TELE satellite 1103

Published worldwide since 1981 in all major languages

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GLOBAL DIGITAL TV MAGAZINE

02-03/2011

Company Report
SKYWORTH
Jack Jiang Managed a Highly Successful South American Market Expansion

Company Report
JIUZHOU
Huang Wei Makes a Big Move Into IPTV Production

Company Report
TRIMAX
Jerry Chu's Expansion Into New Sectors: A Smart Decision

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Eagle Chain and His Four Partners Built an OEM Out of an Engineering Firm

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Satellites in Tokyo
Big Dishes in Tokyo, An Uncommon Hobby in Japan

TELE-satellite 30 Years of Digital TV Business Reporting

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Test Report
Golden Media UNI-BOX Perfect Family Receiver

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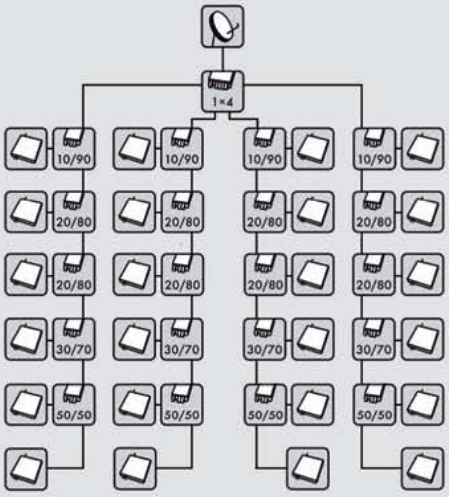

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- Blind-mating
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TELE-satellite Magazine
PO Box 1234
85766 Munich-Ufg
GERMANY/EUROPA UNION

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Published by
TELE-satellite Medien GmbH
Aschheimer Weg 19
85774 Unterfoehring
GERMANY/EUROPA UNION

Hard Copy Subscription
www.TELE-satellite.com/secure/eng/

Design
Németi Barna Attila

Advertising
www.TELE-satellite.com/ads/

Printer
Litografia Rosés
08850 Gavà
SPAIN/EUROPA UNION

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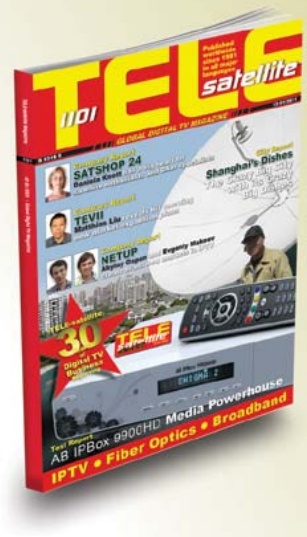
ISSN 1435-7003



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

www.TELE-satellite.com

Dear Readers,

Once again we are – as we have so often been lately – at a turning point: TV manufacturers are making a change and are looking to decide which tuner they should integrate into their TVs. For the past several decades the answer was obvious; an analog tuner had to be installed in every TV. But with the arrival of digital terrestrial TV, the answer wasn't so clear anymore. A rather logical solution might have been to not install any kind of tuner in the TV and let the customer simply decide what receiver to use. But this idea wouldn't work. How can a manufacturer offer a TV set without a tuner to the customers? "HDMI connectors and nothing else"? TV manufacturers could even do away with remote controls since they already come with every receiver.

The truth is customers simply wouldn't buy TVs like that even if the idea makes sense. It's the same with mobile telephones; they must include numerous features or else no one would buy them even though these extra features have nothing to do with making a telephone call. TVs must also have a long list of features otherwise they'd never leave the store shelves. TV manufacturers have no other choice but to integrate a TV tuner in their TVs and why not then a digital tuner for terrestrial TV. And while we're at it, why not add a satellite TV tuner and on top of that, why not include IPTV? This would eliminate the need for a receiver.

Not so fast, receivers won't become obsolete that quickly, it's actually quite the opposite. TV manufacturers first and foremost have to do what the customers want and that is to install tuners for digital terrestrial TV. Every buyer of a TV would be able to receive these signals and that's exactly what they'd expect from a TV. But does this buyer also have a satellite system or a high speed Internet connection for IPTV? That's a question unique to each individual situation.

A TV will never include all of these different possibilities. Receiver manufacturers are far too innovative for that and are continuously expanding and modifying the receivers functions in every possible direction. Here's only one example: radio reception will never be included in a TV yet every receiver is capable of radio reception. A media player or PVR are functions that TV manufacturers rarely have anything to do with since these functions really have nothing to do with what a TV is supposed to do. But they definitely are features that a customer would expect to find in a receiver.

The chance that a TV will one day have all the features that a receiver has today is very unlikely. TVs will always include only basic features while all the extra functions will only be found in the external receiver now and in the future. The receiver is and will always be the focal point of your TV and media reception!

Alexander Wiese
Editor-in-Chief TELE-satellite

ICECRYPT

FREEVIEW RECEIVERS

T2400

- High Definition Twin Tuner DVB-T2 PVR
- 1TB Hard Drive
- Series Recording & Recommendation
- Supports MP3 jukebox, DivX and AVI movie playback

T5000

- Digital Freeview Receiver
- RF-Modulator
- Twin SCART
- Picture in graphics (PIG) support
- Electronic Programme Guide (EPG)
- Digital Audio Output

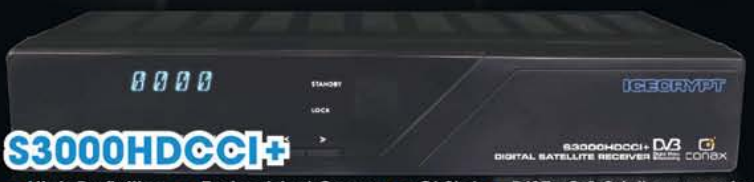
DIGITAL SATELLITE RECEIVERS

S1500C

- 1 Card Reader
- External USB 2.0 Devices (PVR Ready)
- Event Recording by EPG
- HDMI Output

S2000CCI

- Smart Card Reader
- 2 CI Slots
- PVR Ready via USB
- 10,000 Channels



S3000HDCCI+

- High Definition
- Embedded Conax
- CI Slot
- DiSEqC 1.2 fully supported

S4000HDPVR

- High Definition PVR Receiver
- Linux embedded
- 320GB, 500GB and 1TB HDD options
- Twin Tuner

LNBs

Large range of LNBs available.

- Single
- Twin
- Quad
- Octo
- Quattro
- Monoblocks

CAMS

MPEG2 Cams available in Conax, Viaccess & Irdeto

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Professional CAMs for Decoding MPEG2 Broadcasts in a Professional Environment available in 2, 4 and 8 Channel Options

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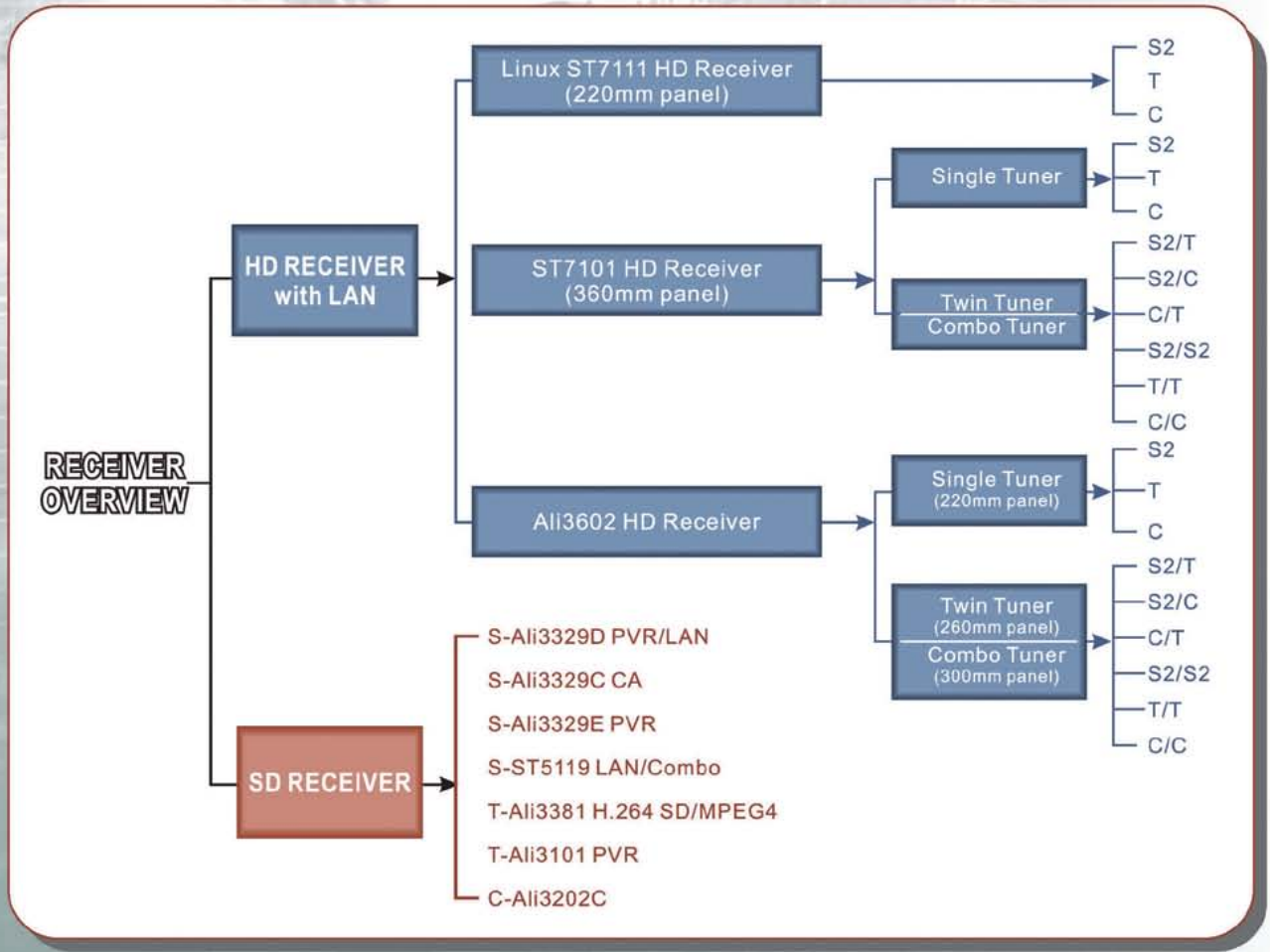

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GOLDEN MEDIA UNI-BOX 9080 CRCI HD PVR COMBO PLUS
Digital HDTV PVR receiver with BlindScan Function 10

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Skyworth

OUTSTANDING STB HARDWARE **MANUFACTURER** FROM CHINA

HT12 DVB-T HD PVR
- SD MPEG-2/HD H.264 & fully DVB-T compliant
- 4000channels TV and Radio programmable
- Support multi-language OSD
- PVR, Timeshfit

HTS11 DVBS2+T HD Combo
- Fully DVB-S2/DVB-T compliant
- 4000channels TV and Radio programmable
- Support multi-language OSD
- PVR Timeshift.

HS14 DVBS2 HD Twin Tuner
- Fully DVB-S2 compliant
- 4000channels TV and Radio programmable
- Plug-in two S2 tuner
- Fully support to 7 days Electronic program Guide
- 1 x CI , CA optional with Conax Embedded
- PVR, Timeshift,

S1L DVB-S SD CA+PVR+LAN
- MPEG-2 digital@fully DVB-S Compliant
- 4000channels TV and Radio programmable
- Fully support to 7 days electronic program guide
- 10/100 Mbps Etherent
- Software upgrade by USB, OTA, RS232 and LAN
- PVR, Timeshift

S1M DVB-S Sticker CA+PVR
- MPEG-2 digital @ fully DVB-S compliant
- 4000 channels TV and Radio programmable
- On Screen Display with multi-language
- PVR ,Timeshift ,CA optional with Conax embedded

S1N DVB-S SD FTA+PVR
- MPEG-2 digital & fully DVB-S compliant
- 4000 channels TV and Radio programmable
- Fully support to 7 days Electronic Program Guide(EPG)
- Diseqc 1.0,1.1,1.2 and USALS, Unicable
- PVR, Timeshift, CA optional with Conax Embedded

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WE ARE DISTRIBUTOR OF **TOPFIELD** STRONG DIGITAL TV VANTAGE

JAEGER HUMAX SELFSAT SMW SWEDISH MICROWAVE AB invacom Innovation in Communications MICROELECTRONICS TECHNOLOGY INC.

