000 readers every month
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- Also active in IPTV and IP Radio

Elnet, Iceland - Distributor

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GM
Asmundur Einarsson

Sales
Magnus Eyjolfsson

- can supply everything from DVB transmitters to DVB receivers
- always adapts its large range of products to meet current market demands
- believes in terrestrial and satellite DVB reception
- expects fibre-optic products to gain popularity in near future

GlobalInvacom, UK - Fibre Optic Products

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QM Qualified

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Gary Stafford

Sales Director
Ivan Horrocks

Technical Support
Matt Presdee

- Invented the new satellite IF transmission technology via fibre optics
- Five million FibreIRS connections are expected by 2015
- Through continuous technological improvements FibreIRS can now serve more than 4000 connections from a single LNB; for professional applications it's several 10,000's
- 14 Multiple R&D Engineers are consistently working to improve the system
- Northern Europe, North Africa and Southeast Asia are the largest FibreIRS markets

Oreind, Iceland - Distributor

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

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Baldur Sveinsson

Founder
Sigurour Gunnarsson

- successful in the home electronics segment
- all antenna installation material always in stock
- focus on IPTV for sustained business development
- sizable repair shop for home electronics equipment

Deviser, China - Signal Analyzer

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

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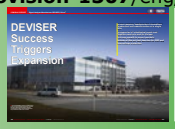

- new company headquarters streamlines production and administration at a single site
- expansion of a dedicated repair and logistics centre in and for Europe
- strong growth in export markets
- state-of-the-art test benches for EMS and overvoltage protection

Dexin, China - Digital TV Head-ends

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

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GM
Sun Yu

- Established in 1994 in Chengdu
- Specializes in professional tv head-end equipment
- 50% of their production is exported
- Intense quality controls

Forcetech, China - IPTV Solution Provider

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

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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

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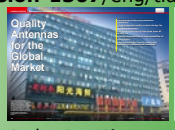
Bang Xian Peng


Production Manager
Bang Xing Peng



- uses state-of-the-art production machinery
- fully automatic quality control during the production process
- volume production of dish sizes from 45 to 180 cm
- ready for production of large quantities at short notice
- environmentally-friendly production according to international standards

ELDTEC, Brasil - Dish, Antennas and Cables

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

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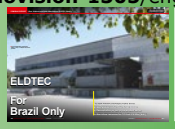
Jefferson Cruz



- Large market coverage within Brazil
- OEM production for other brand names
- Concentration on just a few product series
- Also offers antennas for 2.4 and 5.8 GHz (WiFi)

LIANXING, China - Satellite Dishes

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

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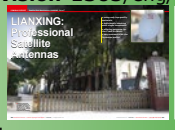
Shop
Serv


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

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Product Manager
Yongjun Zhang

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

Sat-Link, China - Signal Analyzers

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

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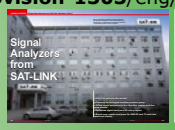
GM
Qing Zhang Lin


Project
GuiHuang Huang


Sales
Nancy


R&D
Han Guang Rong



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

Tecsys, Brazil - Professional Equipment

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

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CEO
Jose Marcos Freire Martins


COO
Jorge Alberto Ganuza


Production
Adilson da Silva

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

Cosmosat, Argentina - Satellite Dishes

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

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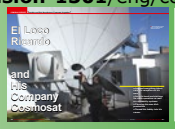
Owner
Ricardo



- Learned everything about satellite reception on his own
- Installs head end stations for cable operators as well as community systems
- Planning his own dish production
- Turned his hobby into his career

Horizon, UK - Signal Analyzers

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

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CEO
Paul Pickering

Technical Director
Paul Hardcastle

Technical Manager
Rob Sydee

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

Satson, Belgium - HDMI

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

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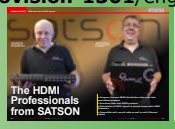
CEO
Stefaan Cornelis

Technical Manager
Didier Debey



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

Antiference, UK - Antenna and HDMI

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

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MD
Trevor Paintain

Sales
Arnold Boeijen

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

USATel, Brazil - Distributor

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

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MD
Jose Manuel Pereira

CFO
Allam Almughrabin

- Imports all of its products from China
- Optimized assortment for digital TV needs in Brazil
- Sells and ships almost exclusively to end users
- Expanding into new business segments such as WLAN and IPTV

DMS International, USA - Distributor

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

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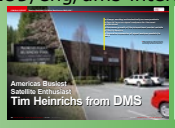
CEO
Tim Heinrichs

President
Vicky Heinrichs



- Always working enthusiastically on new products
- Special focus on signal analyzers for the semi-professional
- Enormous growth of the international market outside of North America
- Innovative expansion of signal analyzer models for 2012

Topsignal, China - Satellite Dishes

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

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Chairman
Zongbao King

GM
Chaofeng Ge

Sales
James You

- OEM delivering exclusively to Wholesalers
- Specializes in large production quantities
- Produces millions of satellite dishes and LNBs
- Majority of shipments go to South America
- Expanding product palette to include high-quality LNBs and VSAT

DVBCN, China - Internet News and Job Forum

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

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Owner
Anna Xie

Chief Editor
Victor Ho

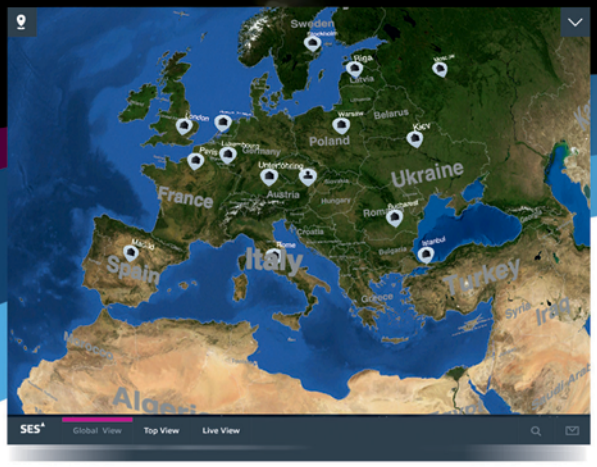
- Known by every digital TV company in China
- Provides all information regarding digital TV
- Expanding in the areas of recruitment and software development
- Focusing in future technologies such as OTT and IPTV
- Working on international expansion

The SES satellite fleet & coverage

SES

your satellite company

SES, a world-leading satellite operator, providing reliable and secure satellite communications solutions to broadcast, telecom, corporate and government customers worldwide.



SES fleet & coverage now in an iPad app!

"We are pleased to showcase our fleet and coverage using the capabilities of the iPad, with 3D earth navigation and an augmented reality view. This tool illustrates the concept of satellites in space and coverage over the earth, as well as provides information that will enable our customers to learn more about our global fleet. With this new application, we are literally putting our satellite fleet in the hands of our customers."

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

TELE audiovision AWARD 05-06/2013

SES Satellites
Successful application for Exploration of all worldwide SES satellite

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

SES

Headquarters
Château de Betzdorf, L-6815 Betzdorf, Luxembourg
Tel: +352 710 725 1 ▪ http://www.ses.com

SVEC, China - Satellite Dishes

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

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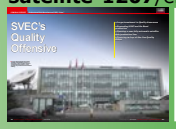
CEO
Wang Duo

Sales
Becky



- Large investment in Quality Assurance
- Expanding VSAT and Ka-Band production
- Opening a new fully automatic satellite dish production line
- Focusing on top-of-the-line Quality dishes

TSReader, USA - Analyzer Software

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

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Owner
Rod Hewitt

- Wrote one of the most successful stream reader programs
- Developed a technical solution to archive TV channels for 'Internet Archive'
- Working on IPTV application programs
- Planning on a program for OCR recognition of BBC's EPG data

Hypex, UK - Distributor

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

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MD
Neal

- Ships large dishes to Great Britain and Europe
- Offers successful product lines from ICECRYPT and GLOBALINVACOM
- Low prices thanks to minimal overhead costs
- Consistent sales despite pricing pressure

Ricks Satellite, USA - Distributor

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

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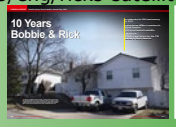
Owner
Rick Caylor

Owner
Rick Caylor



- celebrates its 10th anniversary in 2012
- distributes AZBox's receivers in North America
- is an enthusiastic satellite feedhunter
- sees a good future for the FTA market in North America

StelliteGuys, USA - Internet Forum

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

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TELE audiovision Recommended

Owner
Scott Greczkowski

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

Sowell, China - IPTV Receivers

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

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QM Qualified

GM
Eagle Chain

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

Wadt, Brazil - Headends

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

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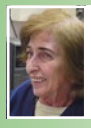
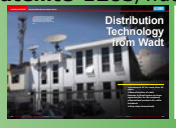


Owner
Neide Wadt

Technical Director
Joao Wadt



- Involved in HF for more than 60 years
- New allocation of cable licenses in Brazil opens up huge opportunities for the company
- Specialized products for cable headends
- Only ships domestically

Jiuzhou, China - Receivers

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

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TELE audiovision Recommended

QM Qualified

Vice Marketing
Jimmy Zhang

Vice GM
Richard

- Developes Digital TV receivers optimized for OTT
- Dedicated OTT development team
- Market for OTT in Europe and North America
- Upgrade of older digital receivers possible with a software upgrade

Panodic, China - Receivers

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

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TELE audiovision Recommended

QM Qualified

Founder
You Zhen Yu

Founder
Huang Wei

CEO
Xu Hai Bin

Marketing Manager
Alan Yu

- Multiple quality control points before, during and after production
- Concentrating on digital TV products
- Cooperating with many license providers
- Continuous product palette expansion

Japan's only broadcast & telecom cross-readership magazine

Monthly Broadband＊Broadcasting＊Business Magazine

B-maga

Cable Television, Multi-Channel Satellite Broadcasting,
IPTV, Mobile TV etc.

- Latest industry trends
- Channel operator business reports
- Technology & equipment
- Media industry news

Monthly B-Maga (Broadband Broadcast Business) / Founded June 2002 / Single issue price: 1,500 yen / In Japanese (cover and table of contents in English)

www.satemaga.co.jp

Sortec, Slovakia - Distributors

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

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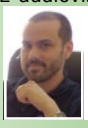
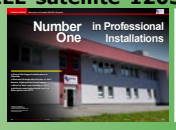
Founder
Ladislav Šmárik


GM
Pavol Macko


Sales
Alexander Záhončík


Sales
Pavol Lukáč



- One of the largest wholesalers in Slovakia
- Success through distribution of well-known, high-quality brand names
- Move to their own building in 2012
- Active in new technologies such as fiber optics and IPTV

Turbosat, UK - Receivers

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

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TELE audiovision Recommended


Sales
Chris Ward


Technical Director
Ray Gargiulo

- own receiver line ICECRYPT
- 50% of sales outside Great Britain
- Focus on receivers, CAM, SmartCards and LNBs
- 80,000 receivers a year
- produces Dolly Buster TV programming via HOTBIRD

BSD, Brazil - Internet Forum

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

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TELE audiovision Recommended


Owner
Marcus Bernardini

- Operates Brazil's largest digital TV website
- Engaged in the further education of digital TV antenna installers
- Planning his own IPTV channel all about digital technology
- Living his dream with his own worldwide radio station

P-Sat, Hungary - Distributor

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

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Owner
Tibor Posta

- Has its own customer magazine
- Created supermarket style store
- Planning start of own branded TV services
- Operates one of the most well-known web communities in Hungary

SatalliteAV, USA - Wholesaler

www.TELE-audiovision.com/**TELE-satellite-1201**/satelliteav.pdf

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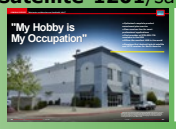
President
Brian Gohl



- Optimized complete product assortment plus service
- Own receiver line for semi-professional applications
- First provider of OTA-SSU FTA receivers in the USA
- Offers the smallest LNB in the world
- Develops first Android hybrid satellite and IPTV receiver for North America

AB-COM, Slovakia - Receivers

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

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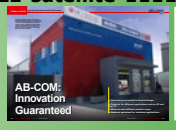
Founder
Juraj Masaryk


Marketing Manager
Michal Grezo


Sales
Pavol Blaho



- Particularly successful in Central Europe
- Products for different applications such as 3D and pay TV
- Focus on cost-efficient product range
- Products optimised for individual applications

Applied Instruments, USA - Signal Analyzers

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

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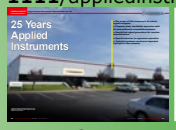
GM
Tom Haywood


Engineering
Jeff Haas


Sales
Scott Haywood



- The power of this company is its robust signal analyzers
- Company plans worldwide expansion with its internationally compatible analyzers
- Special test signal generators for receiver manufacturers
- Special attention to ergonomic operation
- Technical customer service an important highlight of the company

Huber+Suhner, Switzerland - Fibre Optics

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

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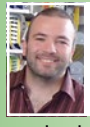
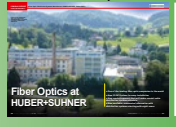

Product Manager
Patrick Zaina


Marketing Manager
Othmar Fuchs



- One of the leading fiber optic companies in the world
- New CLIK! System for easy installation
- New market segment that will make coaxial cable distribution systems obsolete
- Now available: economical alternative with distribution systems starting with eight users

STB Manufacturers in China and Korea!

Are you interested to import to South America?

- **BSD** helps you to find the best distributors and dealers for your products
- **BSD** is active in the digital tv trade since 2003

BSD COMUNICAÇÕES

We maintain personal contacts to all major players in tv systems **in South America**

Contact: E-mail: import@bsdcom.com.br

DishPointer AR

See where to point your dish, live on the iPhone screen!

The revolutionary DishPointer Augmented Reality app is now available on the app store. Just point your iPhone anywhere towards the sky and see all the satellites lined up on the live video screen.

See the Video

See DishPointer AR in action on YouTube!

This app uses the iPhones GPS, motion sensor and compass to calculate all the satellite positions and overlays them on the camera. At a glance you will see where to point the dish and any obstacles blocking the line of sight.

DishPointer is the world's No.1 satellite dish pointing site, offering custom built tools for mobile devices or websites to businesses. For more information, visit www.dishpointer.com.

References

CANAL DIGITAAL SATELLIET

TV VLAANDEREN DIGITAAL

ASTRA

INNOVATION SATELLITE AWARD

Available for the android

www.dishpointer.com
info@dishpointer.com

iPONT, Hungary - 3DTV

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

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CEO
Zoltan Korcsok

CTO
Andor Pasztor

• iPONT's softwarevsolution converts 3D for use with auto-stereoscopic monitors
• 3D enjoyment without annoying glasses
• Potential for receiver manufacturers to expand their STB's to include 3D
• Compatible with the variety of manufacturer auto-stereoscopic monitor solutions

Megasat, Germany - Receiver and Wholesaler

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

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GM
Sven Melzer

• 80% of distributed products come from in-house MEGASAT brand
• full range of satellite components
• special focus on self-aligning camping antennas
• distribution to the whole of Europe

Sapro, Czech - Receiver and Wholesaler

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

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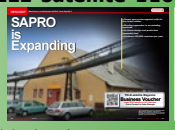
Owner
Lubomír Proboszcz

Sales
Petr Zwrtek

Sales
Jana Proboszczová



• Covers every price segment with its four brand names
• Starting expansion to surrounding countries
• In-house design and production (assembly line)
• Produces 100,000 receivers per year

WSInternational, USA - Receiver and Wholesaler

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

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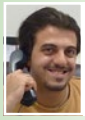
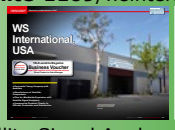
Owner
Robby Dosetareh



Sales
Joseph Bassala



• Successful Young Company with Ambition
• Manufacturer of Satellite Components
• Plan for Worldwide Expansion with Satellite Signal Analyzers
• Inexpensive Products Thanks to Efficient Production and Distribution

BYA, Algeria - Dishes and Receiver

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

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GM
Slimane Ait Yala

Boiingsat, China - LNB

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

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GM
Haowen Chiang

Co-Owner
Yunnjye Qin

Sales
Jason Chiang

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

Bomare, Algeria - Receiver

www.TELE-audiovision.com/**TELE-satellite-1105**/bomare.pdf

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Technical Manager
Tewfik Lamrani

Prevail, China - Fibre Optics and CATV

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

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Sales
Necy-xu

Sales
Helen

Production Manager
Ren Guorui

• Substantially Increased Sales for 2011 Thanks to Rising Exports
• Additional Factory Soon to be in Operation
• Increased Number of Employees
• Four New SMT Machines in Operation
• Very Active R&D Team

Jiuzhou, China - IPTV Boxes

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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

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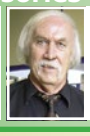

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Превосходная спутниковая система

Unbelievable: this is DXer Daniel Rank's private satellite reception system. He installed everything himself and routed all of the cables in a highly professional manner.

- *Может переключаться между 12-ю зафиксированными спутниковыми конверторами*
- *Использует самодельный ПК в качестве спутникового ресивера*
- *исключительно аккуратная обмотка каждого компонента*
- *управляет своей системой, используя только компьютерную мышь*
- *есть возможность дистанционного управления ресивером через смартфон*

The Best Professionally Constructed Private Satellite System

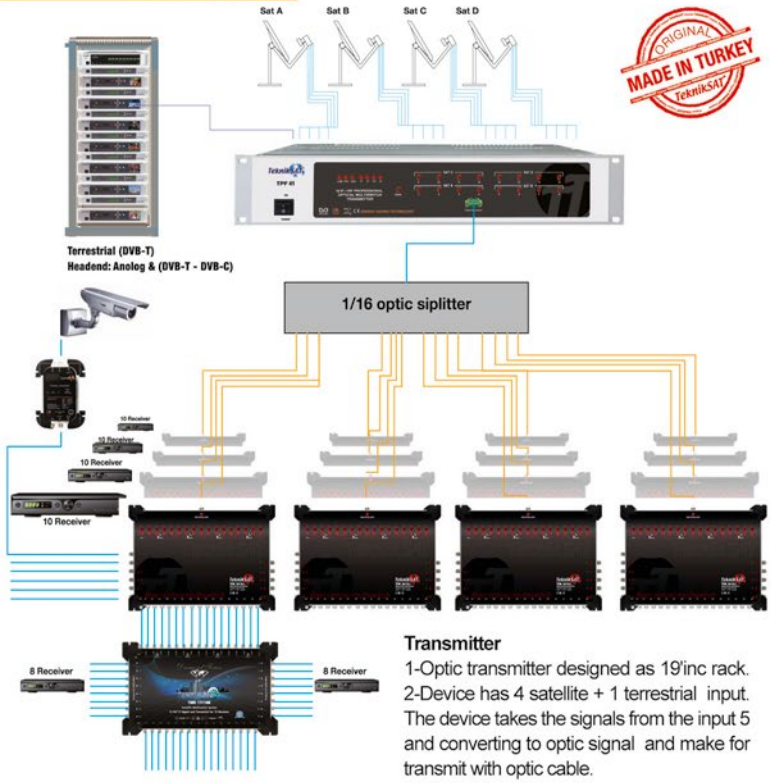
Usually not much care is taken when setting up a private satellite system: as long as TV channels are received, everything is good. How all the cables are installed doesn't really matter. But there is one satellite DXer that is an exception to this rule. He professionally erected his exceptional satellite system according to the philosophy „Only the best is good enough".