ALPS GIBERTINI ALLVISION Inverto digital-labs S2 SPAUN Stab

Balcony mounting parts

ALSO AVAILABLE:
- Balcony stand 100 cm Aluminium
- Balcony stand 100 cm Steel
- Balcony stand "Holland"
- Balcony holder L-form 25 cm
- Balcony holder L-form 50 cm

TOPFIELD SRP-2410

NEW

- Is fully compliant with DVB-S and DVB-S2.
- Supports DiSEqC 1.0, 1.1, 1.2 and USALS.
- Two common interface slots for conditional access modules.
- Can store up to 7,000 TV services and 3,000 radio services.
- Presents Electronic Program Guide (EPGs).
- Supports time-shift up to 5 hours at maximum.
- Records two services at the same time while displaying another service.
- Can record directly to an external hard drive (through USB/eSATA ports).
- Plays back recorded programmes at up to 64 times speed at maximum.
- Plays back video files in DivX, MPG, MP4, VOB, MKV and FLV format.
- Displays image files in JPEG format
- Provides a network game named Battle Tank.
- Provides various ways for firmware update (OTA, USB, LAN).
- Makes it easier to transfer files from/to the receiver by means of an embedded web/FTP server.

New measurements on stock

Premium

Satlook ICE

NEW

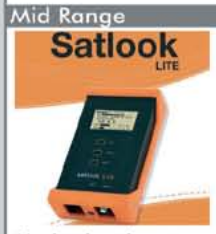
- DVB satellite-receiver 920-2150MHz
- Spectrum-analyzer with expanded spectrum
- DVB-S (Free to Air) and Analog TV-picture
- Digital readout of BER and SNR.
- Super bright 5" 16:9 TFT-LCD color display

and much more

Mid Range

Satlook LITE

NEW



- Very handy and easy to use Satellite-TVmeter.
- "EasyFind"-satellite identification
- Very sensitive
- Digital BER and S/N-ratio

and much more

Cost Effective

Digisat PRO ACCU

NEW

- Measure signallevel from two LNB's at the same time.
- Measured information are displayed on the LCD.
- DiSEqC, 22 kHz, 13/18v and mA readout.
- Generate DiSEqC, 22 kHz and 13/18v to control LNB/switch.

and much more

Consumer

AirBeeper

NEW

- Very small and handy meter for installation of DVB-T antennas.
- Extremely easy to use, no buttons or knobs.
- Pitch-tone indication in the earphone

and much more

HDTV Receiver Selection

TOPFIELD CBP-2001CI+ HD+

HDTV DVB-C Receiver

- HDTV PVR ready to external storage devices via USB port
- Output to 576i, 576 p, 720 p, 1080i with Upscaling SD content
- Playback of DivX, DivX HD, MKV-and VOB video files *.
- Display subtitles (* .srt) media files
- Playback of MP3 files and display JPG image files
- Timeshiftpuffer with a length of up to 5 hours
- Fast forward and rewind with up to 64 x speed
- Numeric display
- 2 CI + shafts modules for pay TV
- Storage of 7000 tv and 3000 radio programs
- Firmware upgrade over USB4

TOPFIELD SBP-2001CI+ HD+

HDTV DVB-S Receiver

- HDTV PVR ready to external storage devices via USB port
- Output to 576i, 576 p, 720 p, 1080i with Upscaling SD content
- Playback of DivX, DivX HD, MKV-and VOB video files *.
- Display subtitles (* .srt) media files
- Playback of MP3 files and display JPG image files
- Timeshiftpuffer with a length of up to 5 hours
- Fast forward and rewind with up to 64 x speed
- Numeric display
- 2 CI + shafts modules for pay TV
- Storage of 10.000 tv and radio programs
- Firmware upgrade over USB4

STRONG DIGITAL TV SRT 6205 - PVR Ready

USB recording capability

- Digital Satellite Receiver
- UHF Modulator to connect the receiver to TV
- 2 Common Interface slots
- USB port

SRT 7100

HDTV Receiver, USB PVR Ready

- HDTV (1080i) receiver for all digital FTA TV and Radio programmes via satellite*
- With IR extender for freedom of placement
- USB port

JAEGER HD+2011 HD+

HDTV - DVB-S Receiver

- USB 2.0 host for playback of external hard drive or USB flash drive
- 1 x Common interface slot

NEW

- PVRready. Direct recording via USB on external storage media possible
- HDTV & SDTV
- 1 x smart card reader
- EPG (7 days in advance)
- Video-resolution 1080p, 1080i, 720p, 576p
- optical signal to the align the antenna
- 5000 Program presets
- Multilingual screen menu
- HDMI out with HDCP
- Radio reception with background display
- Standby power consumption < 1 Watt

Dishes

GIBERTINI TRIAX PRODELIN

40 cm	–	White
70 cm	–	White, Black, Red
90 cm	–	White, Black, Red
100 cm	–	White, Black, Red
120 cm	–	White
130 cm	–	White, Black

Big dishes directly from our warehouse!

NEW

- 160 cm	- 300 cm
- 180 cm	- 370 cm
- 240 cm	

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HD + by ASTRA

NEW

CI+ Common Interface Plus

HDTV Receiver

VANTAGE

VT-1 Full HD PVR

DVB-S Twin FULL HDTV Receiver

- Two DVB-S2 tuner
- 4:3, 16:9, HDTV 720p, HDTV 1080p
- Video MPEG ISO 2/4, MPEG-4 HD / H.264
- 2x USB
- HDMI
- 2 CI and 2 Smart card Reader
- Time shift supported

Big Dishes

PRODELIN. A TriPoint Global Company

240 RXO

NEW

380 RXTX

2.4M - C & KU-BAND

- Precision compressionmolded centerfed reflector
- Series 1252 - Az/El Mount
- Series 1253 - Polar mount
- Low transportation cost withthree panel reflector
- Individual panels inter-changeable and fieldreplaceable
- Galvanized steel mounts Reader

3.8M - C & KU-BAND

- C-Band Intelsat F1, H4 and GType approved: approval #IA031A00 (without LNA) and# IA031AA0 (approved LNAincluded)
- Intelsat approved LNA kit eliminatescostly field testing
- C-Band INSAT & wide-bandavailable
- Precision compression molded foursegment offset reflector
- Installation time reduced withimproved mount design
- Fully galvanized steel Az/El mount
- Reflector/Feed electrical Anti-Icingavailable
- Two axis tracking configurationavailable

Multifocus Dish

emme esse ANTENNA SYSTEM · Clarke align

Professional multisattelite system

- Suitable for M-ML dishes ø 85/100/115cm
- Mount with Skew adjustment of the dish for a perfect alignment of the received satellites
- Multi-feed-holder designed for an easy pointing

An innovate system to reiceive the signal from various satellites at the same time, using one fixed mount, high gain, offset dish. When there is a big difference between longitude of the receiving dish and that of the transmitting satellite, the pointing of the dish leads to another "disalignment" between the antenna axis and the Clarke belt. This system, by the rotation of the parallel dish, allows axis realignment, assuring a stronger signal.

Optical fibre LNB

INVACOM

Innovation in Communications

Fibre LNB / Fibre Flange LNB

with optical fiber connection

AVAILABLE ACCESSORIES:

Optical 2, 4 or 8 way MDU can imitate a twin, quad or quattro LNB, and you can have up to 32 MDUs from one Fibre Optic LNB

1x2, 1x4 or 1x8 optical fibre coupler

Optical cable from 1,0 meter up to 200 meters

The Fibre Optic LNB can feed the whole Ku-band to up to 32 end-points.

Full LNB range INVACOM available as:

SNH-031, TWH-031, QTH-031, QDH-031, SNF-031, TWF-031, QTF-031 and QDF-031

Parts

Multifeedholder for 2, 3, or 4 LNB

Wallmounts

15 cm distance – Aluminium
25 cm distance – Aluminium
35 cm distance – Aluminium
45 cm distance – Aluminium
55 cm distance – Aluminium
35 cm distance – Steel
45 cm distance – Steel
50 cm distance – Steel
70 cm distance – Steel

F-Connector – 7 mm
F-Connector – 7 mm waterresistant
F-Connector – 4 mm and more

Remotesystems

AV-Linker – Videosender for remote control
Remote Blaster
Zapline 2 and more

BIG Link

Koaxialcable

High Qualitiy coax cable
Minicable Coax
Mini-Twincable Coax
> 100 dB / > 110 dB

LNBs

- MTI
- BEST
- INVACOM
- ALPS
- INVERTO
- MAXIMUM
- TITANIUM, etc.

- Single Universal
- Twin Universal
- Quattro Universal
- Quad Universal
- Octo LNB
- Monoblock Single Universal
- Monoblock Twin Universal
- Monoblock Quad
- C Band
- Circular

and many more

Inverto

- Red Extend - 40mm, 0,3dB
- Black Premium - 40mm, 0,2dB
- Black Ultra - 40mm, 0,2dB
- Black Multiconnect - 23mm, 0,2dB

All available as:

- Single Universal
- Twin Universal
- Quattro Universal
- Quad Universal

Full LNB range INVERTO available from stock

Motors

Aktuatoren/ Actuators

Mini Actuators – 6", 8", 10", 12"
Regular Actuators – 12", 18", 24"
Heavy Actuators – 24", 36"

H-H Mounts

SG 99 / SG 99 II – up to 1,00 m
SG 107 – up to 1,10 m
SG 2500 A DiSEqC 1.2 – up to 1,00 m
Stab HH100 DiSEqC 1.2 – up to 1,00 m
Stab HH120 DiSEqC 1.2 – up to 1,20 m

Multiswitches/ DiSEqC-Switches

- SPAUN
- DTRON
- JAEGER
- JOHANSSON
- MAXIMUM
- BEST

From 2 in/1 out
up to 17 in/36 out

S2 SPAUN Full range

Flat-Dishes

SELFSAT

- Works on all Ku-band Satellites
- Cross polarization improved
- Ideal for High Definition reception

SELFSAT Flat-Dishes available as:

H30D / H30D2 / H30D4

STRONG DIGITAL TV

Slimsat SA 61

- Satellite antenna with integrated Single LNB
- Simple: Installation within a few minutes

NEW

Unicable solution

Inverto digital-labs

IDLP-USS200-CUO10-8PP

This cascadable Unicable switch is the smallest form factor Unicable switch enabling the reception of 2 satellites and installations with up to 8 satellite receivers over a single cable. In addition to its eight User Bands Unicable output, the multiswitch also features two legacy outputs, a terrestrial antenna input and is powered by an external power supply

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Golden Media UNI-BOX 9080 CRCI HD PVR COMBO Plus

A PVR Receiver with an Exceptional BlindScan Function

• Whoever designed the housing of Golden Media's UNI-BOX 9080 deserves a pat on the back. It's very pleasing to the eye and would nicely adorn any TV rack or living room cabinet. The front panel sports an elegant black see-through Plexiglas flap behind which you'll find eight buttons that can be used to fully control the UNI-BOX 9080 should the remote control go missing. You'll also find two integrated card readers as well as a CI slot behind this flap. While the card reader is only compatible with the Conax encryption system, the CI slot can communicate with every type of module, for example, Irdeto, Cryptoworks, Seca or Viaccess.