We paid him a visit in the small town of Blankenberg in the southern part of Thuringen in Germany right along the river Saale. Daniel Rank became interested in anything electronic at a very early age: „When I was 12 years old I started helping friends and relatives with electric related installations." He is an electronics technician and works for a small company (STS Signal Technik Sprenger) that manufactures specialized communications products, such as, telephones that still work using a hand crank that would be used in times of emergency when multiple electronic networks have failed. He works in the company's development laboratory.

He came in contact with satellite reception while in the military. „I was stationed in Kosovo twice, once in 2002 and again in 2003." To provide the soldiers with TV from home, the military installed a satellite system that provided only four TV channels. Daniel Rank was determined to improve that number. He installed his own satellite system and started to be-

■ **The front side of Daniel Rank's house. There's nothing that can be seen here that would even hint at the highly professional satellite reception system that is installed on the other side of the home.**

TekniksSAT fiber Optical systems



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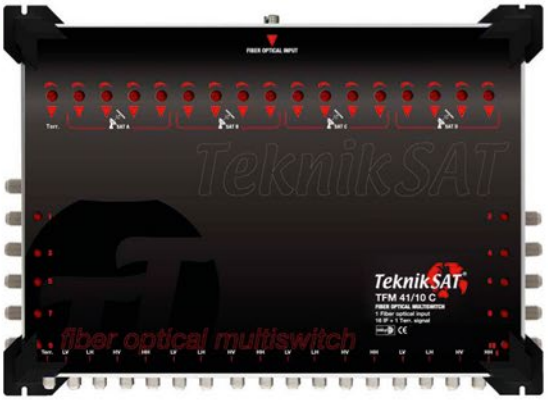

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■The three dishes are actually quite inconspicuous; the trees hide them very well.

come more and more involved with that subject.

„When I came back home, I acquired a Toroidal 90 antenna." This type of antenna can be used to receive multiple satellites all at the same time using as many LNBs as needed for each satellite without having to turn the antenna. The dish as shaped in such a way that the focal point is actually a focal line that stretches across a large orbital arc. „I started with four Quad LNBs for the satellites at 13 east, 19 east, 23 east and 28.2 east." And just like any other satellite DXer, it didn't take long before this was no longer good enough for Daniel. Over the years he continuously added LNBs until now he has a total of 12 LNBs on his antenna. „The eastern-most satellite that I can receive is at 33 east while the western-most is at 12.5 west." He also added two motorized antennas.

„Both of them are equipped with DiSEqC motors and Twin LNBs. One of the dishes is 120cm in diameter and the other

■To set up his satellite system Daniel Rank used his Smartphone: he uses the Android applications on it to remotely control his homemade PC system through his own WLAN

one is 110cm wide. The range of the antennas reaches from 75 east to 34 west."

What makes Daniel Rank's satellite system so unique is how all of the components are connected together and how all the cables are routed: it's all highly professional! Thanks to his electrical installation experience, he knows exactly how to professionally install cable and also what to look out for. He doesn't use the standard white installation cable that is actually meant to be used indoors, instead he uses better-protected cable designed to be used outdoors. He even considered things like potential equalization; something that your average private antenna builder wouldn't even think about.

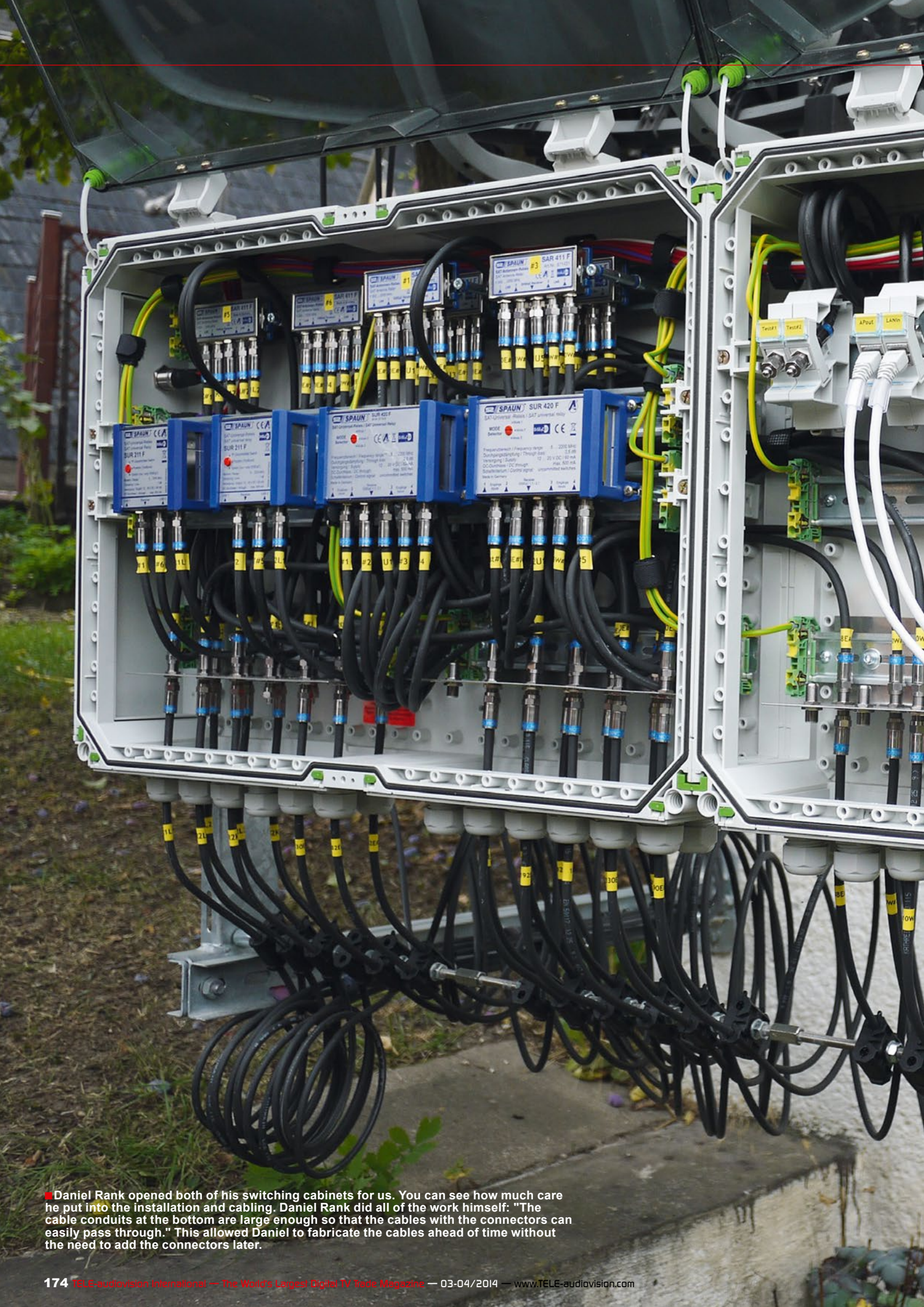
The highlight of his system is the homemade PC that he uses to control everything. „My Home Theater consists of six satellite tuners and eight 1.5 GB hard drives that are switched using RAID." The signals from all of his LNBs end up in his PC and he can use the PC's mouse to switch between channels. If, while I'm watching a TV channel, I decide I want to check my e-mails or surf the Internet, I can do that with a simple mouse click." Instead of a remote control that he now only needs to adjust the speaker volume on his 7.1 HiFi system, the only device he uses while watching satellite TV is the mouse.

„When I want to adjust the settings on my system, I use the Android programs on my Smartphone to remotely control the DVB channels." Daniel Rank has optimally set up the available software and is already prepared for new technologies such as the Ka-band and SatIP. „My cabling is already prepared for it, I'm just waiting for less expensive hardware to become available."