TELE satellite AWARD 02-03/2011

Golden Media UNI-BOX 9080 CRCI HD PVR COMBO Plus
Perfect family receiver but also a top choice for the satellite DXer thanks to its high-speed BlindScan function

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Turkish	Türkçe	www.TELE-satellite.com/TELE-satellite-1103/tur/goldenmedia.pdf

Available online starting from 28 January 2011

A VFD display can be found in the middle of the front panel and is very easy to read even if the front panel flap is closed. When the receiver is on, it shows information on the currently selected channel, the time as well as technical parameters using small icons.

Looking at the rear panel of this new Golden Media receiver is also a joy. The first thing you notice is the two tuners; our test receiver came equipped with DVB-S2 and DVB-T HDTV tuners. Since these tuners are plug-in modules, it is possible to customize the receiver with a combination of tuners that fit your needs. DVB-S2 and DVB-C as well as DVB-T and DVB-C combinations are available from the manufacturer.

An absolute must for any HDTV receiver is an HDMI output that can provide the best possible audio and video quality to the TV. In addition the manufacturer included Scart jacks (for use in Europe), six RCA jacks for YUV, stereo audio and composite video plus an RJ45 jack, an optical digital audio output, an RS232 serial interface and since this is a PVR box you'll also find a USB 2.0 port. To top it all off, the rear panel also comes with a programmable 0/12V output as well as a main power switch so that the receiver can be completely disconnected from the power source.

We were also very pleased with the included remote control. It sits comfortable in your hand plus all the buttons are legibly labeled and organized in a very logical manner. In contrast to the remote control's plastic housing, the buttons themselves are covered with a slip-free surface that makes the entire remote control comfortable to use. The excellent multi-language user manual also included in the package must also be mentioned. Even though at first glance it seemed to be somewhat unorganized, in the end the user manual was able to answer every question that popped up during our tests and should therefore be an outstanding source of information for the user at home.

All in all, we were very happy with the receiver's quality; we were impressed with its design and even with the remote control and user manual Golden Media did not spare any expense.

When the UNI-BOX 9080 is turned on for the first time, an Installation Assistant did not appear as is the case with many other receivers. But it didn't really matter; a single push of the Menu button immediately takes you to the Main Menu. And just like the elegant design of the receiver's housing, the Main Menu is just as elegant and organized. It consists of eight submenus that let you take care of all of the receiver's settings and also let you access all of the receiver's functions.

Since this is a Combo receiver with two different tuners, the receiver naturally needs to be matched to two

More on This Manufacturer

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different antenna setups. As mentioned before, our test receiver came with DVB-T HDTV and DVB-S2 tuners.

For DVB-T, the receiver comes preprogrammed with a list of DVB-T settings from a total of 17 different regions. Most of these regions are in Europe: Great Britain, Germany, Greece, Slovenia, Denmark, Finland, Italy, Poland, Russia, Spain, Sweden, The Czech Republic and Slovakia. There are also settings for Australia. These regional settings take into account any differences there might be from one region to another such as the frequency band used or the channel plan. Naturally you can manually scan each desired frequency in the UHF or VHF band with individual parameters. The UNI-BOX 9080 can also supply 5V at the DVB-T antenna input so that a signal amplifier could be used with an antenna without the need of an external power supply.

The red function button can be used to start a fully automatic channel scan across the entire frequency band. In our case the scan found all available DVB-T channels in 84 seconds. Unfortunately, the UNI-BOX receiver is not yet DVB-T2 compatible.

For DVB-S/S2 reception, the necessary settings and options are far more extensive. The manufacturer included a preprogrammed list of 44 European satellites. Unfortunately, Asian, American or Oceanic satellites are not to be found in the list and even the included European satellite and transponder data is not all that up to date. On the other hand, we were impressed with the variety of the available LOF and DiSEqC settings.

The UNI-BOX 9080 supports a range of DiSEqC protocols including 1.0 for the classic multifeed antenna with up to four LNBs, 1.1 for the dual reflector dish with up to 16 LNBs as well as 1.2 and 1.3 (USALS) for use with a motorized antenna. The available LOF settings were just as extensive: in addition to a universal Ku-band LNB, a C-band LNB can also be connected. Thanks to the manual LOF entry, less popular LOFs that are not preprogrammed in the receiver can be manually entered.

If you want to use this receiver with an SCR system, you're in luck: the UNI-BOX 9080 supports single-cable solutions and lets you define all its required parameters. The extensive LNB settings are expanded even more with the ability to increase the LNB supply voltage by 0.5V. This is a great idea! If your cable run to the antenna is unusually long, increasing the LNB supply voltage by just 0.5V would be enough to overcome any larger-than-normal voltage drop that would occur in the cable.

An especially interesting feature for those who have older satellite systems would be the 0/12V programmable RCA output on the back of the receiver. It can be individually activated or deactivated via the settings menu for every satellite entry.

In general we noticed with the UNI-BOX 9080 that the manufacturer at a variety of points in the operating concept of the receiver incorporated some really wonderful ideas and bonus features that make it all the more easier for the end user to play with this box. In the case of satellite settings, it would be the automatic DiSEqC recognition.

Who hasn't seen this problem? The signals of multiple satellites are delivered by a DiSEqC switch with a single cable to the receiver but then you can't quite remember which satellite is connected to what DiSEqC port. For the Golden Media UNI-BOX 9080 this is no problem at all; with the push of one button, the receiver automatically looks at each port to identify which port the currently selected satellite is connected to. This feature functioned quickly and reliably during our tests. An especially useful feature is the audible signal tone that can be activated so that it isn't necessary to repeatedly look at the TV screen while aligning the antenna.

Once all of the settings are correctly entered and the receiver itself has been matched to the antenna system, the next step would be the channel scan. The channel scan is available in three different modes: satellite scan, manual transponder scan and of course the BlindScan. Even though the receiver comes with two CI slots and two integrated card readers, the channel scan can be limited to only FTA (free) channels. You can also further limit the scan to TV or radio only with one button-push on the remote control. Golden Media also thought ahead when it came to the Network scan; in our tests an automatic scan of the HOT-BIRD satellites at 13° east was completed in just over six minutes and yielded 1427 TV channels and 395 radio channels.

With that in mind, we wanted to take a closer look at the DVB-S2 tuner. There were no hiccups whether it was SCPC reception with very low symbolrates or whether it was reception of very weak signals. It easily handled our SCPC test transponder with a symbolrate of 1.240 Ms/sec. on INTELSAT 14 at 45° west as well as two very weak transponders on BADR at 26° east while other similar receivers hardly even recognized those signals.

Over the past several years we've tested quite a variety of BlindScan receivers here

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at TELE-satellite but it's safe to say that the UNI-BOX 9080 can be ranked as one of the best. We started a BlindScan on HOTBIRD at 13° east and were surprised that it finished the task in just about seven minutes. It found 1479 TV channels and 430 radio channels. At first we thought the receiver worked off of a prepared channel list; there was no other way to explain this exceptional result in such a short time. So, we then moved our roof antenna to another satellite and started a new BlindScan. The UNI-BOX 9080 identified 287 TV channels and 143 radio channels on TÜRKSAT at 42° east; even the narrowband SCPC transponders were recognized and stored in the channel list.

To compare, we then performed a channel scan without the BlindScan function using only the preprogrammed transponder data from the manufacturer and achieved very meager results: only 25 TV and 3 radio channels were found on TÜRKSAT. Additional tests of the BlindScan function, for example, on EUTELSAT 36° east, confirm its incredible speed and precision; even the narrowest bandwidth SCPC transponder was easily recognized and processed. A more precise presentation of the BlindScan test results can be seen in Table 1. The only drawback to the BlindScan function: you can't set a specific frequency range nor can you limit the scan to only one polarization. Nevertheless, it's a function that's an absolute 'must have' for every DXer and feed-hunter.

The entire installation process is rounded off by two more outstanding features: the first is the sub-menu "Automatic Installation". This feature takes much of the setup work away from the end-user. In this mode the receiver attempts to identify on its own what satellites – even through a DiSEqC multi-switch – can be received with the available equipment. The automatic channel scan of all the receivable satellites can be started with the push of just one button. This feature worked very well in our tests and in addition to the usual suspects such as ASTRA 19.2° east and HOTBIRD 13.0° east, ASTRA2 at 28.2° east and BADR at 26° east were also recognized without any problems.

The second feature is an azimuth and elevation calculator. You have to enter in your local coordinates manually but they can easily be found with Google maps or some other Internet service. In return though, you'll get all the necessary parameters to align your satellite antenna.

Once the UNI-BOX 9080 has been set up with all the local parameters, it would be a good idea to take care of all

HOTBIRD 13° Ost	7 Minutes	1479 TV and 430 Radio Channels
TÜRKSAT 42° Ost	8 Minutes	287 TV and 143 Radio Channels
EUTELSAT 36° Ost	10 Minutes	35 TV and 3 Radio Channels
EXPRESS AM44 11° West	4 Minutes	19 TV and 1 Radio Channels

Table 1: BlindScan Results

1. Golden Media UNI-BOX 9080 Start Screen
2. The clear and concise Main Menu
3. Separate settings for DVB-S/2 und DVB-T Reception
4. Region selection for DVB-T reception
5. The extensive settings capabilities in DVB-S/2 mode

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6. The UNI-BOX 9080 supports SCR single-cable solutions

7. Channel scan options

8. Automatic recognition of receivable satellites

9. Calculation of Azimuth and Elevation

10. Language selection

11. Eight timer positions are available

12. Various settings possibilities

13. Software update

14. Detailed information on the free space of a USD device

15. Network parameters can be set either via DHCP or manually

16. DVB-T channel scan

17. HD channels and encrypted programs are identified in the channel list by their own icons

18. Satellite selection

19. Channel list restricted to Irdeto encrypted channels only

20. Saving the channel list and all settings to a USB Stick

21. Channel list search function

22. Info bar with data on the current and upcoming program

23. Current programs in the EPG overview

the user-defined settings as well as matching the TV to the receiver setup. The receiver's OSD can communicate with you in English, German, French, Italian, Russian, Spanish, Turkish, Portuguese, Arabic, Polish, Ukrainian, Persian, Romanian, Hungarian, Croatian, Bulgarian, Czech, Indonesian, Slovenian, Swedish, Slovakian as well as a few other languages.

As you would expect with any good DVB-S2 receiver, the internal real time clock (RTC) is automatically set via the satellite signal. The user, however, needs to set the local time difference from GMT as well as activate or deactivate daylight savings time (summer time).

We were surprised at the extensive on-screen display settings that were available. In addition to standard parameters such as display timeout, display position or transparency, you can also set brightness, contrast and color saturation. Be careful in adjusting these settings though, as they also affect the displayed TV picture.

When connected to an LCD or plasma TV, the UNI-BOX 9080 can present the video signal via the HDMI output in 480p, 576p, 720p 50 Hz, 720p 60 Hz,1080i 50 Hz and 1080i 60 Hz. If you can't or don't want to use the HDMI output, the signal is also available in RGB and YUV. You can also select how a 4:3 signal can be displayed on a 16:9 screen. Using a dedicated button on the remote control, the video format can be changed to match the currently received signal.

All of these settings capabilities are topped off with the ability to select a fast or regular standby mode. In fast standby mode, the receiver uses a little more power but comes out of standby much more quickly than in regular mode. Additionally, the VFD display can be completely turned off in standby mode if desired.

Once the channel list has been filled (8000 max) with thousands of channels thanks to the speedy BlindScan feature, some organization will be needed. For this task the UNI-BOX 9080 comes with numerous possibilities all presented in a clear and easy-to-understand menu. Just like with the EPG display and the channel list, the red function button is used to limit the number of displayed channels. It can be set to show only those channels on a specific satellite, those using a specific encryption system or those from a specific provider. The list can also be set to display only HD channels as well as only those channels from one or the other tuner. The remaining channels can be renamed, moved, deleted, locked with a PIN code or skipped over.