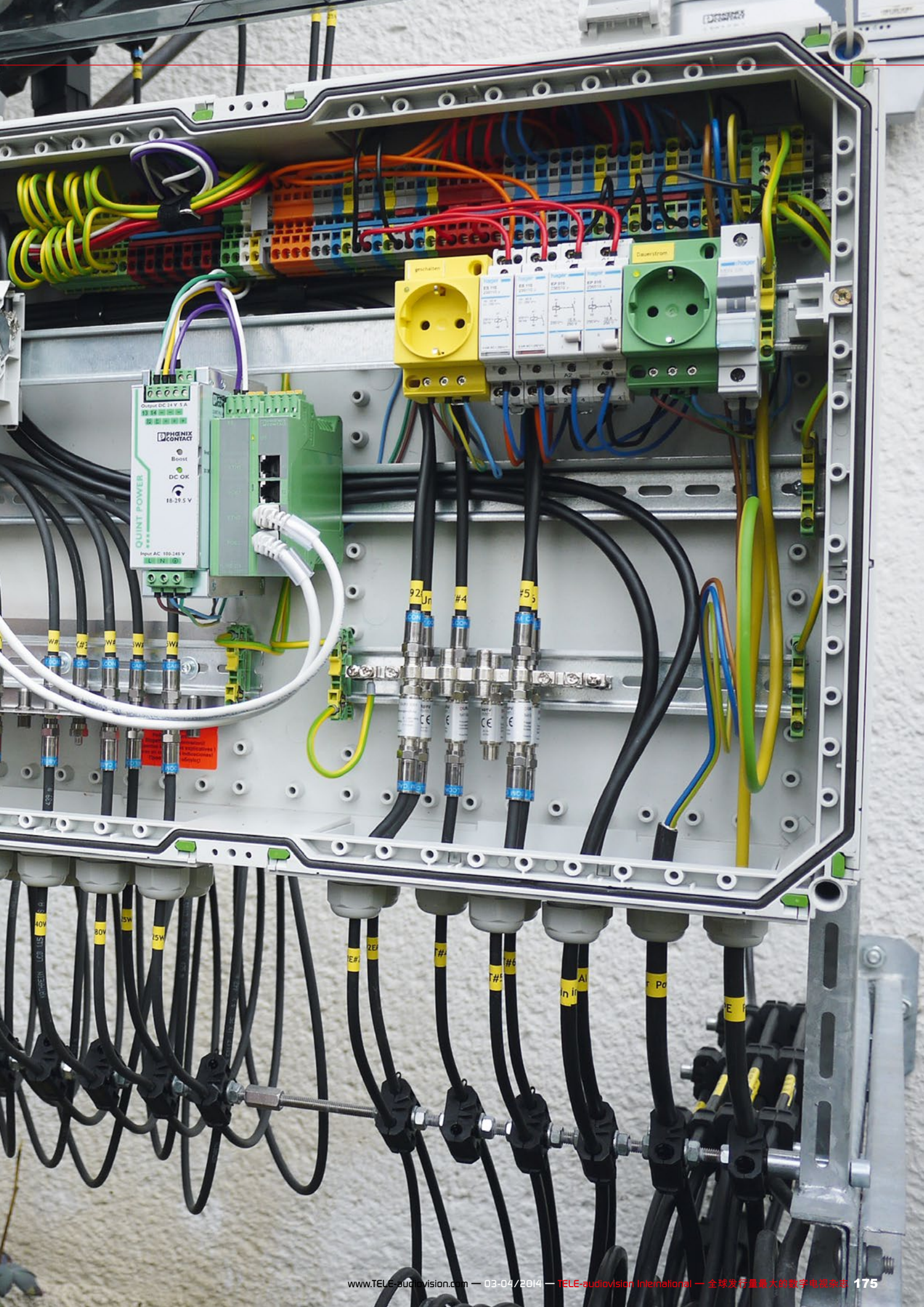
Daniel Rank is not totally satisfied with his system: „I'm planning to reconstruct the Toroidal antenna's LNB mounting rail in order to be able to adjust the height of the LNB installation." Not all of the satellites sit perfectly on the orbital belt, some of them are in inclined orbits. Daniel Rank is a perfectionist; his philosophy mentioned at the beginning should not only be understood like this: that the hardware has to be the best, the installation itself has to be the best it could possibly be.

Daniel Rank managed to get it done: his satellite reception system is without a doubt the best private professionally installed system there is!

From the side you can see the 12 LNBs on his Toroidal antenna. This antenna is shaped in such a way that all of the 12 LNBs sit in the focal point of the antenna. All 12 satellites can therefore be equally received depending on the footprints. The box on the wall provides a WLAN signal. Why? "My WLAN signal is attenuated quite a bit when it goes through the wall, that's why I installed a WLAN repeater so that whenever I'm working on my system out in the yard, I'll have an excellent WLAN signal."



Daniel Rank opened both of his switching cabinets for us. You can see how much care he put into the installation and cabling. Daniel Rank did all of the work himself: "The cable conduits at the bottom are large enough so that the cables with the connectors can easily pass through." This allowed Daniel to fabricate the cables ahead of time without the need to add the connectors later.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1. Another detail: Daniel drilled the potential equalization plate himself: "The holes are located precisely above the cable conduit openings. In this way not one cable needs to be bent; they can be routed straight through to the connector jacks."

2. The 110cm motorized antenna. Even here the LNB cables were correctly and professionally fastened and routed into the house.

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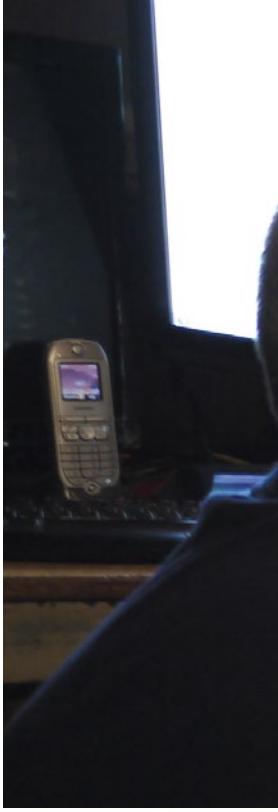

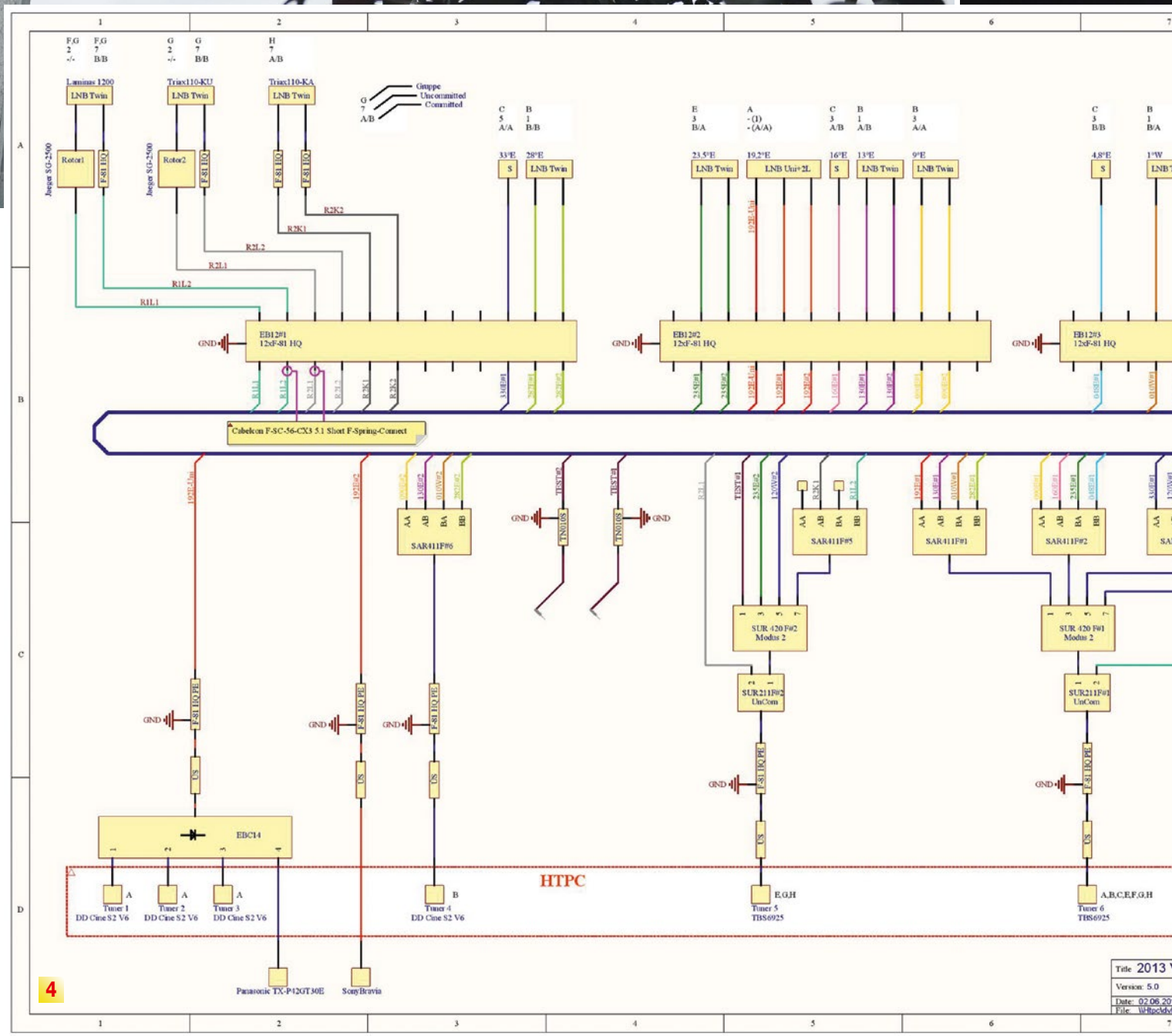
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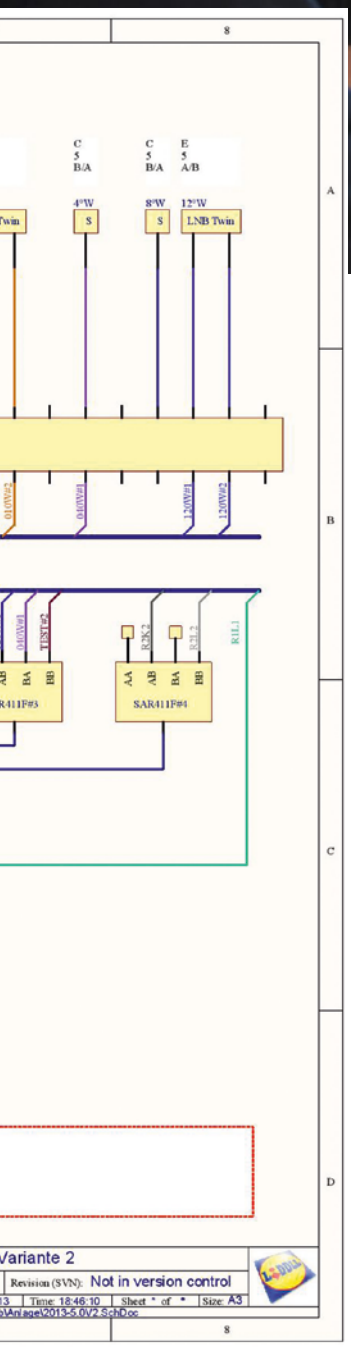
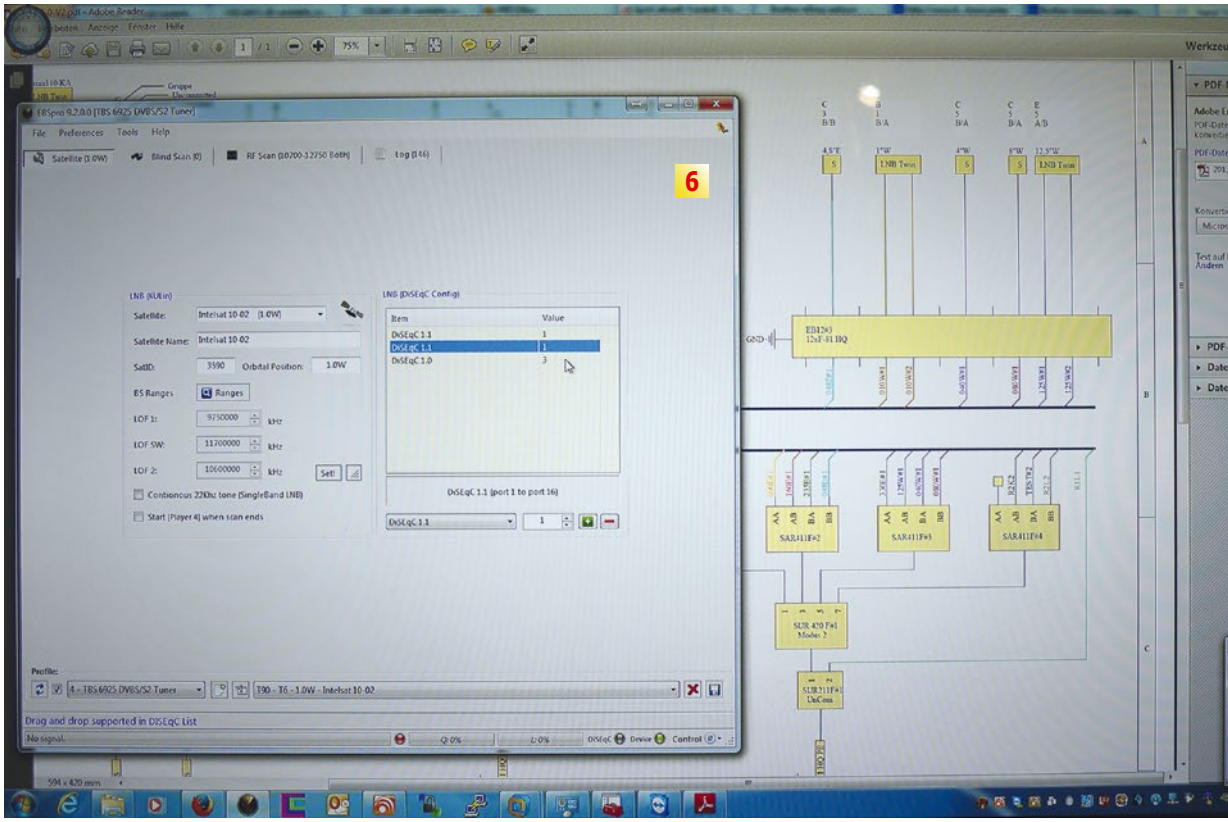