Especially useful is the ability to edit entire transponders all at once, greatly simplifying this task. Thanks to the powerful search function, individual channels can be found simply by entering the first few letters of the channel name. Channels can also be moved into one of 32 Favorites lists for easy access later. The channel list editing features are also available in the Favorites lists.

Once all the settings have been dealt with, the receiver has been matched to the antenna system and the channel list has been filled, you can finally leave the Main Menu. The UNI-BOX 9080 will then automatically switch over to the first available channel.

Every time you change a channel, a very detailed Info bar appears momentarily that

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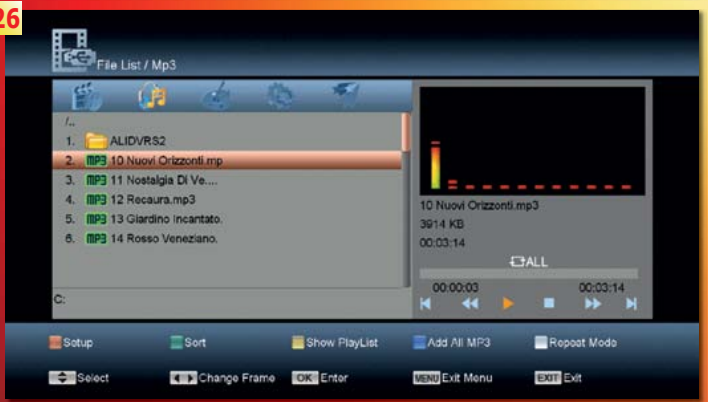

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24. The REC button can mark programs for recording directly in the EPG
25. Display of the technical parameters of a channel with a symbolrate of only 1.240 Ms/sec.
26. MP3 playback
27. JPEG display

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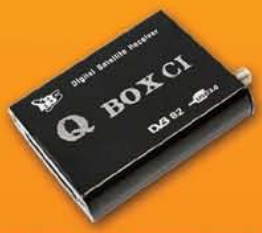

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provides information on the current and upcoming channel. The icons that appear let the user know what additional features are included by the provider. For example, this could be teletext, subtitles, various languages and EPG data to name a few. As is typical with every DVB receiver, a push of the Info button displays expanded programming information with a description of the program assuming of course that this data is made available by the provider.

For those more technically oriented, even more information is available by pressing the red function button: from PIDs all the way to signal strength and quality, dozens of parameters are displayed that would raise the pulse of any technician or DXer.

As far as this receiver's picture and audio quality are concerned, we were very impressed during our tests regardless whether it was an HD or SD channel. Channel switching times were also very good and were about one second between two different transponders.

The electronic program guide (EPG) also turned out very well. It can be accessed from a dedicated button on the remote control and is available in four different modes:

Current – the current EPG data from five channels is displayed

Next – the EPG data of the next program is shown for five channels

More – EPG data in table format for five channels

Schedule – in this mode the channel list is shown on the left side while the EPG data from the next couple of weeks for the currently selected channel is shown on the right side.

It doesn't matter which of the four modes you select, they are all put together in an organized fashion and correctly present the EPG data. Thanks to the red function button, the displayed channels can once again be reduced to a specific satellite, package or Favorites. With the help of the yellow function button as well as the REC button, timer entries can be setup directly from the EPG. Up to eight timer settings are available. It is also possible to set these timers to work on a daily, weekly, monthly, weekday or weekend basis. So, it really doesn't matter anymore when your favorite TV shows are shown, this outstanding timer function won't let you miss any upcoming episodes.

If you use the receiver without an attached hard drive and therefore can't record any programs, you can use the timer function to provide a user-settable reminder as to when to switch over to the desired channel.

The channel list of the Golden Media UNI-BOX 908 also turned out quite well. It can be displayed with the single push of the OK button. In the OSD settings you can select whether to show the channel list in one, two or three columns. A feature that we don't see very often is the ability to use the colored function buttons to display the EPG data of a channel directly from the channel list. What could be better than skimming through the channel list and pushing a single button to read more about the currently selected program? Deciding what to watch couldn't be any easier than this. The red function button can also be used to reduce the channel list to a certain satellite, provider or content. This same button can also be used to switch between the two reception modes; in our case it was DVB-T HDTV and DVB-S2. If you want to make a small change to the channel list while the receiver is in operation, the UNI-BOX 9080 provides the necessary tools for this task in a somewhat slimmed down graphical version. The blue function button provides order in the channel list. It can be used to sort the

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list based on free or encrypted channels, encryption mode as well as alphabetically. All of these channel list features are available not only in TV mode but also in radio mode. Switching between modes is handled by pushing a button on the remote control. Thanks to the 32 Favorites lists, thousands of channels can be properly organized. Each family member can customize their own personal Favorites list with their favorite channels.

The two internal card readers and the CI slots had to also prove themselves using a variety of modules and cards. Unfortunately, the card readers are only Conax compatible and are therefore limited in their use.

As the name of the receiver suggests, this box becomes a true PVR receiver once an external storage device such as a USB hard drive or USB stick is attached. Thanks to the speedy USB 2.0 connection, high resolution content can be recorded without any problems.

Naturally, the PVR can be used with both tuners regardless of what path the content uses to get into the receiver. If you're not familiar with the term PVR, we'd like to take a moment and provide a brief explanation. The received DVB signal is stored digitally and without any signal degradation on an internal or, in our case, external storage device. During playback, all of the features you have come to know such as Pause and Fast-Forward/Rewind at various speeds are available. Along with this is the Time Shift feature that lets you pause a live transmission and then restart it from the point where it was stopped when you're ready to continue watching. So, if for example a telephone call interrupts the movie you were watching, you can pause the movie, carry on your telephone conversation and then continue watching that movie after hanging up the phone without missing a thing.

The UNI-BOX 9080 lets you time shift and record another channel at the same time but it would require a sufficiently fast storage device which can be checked using the integrated speed test function. The external storage devices can be formatted in either FAT or NTFS. Obviously the fact that this would delete any content already on them is implied and doesn't need to be expanded on here. Since Golden Media opted for external storage devices with the UNI-BOX 9080, recorded content can be easily transferred to a PC where you can then, for example, convert it to a DVD.

As with most PVR receivers, the Golden Media box can also playback MP3 music and display your vacation pictures that were previously stored on an external storage device. In our tests, as with everything else so far, this feature functioned perfectly.

These external storage devices need not only be used for the PVR function or for storing MP3 and picture data, but they can also be used to comfortably install new firmware as well as saving the receiver settings and the channel list. And let's not forget that the firmware can also be updated via DVB-S, DVB-T, USB and the RS232 interface, but in the end, the Internet is the most widely used update method. The required network parameters can be obtained by the receiver automatically via DHPC from a local network router or they can be manually entered by the user.

And to top it all off, the UNI-BOX 9080 also comes with three integrated video games that you can use to pass the time during those long commercial breaks.

We really enjoyed putting the new UNI-BOX 9080 to the test here at our test center. It is an extremely user-friendly receiver with every detail well thought out. It makes a perfect living room receiver for the entire family while its large selection of features, its stable operating software and above all its outstanding BlindScan function also make it very interesting for the professional user. Thanks to its BlindScan function, this receiver has found a permanent home here in our test lab.

Expert Opinion

Thomas Haring
TELE-satellite
Test Center
Austria

\+

As a Combo receiver, the UNI-BOX 9080 can receive DVB signals two different ways. The two integrated CI slots and card readers allow operation with a variety of encryption systems. The firmware did not give us any problems during our tests.

Up to 8000 channels can be stored in the receiver's channel memory; this is sufficiently large enough so that this receiver can easily be connected to a motorized antenna system. SCR single-cable solutions are supported as are all the different DiSEqC protocols.

Both the DVB-T and DVB-S2 tuners are extremely sensitive; in DVB-S2 mode the receiver had no trouble handling narrowband SCPC signals or very weak signals.

The outstanding BlindScan function deserves especially high praise!

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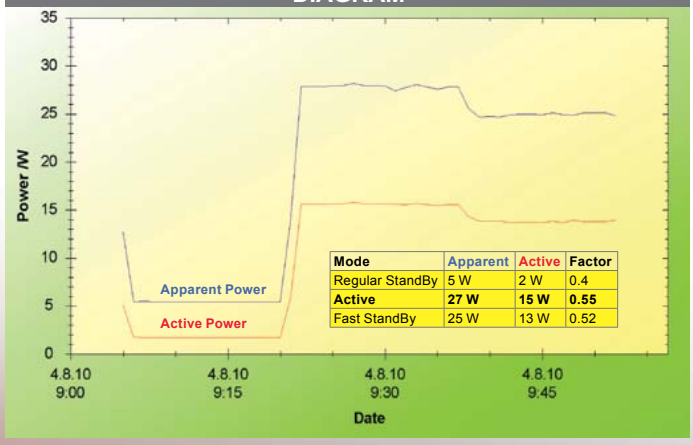
Unfortunately, the included satellite and transponder data is not all that up to date and there are only eight free timer positions available.

ENERGY
DIAGRAM



First 15 minutes: StandBy (regular) - Second 15 minutes: Receiver boot-up, then active operation with channel switching, recording, playback, etc. - Third 15 minutes: Fast StandBy

TECHNICAL
DATA

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E-Mail	info@cynextra.com
Website	www.golden-media.net
Model	Golden Media UNI-BOX 9080 CRCI HD PVR COMBO Plus
Function	Digital HDTV dual tuner PVR receiver with various Features & Blindscan, available tuners DVB-T HDTV, DVB-C, DVB-S/S2
Channel Memory	8000
Input range DVB-T	170-230 MHz, 470-860 MHz
RF-input level DVB-T	-70dBm to -8dBm
Demodulation DVB-T	COFDM 2K/8K
Input range DVB-S/2	950-2150 MHz
Signal level DVB-S/2	-65dBm to -25 dBm
SCPC compatible	yes
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
USALS	yes
HDMI output	yes
Scart connector	yes
Audio/Video outputs	6x RCA
Component video output	yes
S-Video output	no
UHF modulator	no
0/12V connector	yes
Digital audio output	yes
EPG	yes
C/Ku-band compatible	yes
PVR-function	yes
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Ethernet	yes
E-SATA	no
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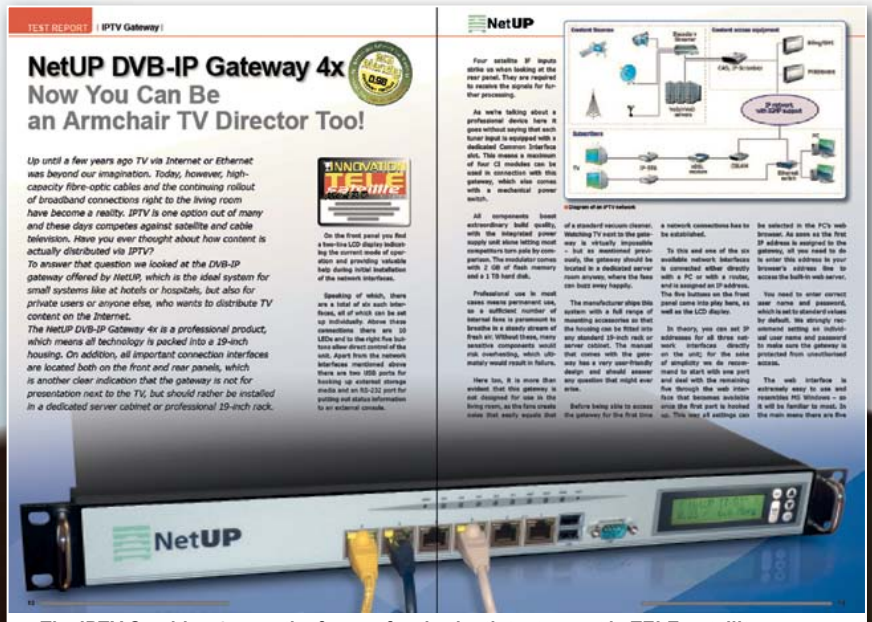
Professional software for IPTV operators

Thomas Haring

• After having discussed the streaming function of the NetUP IPTV Combine 4x in TELE-satellite issue 10-11/2010 it is now time to have a closer look at all the features required to create a user-friendly OSD (on-screen display) for customers and to help them use all IPTV functions on the one hand, as well as to assist operators in maintaining full control over what type of content is available to end users, and what price they have to pay.