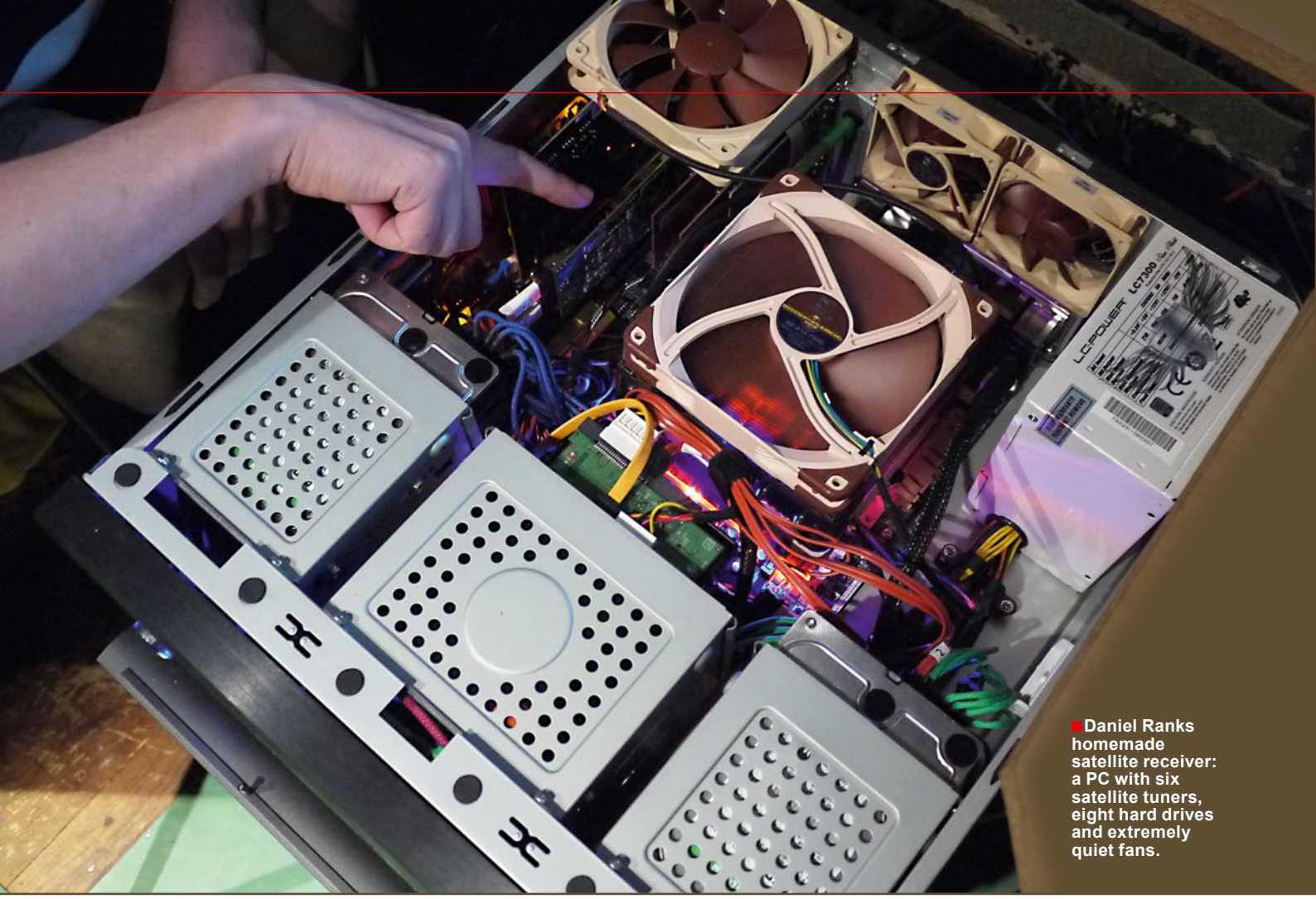


3. The 120cm antenna. This one is already prepared for the connection of a Ka-band LNB.

4. Daniel Rank's satellite reception system block diagram.

5. Daniel Rank in his shack. He sits here in the evenings and enjoys all of the channels he can receive with his system. "I'm a football fan but I also like to watch documentaries." His favorite satellites are at 26 east for Dubai Sports and 1 west for the numerous documentaries. "I also like to switch over to the satellites at 23 east, 12 west and 24 west; there's always a sports feed there that I can easily find through a Blindscan."

6. Daniel demonstrates how he switches between the 16 LNBs. The various DiSEqC switches have to be correctly switched for each LNB.



Daniel Ranks homemade satellite receiver: a PC with six satellite tuners, eight hard drives and extremely quiet fans.

Six-Tuner Receiver

Daniel Rank's Homemade Satellite Receiver

Tuner 1: ASTRA via SCR (1210 MHz)
Tuner 2: ASTRA via SCR (1420 MHz)
Tuner 3: ASTRA via SCR (1680 MHz)
Tuner 4: ASTRA via SCR (2040 MHz)
Tuner 5: Antenna motor 2 switched through the SPAUN SUR211F#2's uncommitted switch #2

To connect to, for example, the satellite at 23.5 east, the correct switching is:

uncommitted switch #3
(SPAUN SUR211F#2 - input 1)
uncommitted switch #3
(SPAUN SUR420F#2 - input 2)
committed switch #3
(without switching)

Tuner 6: All in one: Switching between antenna motors and fixed LNBs via SPAUN SUR211F#1. The antenna motors are switched in uncommitted switch #2 and USALS mode.

The fixed LNBs are connected via input 1 (uncommitted switch #1) of the SPAUN SUR211F#1 and SPAUN SUR420F#1 in mode 2. It's mode 2 because the command uncommitted switch #2 is always used by the SPAUN SUR211F#1,with the uncommitted switch #2 (or US4, 6, 8, 10, 12, 14, 16) it would always switched to the antenna motor. Mode 2 passes the uneven US 1, 3, 5, 7 through which then allows cascading. For example, to switch to the 4 west satellite, the correct path would be:

uncommitted switch #1
(SPAUN SUR211F#1 - Input 1)
uncommitted switch #5
(SPAUN SUR420F#1 - Input 3)
committed switch #3
(SPAUN SAR411F#3 – Input 3)

It would also work with this combination since the SPAUN SUR211F#1 will switch to Input 1 with all of the uneven ones:

uncommitted switch #5
(SPAUN SUR211F#1 - Input 1)
uncommitted switch #5
(SPAUN SUR420F#1 - Input 3)
committed switch #3
(SPAUN SAR411F#3 – Input 3)

Note: the uncommitted switch from the SPAUN SUR211F and the SUR420F can also be accessed using an alternate address:

normal: E0 10 39 Fx
(10 = all Switches)
alternative: E0 18 39 Fx

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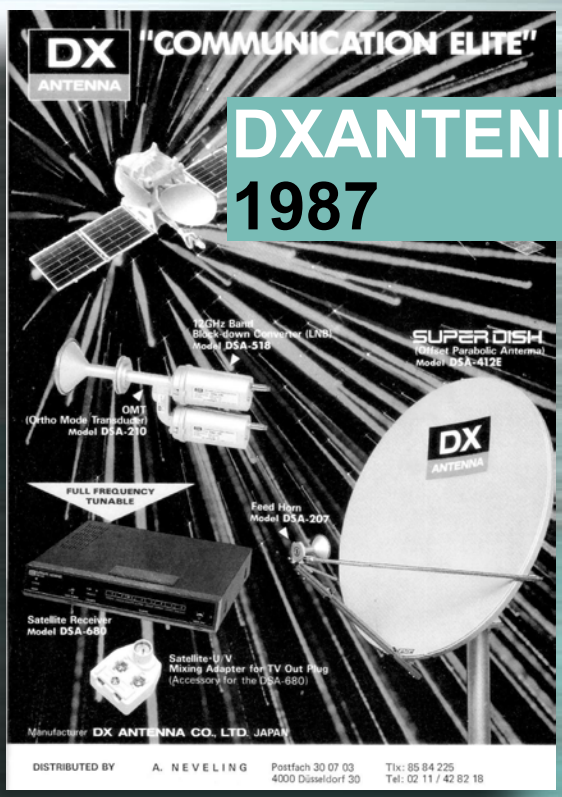
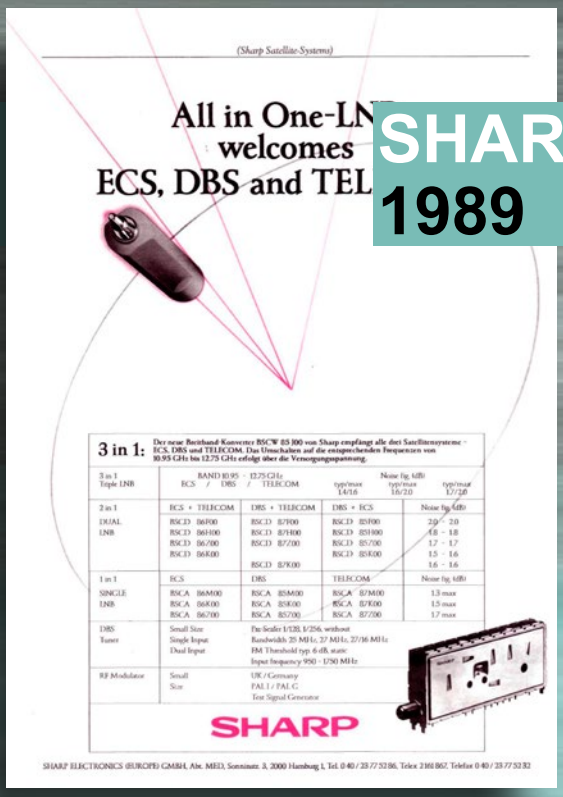


DXANTENNA 1987

ASTRA 1987

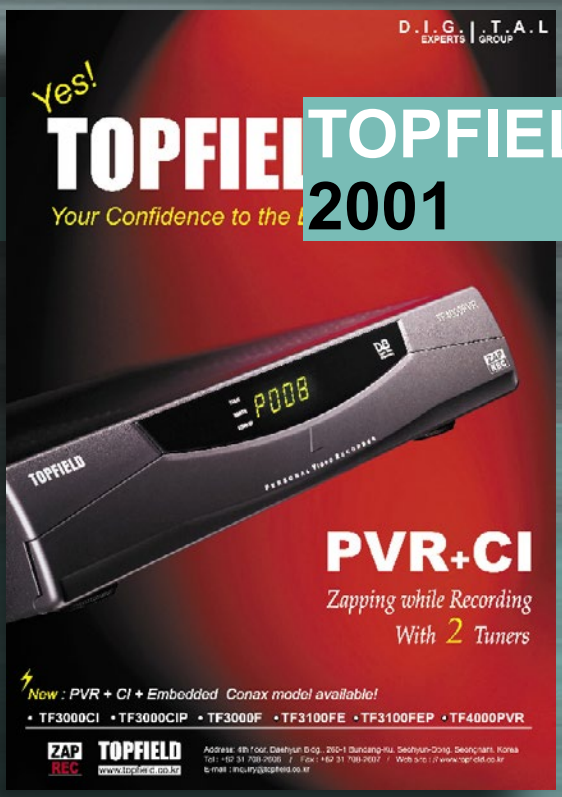
MASPRO 1988



SHARP 1989

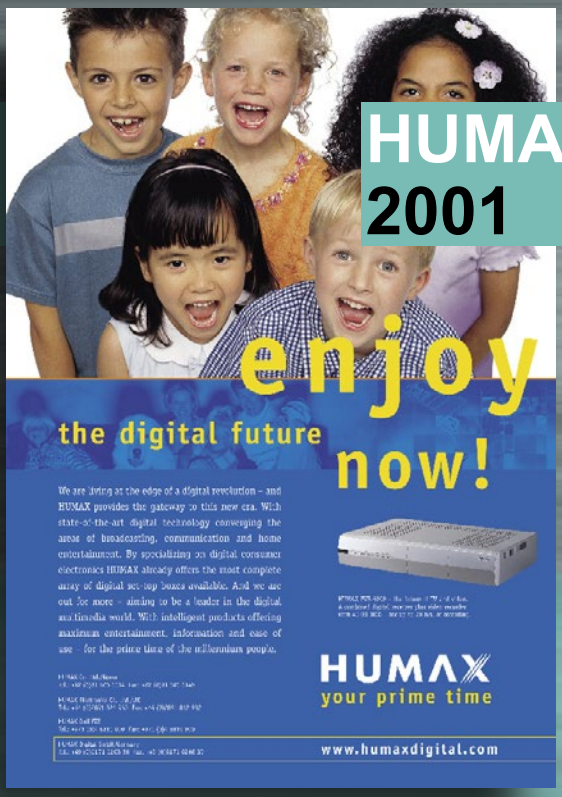
Made Them Big!

Success with TELE-audiovision Magazine



TOPFIELD 2001

MTI 2001



HUMAX 2001

ARION 2001

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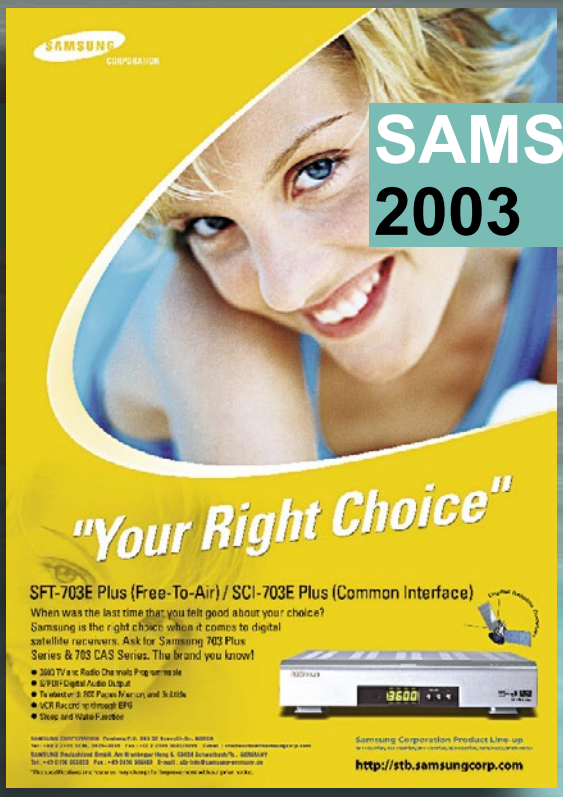
These Companies Started Their International

NDS
2002

DREAM
2002

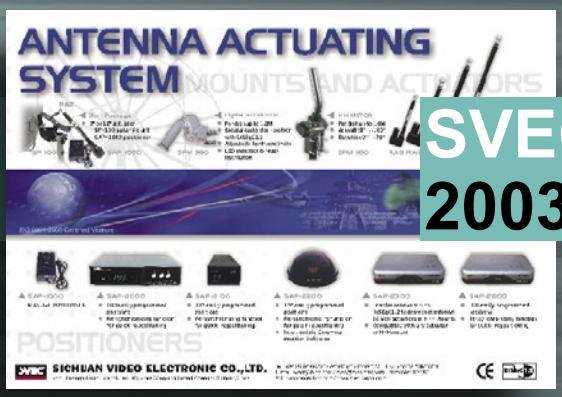
KAON
2003



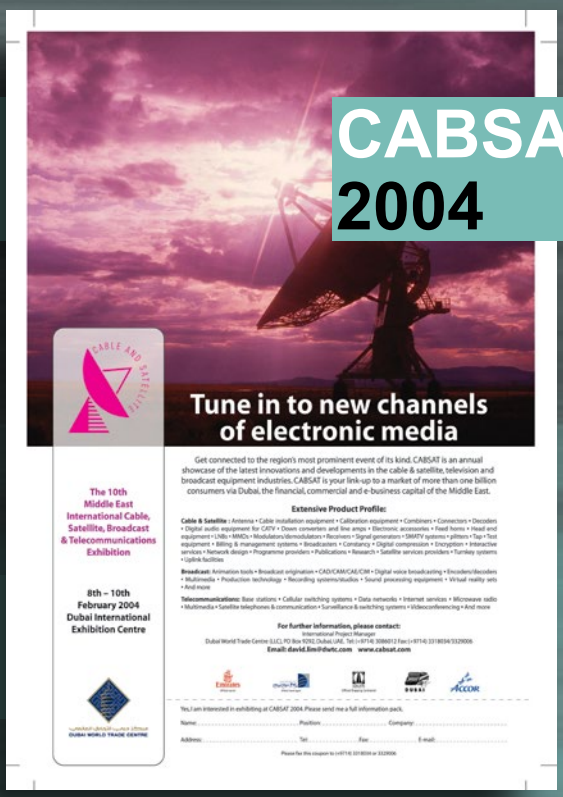
SAMSUNG
2003

Made Them Big!