TEST REPORT | IPTV Gateway |

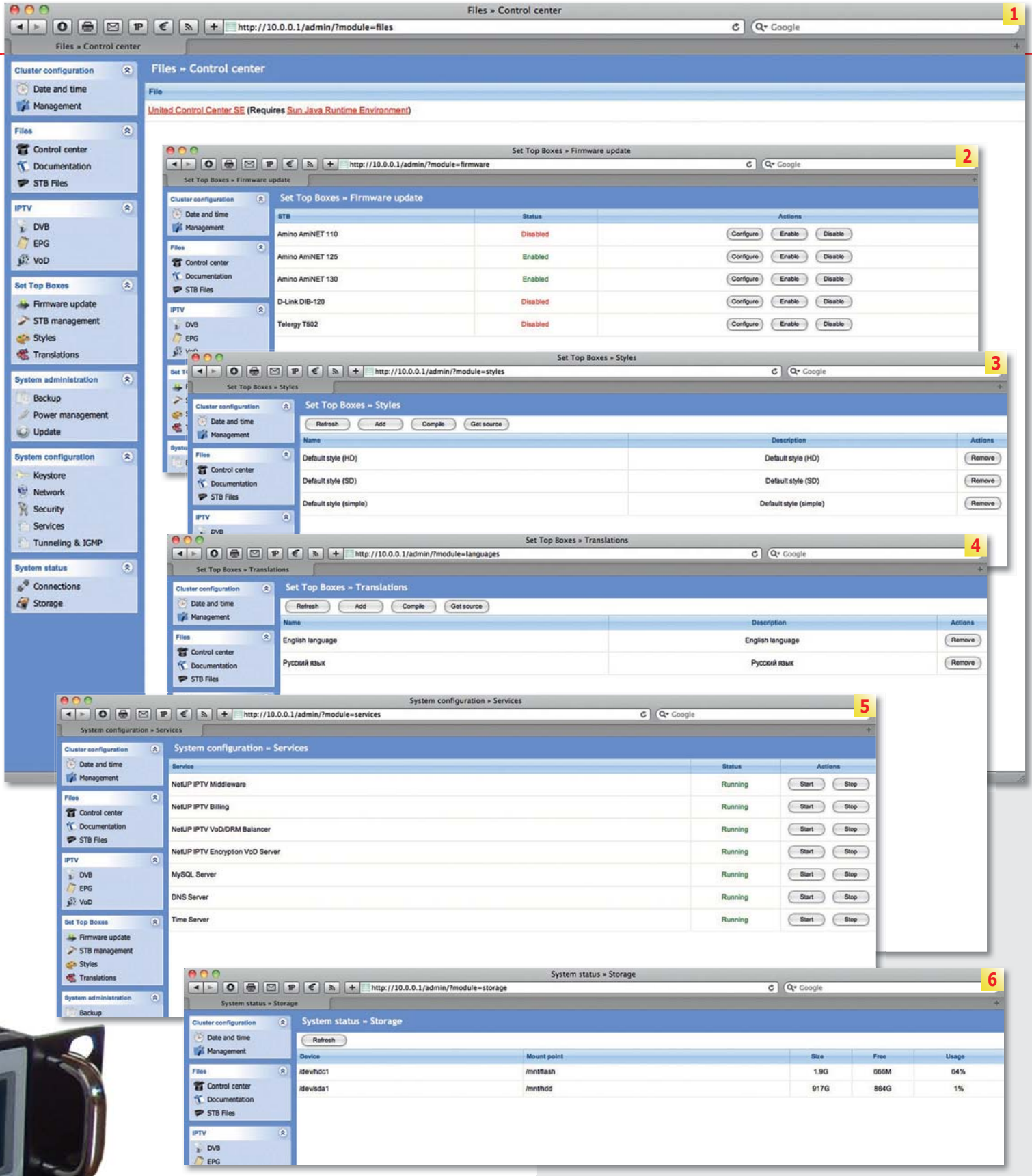
NetUP DVB-IP Gateway 4x
Now You Can Be an Armchair TV Director Too!

Up until a few years ago TV via Internet or Ethernet was beyond our imagination. Today, however, high-capacity fibre-optic cables and the continuing rollout of broadband connections right to the living room have become a reality. IPTV is one option out of many and these days competes against satellite and cable television. Have you ever thought about how content is actually distributed via IPTV?
To answer that question we looked at the DVB-IP gateway offered by NetUP, which is the ideal system for small systems like at hotels or hospitals, but also for private users or anyone else, who wants to distribute TV content on the Internet.
The NetUP DVB-IP Gateway 4x is a professional product, which means all technology is packed into a 19-inch housing. On addition, all important connection interfaces are located both on the front and rear panels, which is another clear indication that the gateway is not for presentation next to the TV, but should rather be installed in a dedicated server cabinet or professional 19-inch rack.

NetUP

■ The IPTV Combine 4x was the focus of an in-depth test report in TELE-satellite issue 10-11/2010.

■ IPTV Combine 4x from NetUP – the core of the IPTV network presented in this report.



Middleware – interface between end user and IPTV network

Middleware is a software solution which takes care of presenting IPTV content in a visually pleasing way to customers of IPTV operators. It makes sure the right channels find their way into the channel list, it creates a user-friendly EPG (electronic program guide) and – last but by no means least – it packages all information into a neat OSD system on the IPTV receiver.

Generally, there are two types of middleware that can

Basic configuration of the IPTV Combine 4x

1. The United Control Center is an integrated feature of the IPTV Combine 4x server and can be directly downloaded from there

2. All IPTV receivers in the network can be provided with software updates from the central firmware update server

3. Various OSD themes (skins) can be created, edited and saved on the IPTV server

4. IPTV operators can decide to have OSD texts translated into any required language

5. A web interface is available to launch, quit and adjust all IPTV Combine 4x services

6. The IPTV Combine 4x boasts 1TB of internal hard disk capacity to store VOD and nVOD content

be used: The more simple version consists of the web server which creates and provides HTML pages and JavaScript applications, which in turn are made available to IPTV receivers which then display all corresponding information on the end users' screens. In such a system the middleware takes over the role of web server, while the IPTV box at the client end acts as web browser. While this is a system that can be set up and implemented easily, it does not serve any commercial purpose, as IPTV operators have no billing option and no way of controlling access to content.

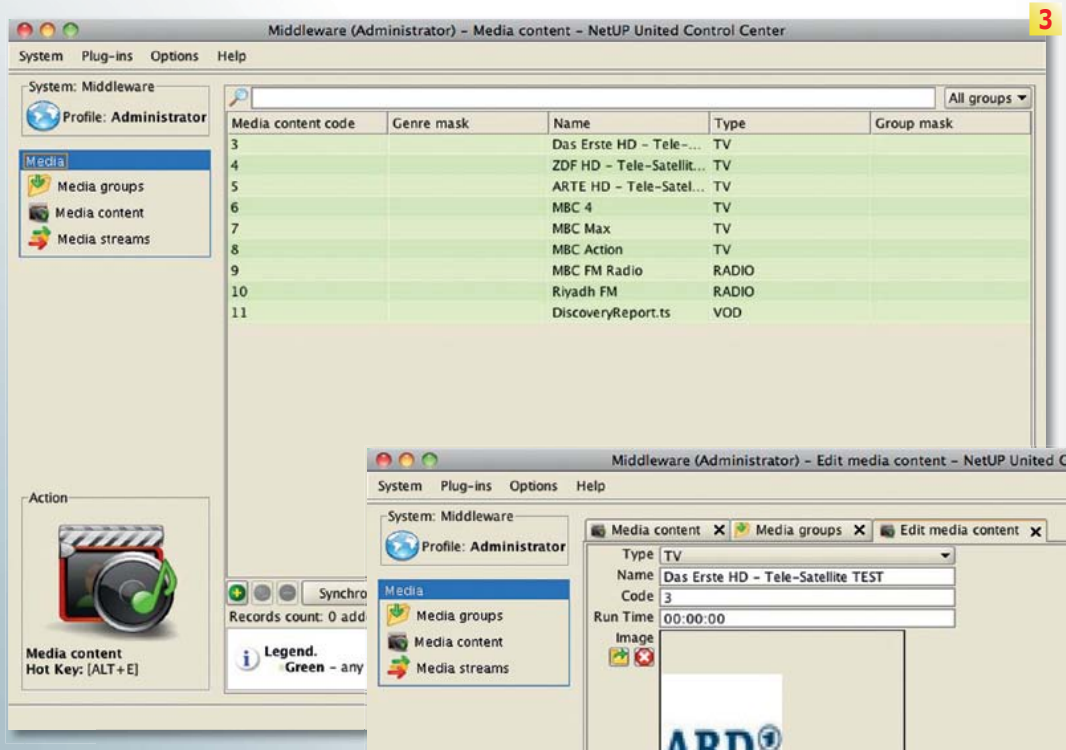
The second middleware category is more complex, but at the same time more versatile and much more for useful as a business application. It is based on IPTV boxes that are not only capable of displaying received information, but can also communicate with the middleware so that they cannot only create a nice OSD for end users, but also assist in billing, content and cost control as well as marketing.

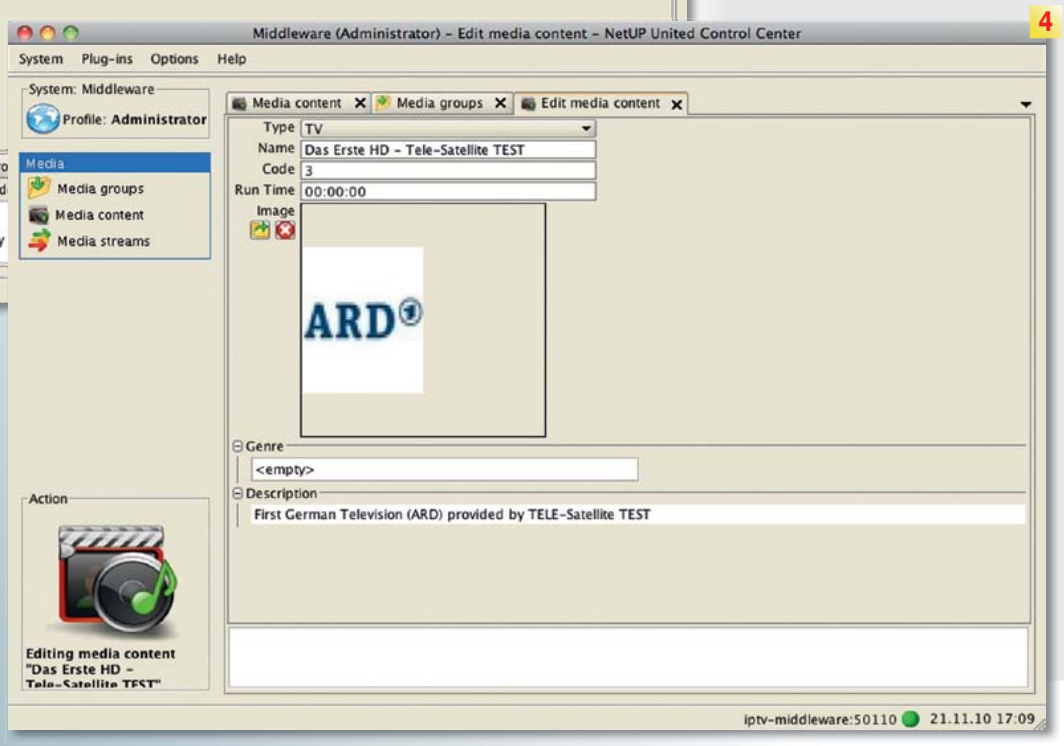
Every time an IPTV network is set up to make money you need extended middleware, such as the IPTV Combine 4x from Russian company NetUP. The receiver component of the NetUP middleware is written in C++, runs directly on the IPTV receiver and therefore allows lag-free use of all features, even in connection with a high-definition on-screen display, which is an important aspect these days and – in particular – in future.