Success with TELE-audiovision Magazine

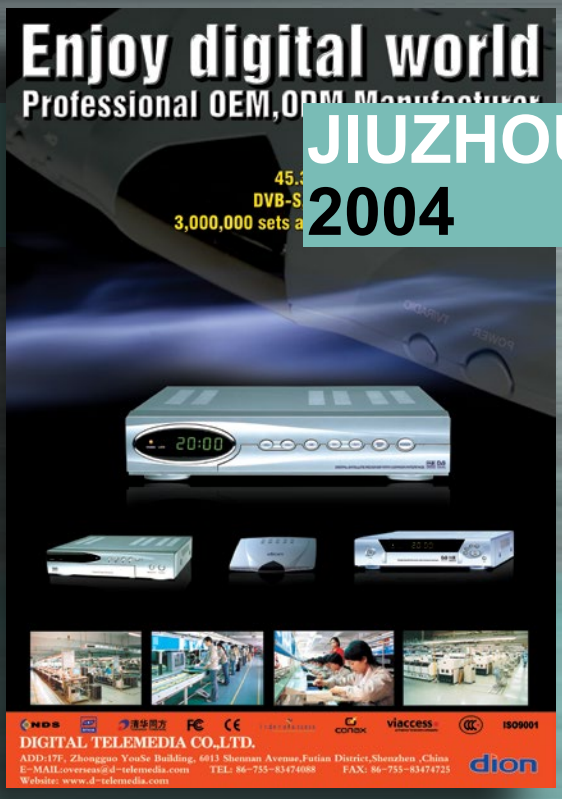


SVEC
2003



CABSAT
2004

JONSA
2004



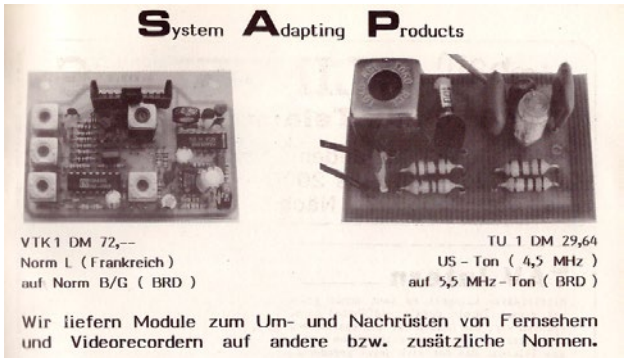
JIUZHOU
2004

CHANGHONG
2006

30 Years Ago

System Adapting

Adapt your Norm B/G tv set to receive the French Norm L or receive the US tv audio at 4.5 MHz with a 5.5 MHz tv set.



TV-ELDORADO USA

Davon kann man nur träumen, Fernsehen in Überfülle, via Kabel und via Satellit. Per Eriksson berichtet über den Musikkanal "MTV" im US-Kabelnetz und Hans-Werner Geruhn über Satelliten-TV in den USA.

Satelliten-TV

von Hans-Werner Geruhn, Rösrath

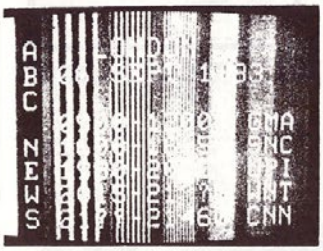
Von August bis Oktober letztes Jahr hatte ich Gelegenheit, die USA zu bereisen, und wieder einmal - obwohl es schon meine vierte USA-Reise war - kam ich in mancherlei Beziehung aus dem Staunen nicht heraus. Sah man vor zwei Jahren noch kaum irgendwo Parabolspiegel, so scheinen sie jetzt überall im Land aus dem Boden zu schießen. Entlang den Highways und in den Städten, auf Moteldächern oder -parkplätzen, in Gärten, vor den Häusern oder vor Fernsehgeschäften, zur Demonstration und zum Anfassen.

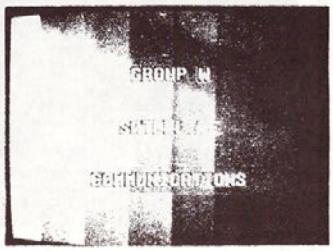
Und daß dies alles zu durchaus erschwinglichen Preisen zu haben ist, sah ich in Central Florida bei einem Anbieter (Foto), der 80 Kanäle Satelliten-TV für 2495.- Dollar garantierte. Bei entsprechend größerem Spiegel oder mit Motorantenne läßt sich bequem die doppelte Anzahl Kanäle einfangen.

Satelliten-TV Empfangsanlagen heissen in den USA einfach "earth station" oder "TVRO" (Television Receive Only). In Philadelphia lernte ich einen Satelliten-TV-Fan kennen, der zu seinem Parabolspiegel auch gleich noch die passende Autonummer hatte.

Bei ihm konnte ich mir auch sehr eindrucksvoll die ganze Faszination des Satellitenempfangs vorführen lassen. Er ist stolzer Besitzer eines 4m Spiegels des Janeil Systems.

Neben den kommerziellen Programmen gibt's über Satellit auch private Sendungen, die aus allem bestehen,





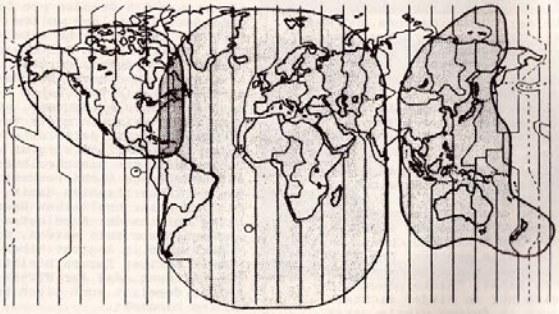
Sat-TV über AFN-TV

Seit 1.Februar ist es soweit. Ohne weitere Ankündigung begann AFN-TV mit der Direktübertragung amerikanischer Programme über Satellit.

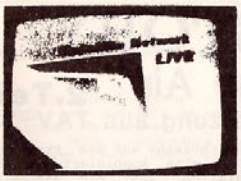
In Frankfurt, dem AFN-Hauptquartier, benutzt man einen 11m-Spiegel (siehe Foto), der von der DBP zur Verfügung gestellt wurde und später gemietet werden soll. Bis es soweit ist, wird bei Satellitenübertragungen etwa jede Viertelstunde eine Laufschrift eingeblendet:
"This broadcast is a test of the AFRTS SatNet system in conjunction with the Deutsche Bundespost".
Beim Berliner AFN-TV-Sender, der ja keine Direktverbindung nach Frankfurt hat, gibt's ebenfalls Satelliten-TV. Dort benutzt man die von den Franzosen (FFB) ausrangierte 9m Antenne, also alliierte Zusammenarbeit.

Zum Programm:
Nach wie vor kommt der Großteil der Programme über Videobänder zu AFN-TV. Das Satellitennetz wird nur für aktuelle Sendungen benutzt. Täglich gibt es jetzt, teils um wenige Stunden zeitversetzt, teils live, die folgenden US-Shows (auch die Nachrichten sind in den USA Shows):
0600 ABC World News
0630 CNN Sports
0700 NBC Nightly News
1200 CNN Headline News
1600 The Today Show (von NBC)
1800 CNN Headline News
2200 CNN Headline News (außer weekend)
ca 0030 The Tonight Show (NBC)
CNN steht für "Cable News Network" und ist der Nachrichtenkanal des berühmt-berüchtigten Ted Turner.
Insgesamt etwa sechs Stunden täglich werden über Satellit übernommen, nur vier Stunden täglich sind jetzt bei AFN-TV noch sendefrei! Dies ist Europarekord. Auch was die Qualität des Programms betrifft, übertrifft AFN-TV allemal jede europäische Anstalt (außer in puncto Kultur etc).
Wer auch nur die geringste Chance hat, AFN-TV zu empfangen (oder gleich den AFRTS-Satelliten), sollte so ziemlich jeden Aufwand treiben - es lohnt sich. Und Englisch lernt man dabei sowieso von alleine.

AFRTS 'SATNET' INTERNATIONAL TV SERVICE



SATCOM IR 139° W SPOT BEAM | INTELSAT IV 1° W GLOBAL BEAM | INTELSAT 181° W HEMISPHERIC BEAM



Über drei Satelliten überträgt AFRTS sein Programm, praktisch auf der ganzen Erde ist ein Empfang möglich. Die Tabelle unten zeigt das Programm, AFN-TV übernimmt nicht alles. Die Bildschirmfotos links zeigen AFN-TV Hinweistafel für eine Satelliten-Direktübertragung, das Logo der CNN Headline News und das Logo der "Today" Show.
Karte und Tabelle: "Popular Communications" 9/83; Fotos: alle Thomas Martin, Redaktion ZITTY, Berlin.