Middleware

Strictly speaking, the NetUP Combine 4x middleware consists of two distinct components: For one, there is the server end (IPTV Combine 4x Server) which provides all required information. And then there is the client end (IPTV receiver) which receives this information, processes all data and creates a graphic user-interface. As these two components need to work very closely with each other all of the time, middleware and IPTV box must be compatible with each other. If the NetUP IPTV Combine 4x is the middleware of choice operators can choose from a number of compatible IPTV boxes. For the purpose of this test report we have selected the AmiNET130M from Amino.

All features and configurations of the NetUP IPTV Combine 4x are partly controlled via a web interface which is used to launch, activate, deactivate and set up individual services such as streaming, middleware, VOD, etc. More detailed settings of the middleware, the billing system and the video-on-demand system are accessed through the so-called United Control Center.





Main menu of the NetUP middleware

1. United Control Center main menu

2. Thanks to a DNS server all services within an IPTV network can be addressed by name. While IP addresses can be used as well, they are no prerequisite.

3. List of existing TV and radio channels in the middleware

4. Adding a new TV channel complete with logo and station details

NXP8735 Linux HD DVB-S2+T COMBO

Sowell

DVB Series

- Digital Satellite Receiver
- Digital Terrestrial Receiver
- Digital Cable Receiver
- HD/SD COMBO Receiver

Features

- Fully MPEG-2/MPEG-4(H.264/VC-1) and DVB-S/DVB-S2/DVB-T Compliant
- Multi-media Function (Playback TS, MKV, AVI, DivX, XviD, VOB, RMVB, RM etc.)
- Linux OS Embedded with Powerful compatibility
- Recording & Playback with External Storage Devices(e-SATA / USB2.0 / HDD)
- Support HDMI output (up to 1080i)
- USB Hub
- USB WiFi
- Support Youtube
- VFTP Download
- BT Download

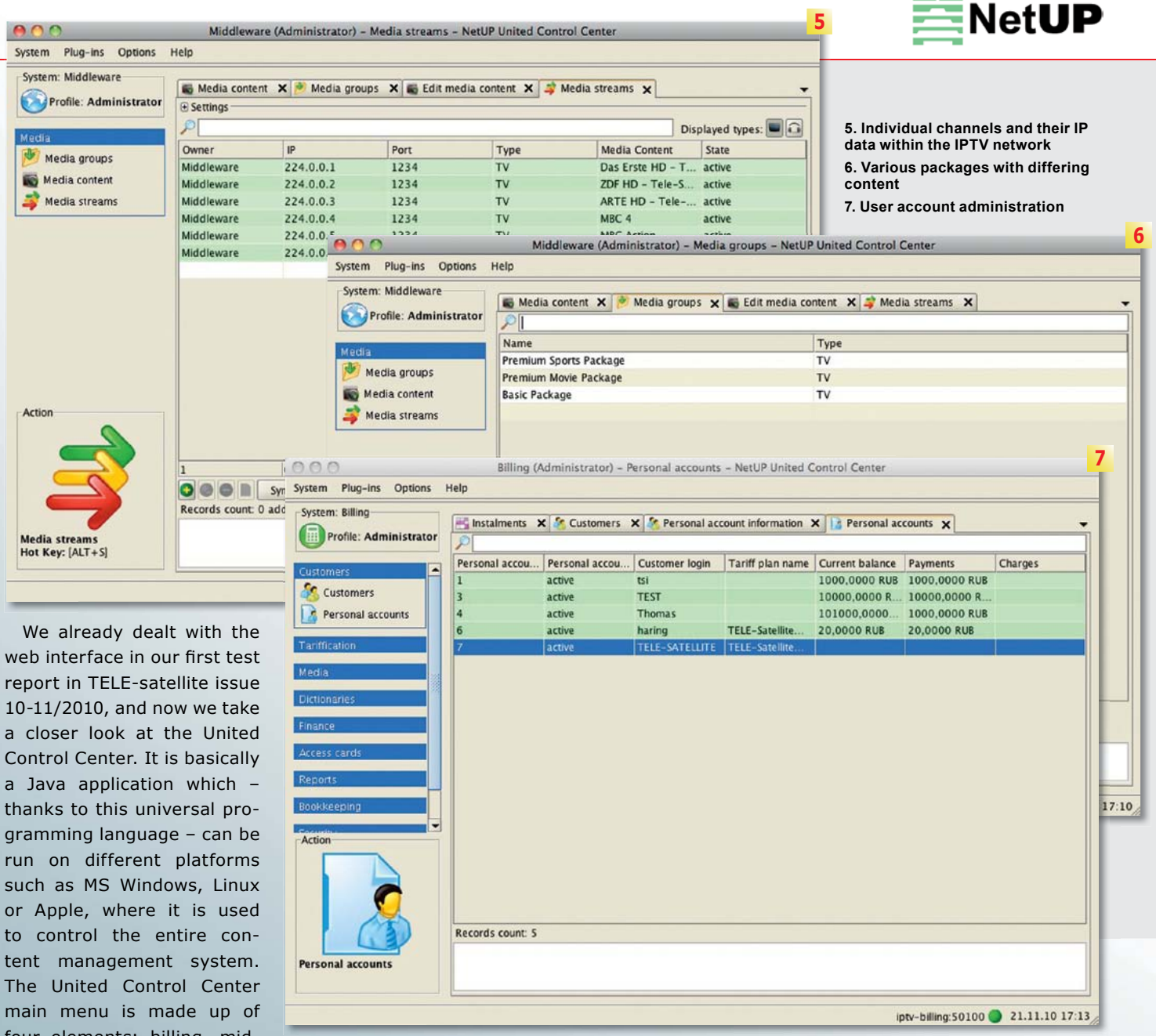
- Support SMB
- Ethernet Embedded
- Conax CAS7.0 Embedded
- Common Interface Plus (CI+)
- Plug-in tuner design
- Low-power Consumption

DTS302 DVB-S+T COMBO

Features

- Fully DVB-S/DVB-T/MPEG -2 Compliant
- Recording&Playback with External Storage Devices(USB2.0 / HDD)
- Time-shift function
- DiSEqC1.0/1.1/1.2/1.3(USALS) and 22KHz switching
- Conax CAS7.0 Embedded
- 2 Common Interface(CI)
- Ethernet Embedded (Optional)
- Support MP3, JPG image and photo display.(Optional)
- 5000 channels memory space
- SCPC& MCPC receivable from C/Ku band satellite
- CVBS, RGB video output
- Multi-Subtitle language, Audio Language, Menu Language
- 7 Days Electronic Program Guide(EPG)
- Parental Lock function
- Teletext and close caption output through OSD and VBI.
- RF Modulator for TV standard(PAL B/G, PAL D/K, PAL I,NTSC M)
- Automatic PAL/NTSC/SECAM conversion

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



5. Individual channels and their IP data within the IPTV network

6. Various packages with differing content

7. User account administration

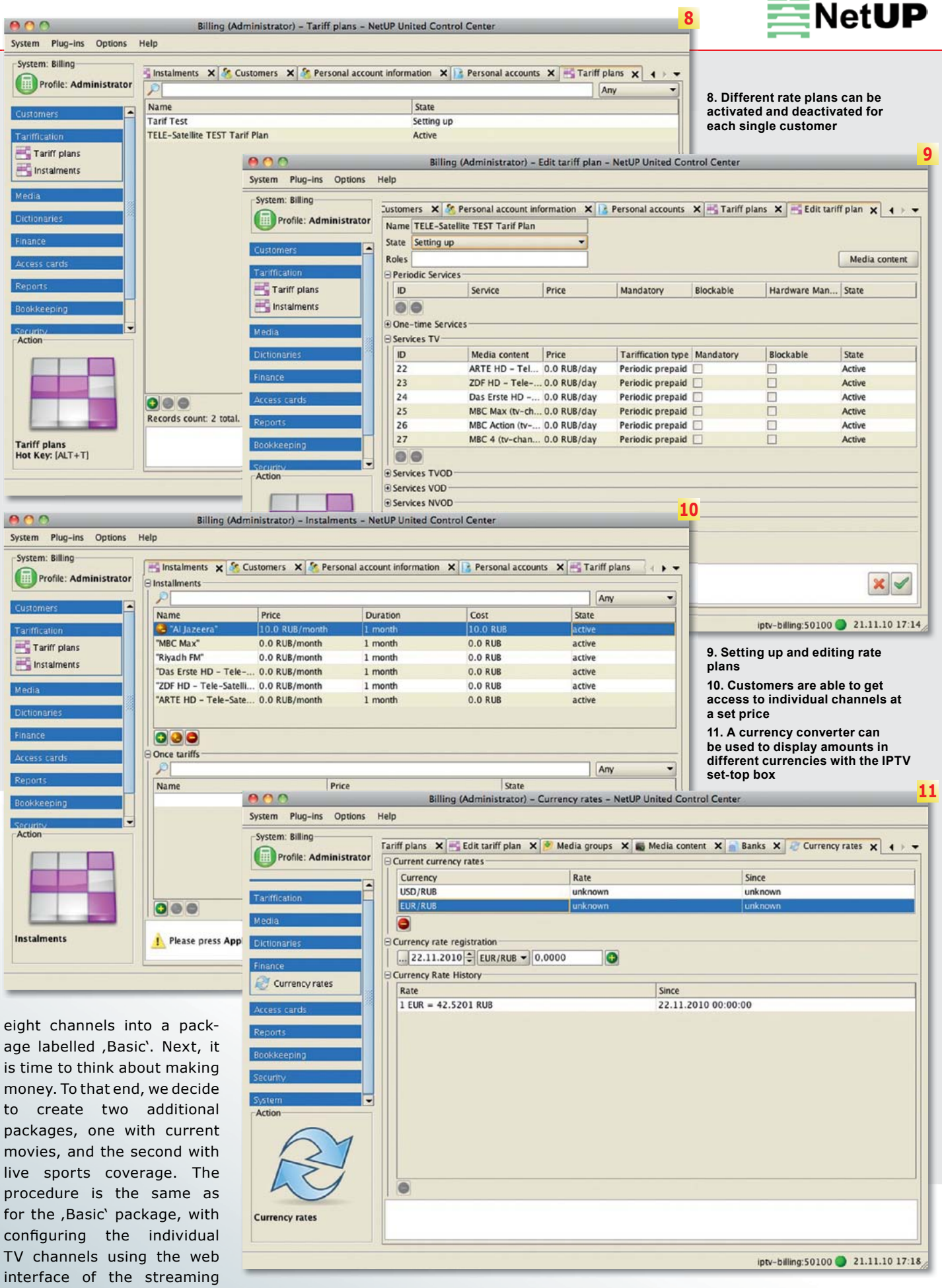
We already dealt with the web interface in our first test report in TELE-satellite issue 10-11/2010, and now we take a closer look at the United Control Center. It is basically a Java application which – thanks to this universal programming language – can be run on different platforms such as MS Windows, Linux or Apple, where it is used to control the entire content management system. The United Control Center main menu is made up of four elements: billing, middleware, nVOD (near video-on-demand)/VOD and DRM (digital rights management). The last two elements, TVOD (TV-on-demand) and DRM are proprietary solutions of NetUP, which were not part of our test system and which therefore cannot be evaluated in this report.

With a simple click on the middleware icon the NetUP United Control Center (UCC) opens up access to media groups, media content and media streams. All three items are intended to add, remove or combine media content. With media groups it is possible to group together different media content (such as TV channels, radio channels or video-on-demand content) into packages. This allows creating a starter package, for example, which includes only limited content, or an extended package with full-range content.