Armed Forces Radio Television Service (AFRTS)

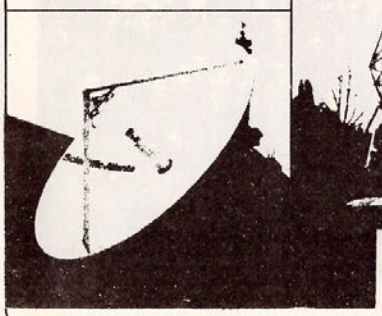
Weekday Program Schedule

Time	Program
14:00	The Today Show (NBC)
16:00	Cable News Network (CNN)
18:00	varies
19:00	varies
20:00	varies
22:00	Advisory Block
22:15	Armed Forces Digest
22:20	Paul Harvey (ABC)
22:30	ABC World News Tonight
23:00	NBC Nightly News
23:30	CNN News
02:30	MacNeil/Lehrer (PBS)
03:00	CNN Sports
03:30	The Tonight Show
04:30	Nightline (ABC)
05:30	Sign off

Weekend Programming

Time	Program
17:00-22:00	Sporting events
22:30	NBC or ABC Evening News
02:30	NBC Monitor (Sundays)

(All times are GMT/UTC)



Links die Satellitenantenne für AFN-TV Germany beim Frankfurter Hauptquartier, oben die Satellitenantenne für AFN-TV Berlin.

"Satellite TV" update

Nach dem wir im letzten Heft das Programm des französischen Satellitenfernsehens "TV5" abdruckten, folgt hier wieder einmal (s.TAV-11) das aktuelle englische Satellitenprogramm. Gesendet wird mittlerweile fünf Stunden täglich.

Hauptsächlich finanziert sich das Programm aus Werbung und zu einem geringen Teil auch aus Gebühren von den Kabelgesellschaften, die das Programm übernehmen. Wer einen Werbespot buchen will, muß umgerechnet DM 1000.- zahlen, die Spots sind einheitlich 30 Sekunden lang und man befindet sich dann in so erlauchter Umgebung wie Wrigleys, Coca-Cola, Black and Decker, Unilever, Kelloggs und so weiter, die alle schon über Satellite-TV werben.

Die Fotos geben einen Einblick in die Studioanlagen. Die linken drei Fotos zeigen oben das eigenartig 'verspielte' Sekretariat, darunter die Satellite-Antenne. Sie ist von der Straße aus nicht sichtbar und erst nach Klettern über Feuerleitern zu fotografieren. Darunter das Geschäftsschild an der Hausfront. Die rechten Fotos zeigen oben Blick in die Bildregie, darunter Sprecherraum für die verbindenden Ansagen und die Nachrichten, und das Foto rechts unten zeigt das ausgestrahlte Bild. Der linke Fernseher vor dem Sender (Preview), der rechte den Senderausgang (Transmission).

Alle Fotos von Thomas Martin, Berlin. Programmschema via Satellite TV News.

SATELLITE Programme Schedule – January 1984 PROVISIONAL

	5pm	6pm	7pm	8pm	9pm	10pm
Monday	POP MUSIC	COMEDY SERIES	FAMILY SERIES	DRAMA SERIES	DOCU-MENTARY	SPORT
Tuesday	POP MUSIC	COMEDY SERIES	FAMILY SERIES	ACTION SERIES	COMEDY SERIES	SPORT
Wednesday	POP MUSIC	COMEDY SERIES	LIGHT ENTERTAINMENT SPECIAL	MINI SERIES	COMEDY CLASSICS	SPORT
Thursday	POP MUSIC	COMEDY SERIES	DRAMA SERIES	STUNT SERIES / DOCUMENTARY		SPORT
Friday	POP MUSIC	COMEDY SERIES	MINI SERIES	LIGHT ENTERTAINMENT SPECIAL	COMEDY SERIES	SPORT
Saturday	POP MUSIC	COMEDY SERIES	ACTION SERIES	CINEMA GREATS		LIGHT ENTERTAINMENT SPECIAL
Sunday	POP MUSIC	FAMILY SERIES	SUNDAY NIGHT MOVIE			MUSIC

NEWS HEADLINES (Provisional Time)

20 Years Ago

Flat Screen

Panasonic surprised the market with this new flat screen tv. The TH-14F1 sports a display only 98mm thick. The 36cm tv is a typical 2nd monitor, but Panasonic also plans to bring to market bigger tv sets, which can be put on the wall like a painting. Panasonic expects to to have conquered 10% of the market worldwide by the year 2000 with a yearly output of about 140 million flat screen tv sets.

10 Years Ago

#12-01 2004 www.TELE-satellite.com

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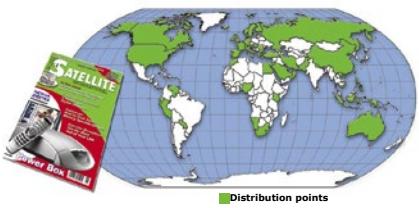

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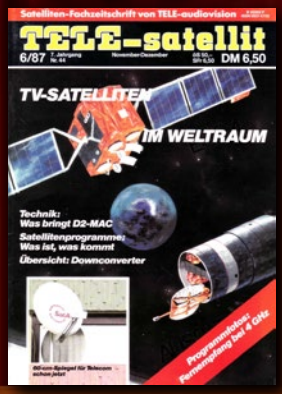

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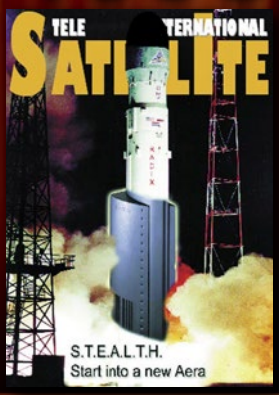

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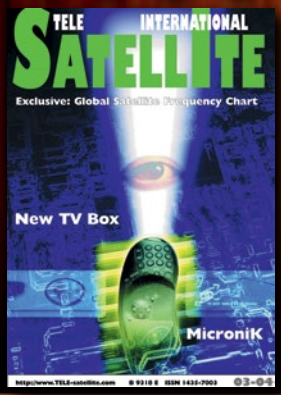

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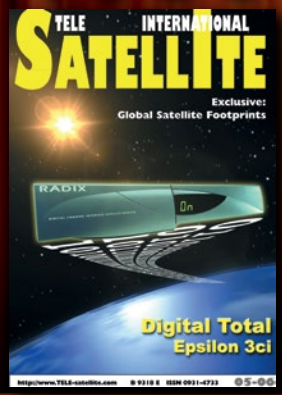

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Issue	**TELE-audiovision 03-04/2014**	**TELE-audiovision 05-06/2014**	**TELE-audiovision 07-08/2014**	**TELE-audiovision 09-10/2014**
#	1403	1405	1407	1409
Editorial Deadline	27 December 2013	28 February 2014	2 May 2014	27 June 2014
Advertisement Deadline 广告截止日期	**3 January 2014**	**7 March 2014**	**9 May 2014**	**4 July 2014**
Hardcopies	14 February 2014	18 April 2014	20 June 2014	15 August 2014
Online	28 February 2014	2 May 2014	4 July 2014	29 August 2014

Digital TV Exhibitions

10 - 12 March 2014
DVB World
Prague, Czech

11 - 13 March 2014
CABSAT 2014
Premier Broadcast & Satellite Platform in the ME & North Africa
Dubai International Convention and Exhibition Centre, Dubai, UAE
Opening Hours:
11 - 12 March: 10:00am - 6:00pm
13 March: 10:00am - 5:00pm
www.cabsat.com

11 - 13 March 2014
Satellite2014
Washington D.C., USA

18 - 20 March 2014
TV Connect
London, UK

20 - 22 March 2014
CCBN 2014
China Content Broadcasting Network Exhibition - largest broadcasting technology and equipment expo in the Asia-Pacific region
China International Exhibition Center (CIEC), Beijing, China
Opening Hours:
20 - 21 March: 9:00am - 5:00pm
22 March: 9:00am - 4:30pm
www.ccbn.tv

13 - 16 April 2014
HKTDC Spring
Hongkong, China

7 - 10 April 2014
NAB Show 2014
For broader-casting® professionals
Las Vegas Convention Center, Las Vegas, Nevada, USA
Opening Hours:
7 - 9 April: 9:00am - 6:00pm
10 April: 9:00am - 2:00pm
www.nabshow.com

29 - 30 April 2014
VSAT Latin America 2014
Sao Paulo, Brazil

20 - 21 May 2014
SatCom Africa
Johannesburg, South Africa

20 - 22 May 2014
ANGACOM 2014
Cologne, Germany

17 - 20 June 2014
CommunicAsia 2014
Singapore

5 - 7 August 2014
ABTA 2014
São Paulo, Brasil

19 - 21 August 2014
SET Broadcast & Cable 2014
São Paulo, Brasil

27 - 30 August 2014
BIRTV 2014
International Radio, TV & Fim Equipment Exhibition
China International Exhibition Center (CIEC), Beijing, China
Opening Hours:
27 - 29 August: 9:00am - 5:00pm
30 August: 9:00am - 3:00pm
www.birtv.com

5 - 10 September 2014
IFA 2014
Berlin, Germany

11 - 14 September 2014
CeBIT Bilisim Eurasia
Istanbul, Turkey

12 - 16 September 2014
IBC 2014
Amsterdam, The Netherlands

13 - 16 October 2014
HKTDC Autumn
Hongkong, China

October 2014
ECEBE Broadband Expo
Budapest, Hungary

8 - 10 October 2014
SCaT India 2014
South Asia's Largest Tradeshow of the Indian Cable & Satellite Television Industry
World Trade Centre, Cuffe Parade, Mumbai, India
Opening Hours:
8 October: 11:30am - 6:30pm
9-10 October: 10:30am - 6:30pm
www.scatmag.com/scatindia/

28 - 29 October 2014
VSAT Mobility 2014
Hong Kong

12 - 13 November 2014
VSAT Africa 2014
Cape Town, South Africa

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