In order to grasp the underlying logics of the NetUP IPTV system we have to put ourselves in the role of an IPTV operator. This begins with starting to think and act like a commercial operation. As most of us come from terrestrial or satellite reception we are used to the fact that all content is always available to all users. Even if we're talking about subscription TV we simply obtain a smartcard and all of a sudden encrypted content is available on screen as well. IPTV is different in a fundamental way: Thanks to direct communication between end user and IPTV operator, complete with return channel, it would be a total waste of resources to send all content to all customers all of the time in the first place, only to then grant or restrict access (as is the case with terrestrial and satellite TV). Instead, IPTV operators create individual packages for a single customer or a certain group of customers. Let's take a hotel as an example: The hotel owner makes a certain range of basic TV and radio channels available to all guests, the price of which is included in the room rate. Therefore, we use the middleware to group together all required TV and radio channels by letting the system know the corresponding IP addresses and ports – after we have configured them via the web interface of the streaming component of the IPTV Combine 4x.

In order to simulate a real-world scenario we design a package with three HD channels, three SD channels as well as two radio channels from two different satellites. The IPTV Combine 4x is equipped with a total of four DVB/S2 tuners (see test report in TELE-satellite 10-11/2010) and so we are at liberty to select content from up to four different transponders or satellite positions.

We then bundle these



8. Different rate plans can be activated and deactivated for each single customer

9. Setting up and editing rate plans

10. Customers are able to get access to individual channels at a set price

11. A currency converter can be used to display amounts in different currencies with the IPTV set-top box

eight channels into a package labelled ‚Basic'. Next, it is time to think about making money. To that end, we decide to create two additional packages, one with current movies, and the second with live sports coverage. The procedure is the same as for the ‚Basic' package, with configuring the individual TV channels using the web interface of the streaming server, before determining their IP addresses and ports using the UCC.

All these steps can be carried out intuitively thanks to the excellent user interface of the United Control Center and the web interface. All options and functions are more or less self-explanatory, so that it's almost impossible to go wrong when setting up the system. It's even possible to add a channel's logo and short station description apart from the channel name, which offers added value to end customers who are able to find

More on This Manufacturer

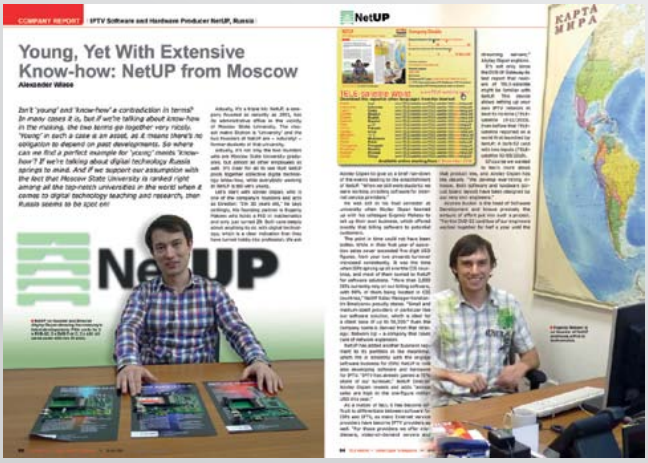
Read TELE-satellite's Company Report:

NETUP

IPTV Software and Hardware Producer, Russia

TELE satellite Recommended

www.netup.tv


Young, Yet With Extensive Know-how: NetUP from Moscow

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

their preferred channel more quickly.

It goes without saying that the same is true for radio channels as well, and for video-on-demand content which can be stored on the IPTV Combine 4x's internal hard disk. Several hundred hours of video fit easily on the built-in 1TB hard disk. Stored content can be added to any package in the same way as a TV channel through the middleware. During special events (for example Olympic Games and the like) individual channels can be added for all to enjoy for a pre-set period of time, after which they will automatically disappear from the channel list again. This allows planning ahead so that hotel staff (in our example) does not have to deal with technical changes and system maintenance under pressure.

In our test scenario we are looking at a professional IPTV system in a commercial framework, so that each IPTV channel also has to feature program information. After all, if hotel guests turn on their TV they want to know right away which event they are currently watching and whether or not there is anything on they would be interested in later that day. In order to implement this feature the NetUP IPTV Combine 4x offer two options. First, it is possible to take over program information for streamed channels right from the original provider via satellite, cable or DVB-T. This will also be the most reasonable and practical way to go in most situations.

In addition, no additional costs occur. If, however, a TV or radio channel that is streamed over the IPTV network does not supply program information, the IPTV Combine 4x middleware also allows adding EPG data manually for each channel. When we tried out both features in our test every nook and cranny seemed to work as intended and as smoothly as possible.

Now that we have set up all basic functions of our virtual IPTV network we continue with looking at an appropriate billing system for our offering. Simply click on the ‚Billing' icon in the United Control Center main menu and you're right where you need to be.

Billing

For the sake of simplicity, let's stick to our idea of a major sports event that should be made available at a hotel through IPTV. Obviously, all IPTV receivers need to be hooked up to the IPTV server for such a distribution network to work. This means that in theory each receiver has access to all of content, unless access is restricted by making use of the return channel capability. The IPTV Combine 4x billing feature is based on the assumption that each customer is entered in the system with his or her full name and has an individual customer account which can be used to activate and deactivate access to certain content on an individual level. In our hotel setting, for example, the ‚Basic' package would be available to all guests without extra charge. If hotel guests then decide to watch additional channels or content, they are able to top up their personal account at reception with an amount of their choosing, let's say USD 50. Reception staff uses the NetUP IPTV Combine 4x billing system to add that amount to the corresponding guest account so that additional channels as well as on-demand content are available to this guest until all credit has been used up. The IPTV Combine 4x even does currency conversions so that guests can be shown the current account credit in their own currency, if the hotel decides to implement this feature.

The final step is customising the IPTV receiver in the guest's room, so that it actually offers and displays all content the guest has paid for and/or is authorised to watch. The obvious way would be using the individual box's MAC address or serial number, but once again NetUP has gone the extra mile and offers a brilliant feature for generating an activation key for each client on the IPTV Combine 4x server. This activation key has to be entered in the IPTV receiver to obtain access to the IPTV network in the first place. At the same time, with this key the IPTV becomes an individually addressable and controllable IPTV reception point, no matter where in the hotel it is located. This way the IPTV receiver is sent information about the current guest, the length of his or her stay at the hotel, and any available credit the guest has available. It is even possible to unlock all channels for 24 hours after the guest's arrival and then lock extended channels again – hoping guests will want to keep watching the full range and pay for the service accordingly. If guests now choose to watch content that is not available with the free ‚Basic' service they may simply use their remote control to select and activate additional content using the in-room IPTV receiver, provided they have bought enough credit at reception beforehand. Any credit used up for such extended content is automatically deducted from their account, with reception being able to monitor all transactions or even assist guests who might prefer to order content via phone rather than working with the IPTV receiver.

As far as the NetUP billing system is concerned, we were just as impressed with all its features and ease of use as with the middleware options. Obviously, it takes a little time until you are able to use all tools to the fullest, but after only a short while everything seems as to be easy as ABC and in everyday use you'll most probably be in awe at how smoothly the system works.

FROM A DIFFERENT PERSPECTIVE

OPENSAT

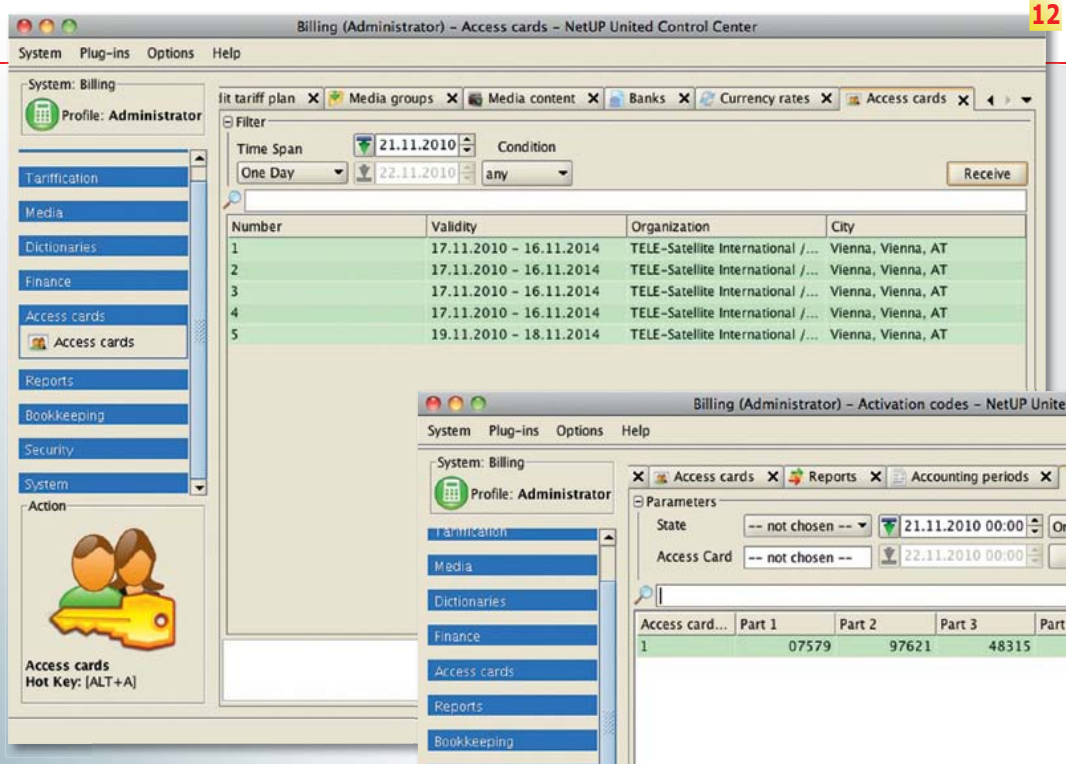
OPENSAT 9700/9900 HDPVR

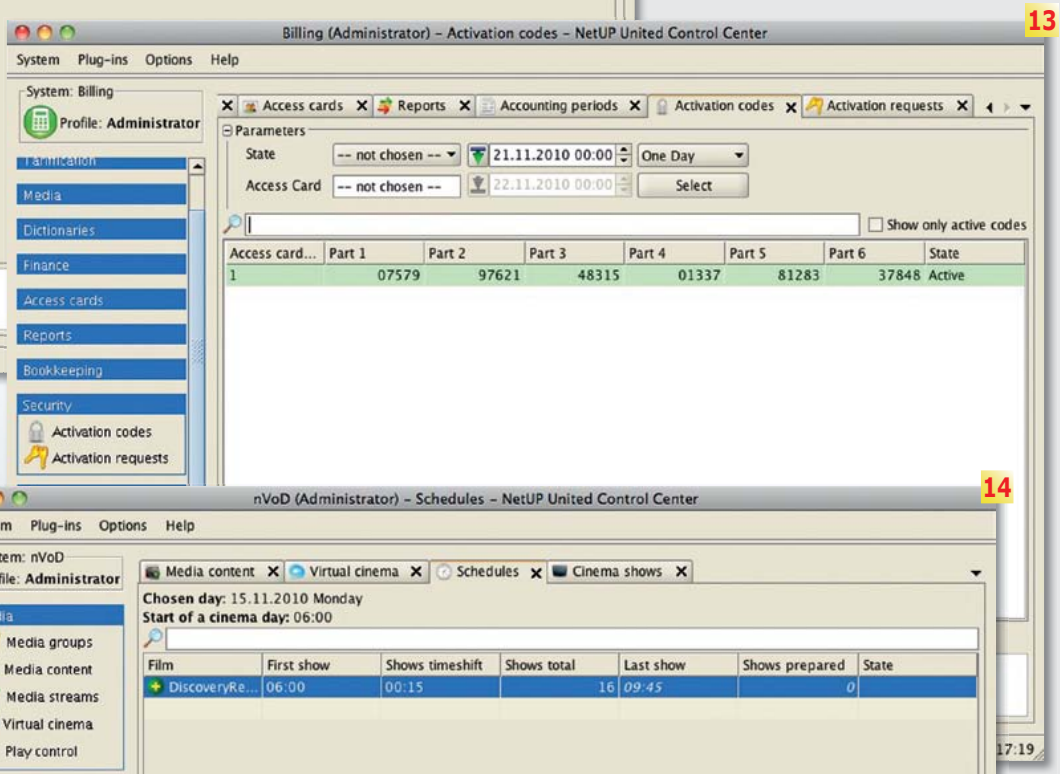
- 1xSmartcard reader • 2xCI slot • Fully compliant with MPEG-4 HD/H.264 (DVB-S/SVB-S2)
- Video resolution 576i,p/720p/1080i • Various video output (HDMI/YPbPr/Scart/CVBS)
- Multimedia functions (MP3/JPG/DivX play support) • VFD display
- PVR ready through USB 2.0 interface • RJ-45 Ethernet interface (9900HDPVR model)
- Blind Scan/Fast Scan/Unicable support • Background recording&playback while recording function

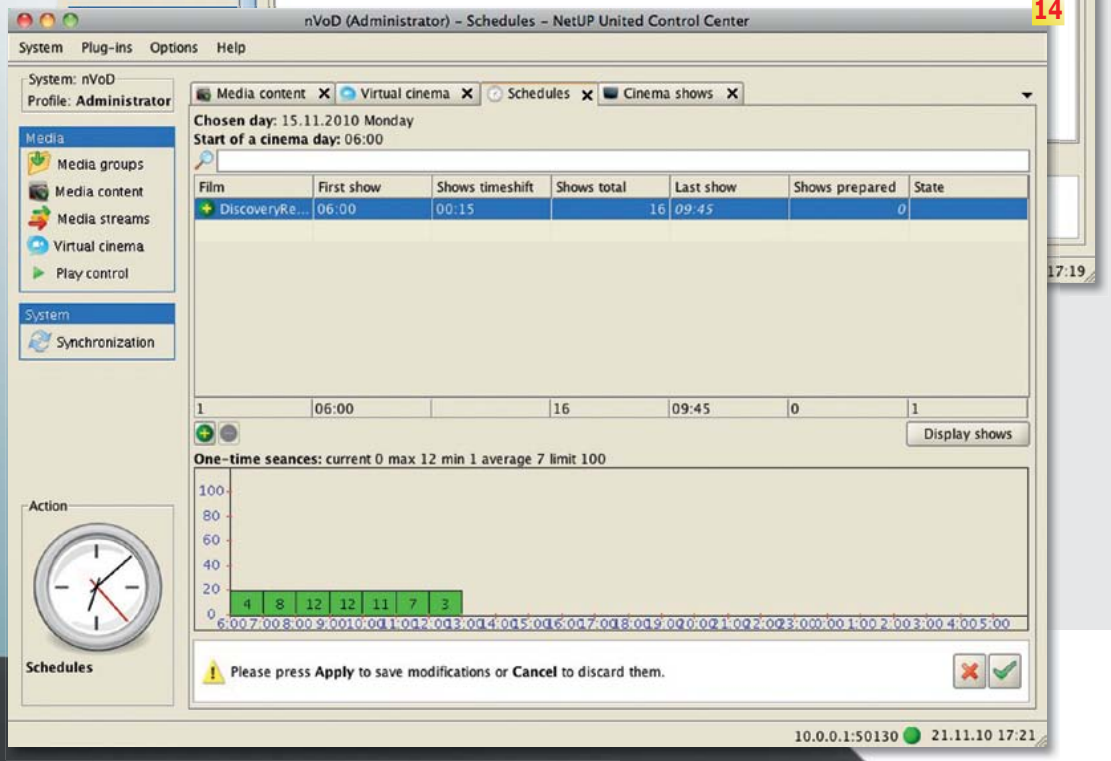
ABC BIZNIS

ABC BIZNIS s.r.o. Krušovská 4646, 955 01 Topoľčany, Slovakia, Tel.: +421 38 5313508
Fax: +421 38 5313508, E-mail: info@abcbiznis.sk, Web: www.abcbiznis.sk

more info: www.opensat.sk







12. Every single IPTV receiver across the entire network can be individually addressed and customised as required

13. An activation code is required so that an IPTV box can become a fully authorised member of the IPTV network

14. nVOD content can be easily organised and made available via the UCC OSD of the IPTV receiver

VOD – Video On Demand and nVOD – near Video on Demand

In our first NetUP IPTV Combine 4x test report we mentioned that the server is equipped with a 1TB internal hard disk with enough capacity to store several hundred hours of video content. The files need to be in transport stream format (MPEG-2 or H.264) in SD or HD resolutions and can be added to packages much like TV channels. If required, different on-demand content can even be offered at different prices. The middleware menu of the UCC is used

to administer on-demand content. While video-on-demand is a fully customised service that makes available content individually for every single guest at a time of the guest's own choosing, nVOD (near video-on-demand) is a service that repeats certain content at pre-defined times in a loop, so that guests can watch a movie, for example, every full hour. This means that with nVOD guests are not in a position to determine the start time of an event – as opposed to true VOD. With nVOD, on the other hand, several guests use the same stream, using up less server and network capacity than true VOD. It makes perfect sense for operators to push nVOD over VOD by offering lower prices for nVOD, for example. The NetUP IPTV Combine 4x supports both nVOD and VOD and the UCC has a dedicated menu item for setting the start and end times of nVOD events.

Here, too, we were impressed at how versatile and user-friendly the NetUP system behaves. It didn't take us much longer than a couple of minutes to set up our in-house nVOD system and store a number of current movies on the IPTV Combine 4x's built-in hard disk. The system can process up to 50 simultaneous video-on-demand streams, which means that in large set-ups using nVOD instead of VOD may be a wise move in order not to push IPTV network capacities to the limit. Incidentally, video-on-demand content can be transferred to the IPTV Combine 4x from any PC using an FTP client.

Customising the IPTV receiver to individual requirements

All user information at the client end is displayed on screen using an OSD system. NetUP provides three OSD skins (themes): HD, SD and simplified SD. IPTV operators can freely choose the skin that best fits their purpose and are able to adjust each of the three skins, if need be. This allows offering several OSD languages, for example, or changing colours and display modes. The creative potential of IPTV operators can be exploited to the max and we, too, simply loved to try out various visual solutions. It has to be said, though, that these settings cannot be made with the help of a graphic user interface but need to be programmed directly in the files of the selected skin. Luckily, the user manual explains all relevant steps in detail, so that it first looks trickier than it actually is.

One of the benefits of an IPTV system is that the server is in direct touch with all connected IPTV boxes at all times. This way, updates, changes to OSD skins or any other configuration adjustments that will have to be made from time to time can be sent to all IPTV receivers fully automatically. The NetUP IPTV Combine 4x does not only come with a DHCP server for automatically assigning an IP address to each box, but also boasts a DNS server which takes care of correctly addressing content, a time server for maintaining the right date and time on all IPTV boxes, and an update server for providing new software and updated settings to IPTV receiver.

There is actually a reason why we have come up with a hotel scenario for our test: NetUP offers a dedicated version of its IPTV Combine 4x for hotels, with optimised software optimised for use in such businesses. Of course it, too, comes with all standard features that are useful for most applications (hospitals, large yachts, cruise ships, education institutions, etc.), but also features additional options focusing on hotels. The hotel version is available as an option and connects the IPTV system to frequently used hotel software suites such as MICROS-Fidelio, for example. The following additional features are then available:

- Individual welcome message in room via TV and IPTV receiver
- Hotel information screen via TV and IPTV receiver
- Displaying all hotel charges via TV and IPTV
- Displaying messages from reception via TV and IPTV receiver
- Express checkout
- Ordering room cleaning service via IPTV receiver

This way hotel guests are not only provided with TV, radio and VOD content via IPTV right in their room, but the in-room TV and IPTV receiver also take over the role of multimedia control panel for most hotel agendas.

Conclusion

With its IPTV Combine 4x NetUP has in store a fully-fledged IPTV solution for small and medium-sized IPTV networks consisting of up to 500 reception boxes.

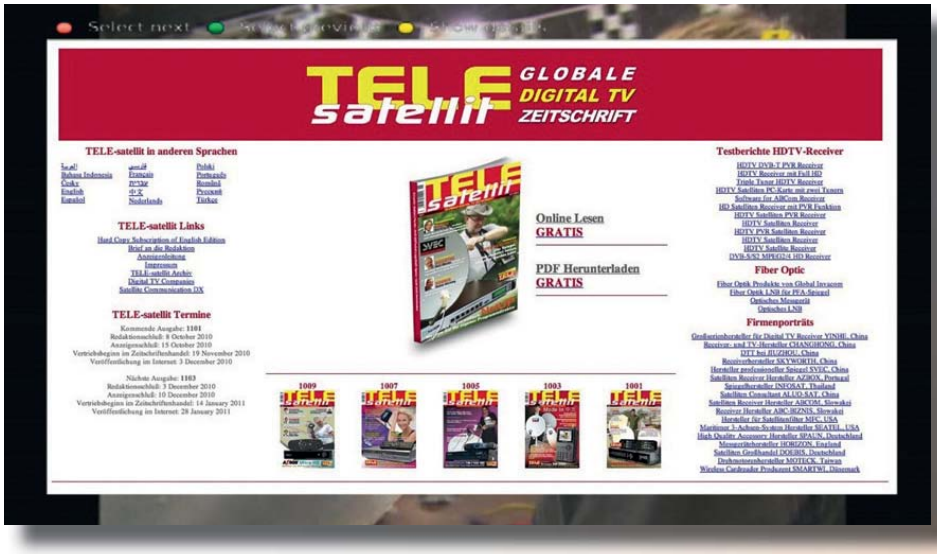
Our test revealed that only are the range of features, the absolute ease of use and the logical concept of the IPTV Combine 4x truly impressive, but it is actually real fun to work with a system that offers everything you need in everyday use and is genuinely user-oriented. Even though we looked long and hard there was hardly any aspect worth criticising. If there is one point we would like to raise it's the user manual, which we would have preferred to be slightly more detailed at some stages. If this is the first time you deal with IPTV it will be very difficult to set up the IPTV Combine 4x server, even with the help of the manual. Then again, we can safely assume that anyone investing a lot of money in the NetUP system will also be able to afford a technician to take care of the initial setup. Once that is completed it is virtually child's play to control, service and adjust the system.

TECHNICAL DATA

Manufacturer	NetUP Olof Palme Street 1, Floor 7 resp. Postbox 87, 119311 Moscow Russia
Fax	+7 499 143 5521
E-Mail	info@netup.tv
Model	IPTV Combine 4x
Function	IPTV Gateway for DVB Signals, Middleware, Billing, VoD, nVoD, DHCP-, Time- & DNS-Server
Tuners	4
Max. simultaneous Transponders	4
Max. bandwidth	240 MB/s
DiSEqC	1.0
Ethernet ports	6 x Gigabit Ethernet 10/100/1000 MB/s
CI Slots	4
USB Connector	yes (2)
RS232	yes
Dimensions	430x44x411mm
Power	90 ~ 264 Volt, 47 ~ 63 Hz
Weight	11.5kg
Consumption	~ 100W

AmiNET130M
IPTV receiver

Thomas Haring



■ The TELE-satellite website as presented via the Amino IPTV set-top box

● Now that we're through with the features and potential of the NetUP IPTV Combine 4x server it's time to have a closer look at one of the compatible IPTV boxes. We have selected the AmiNET 130M from manufacturer Amino. One of the most striking characteristics is its small size, which measures only 114x102x35 mm, and its solid build quality. The chassis is made of genuine aluminium, which suggests the box is built to last.

All you can see on the front panel is a status LED indicating the current operating mode.

The back panel sports an HDMI output, optical audio output and network interface as well as USB connection.

The box comes complete with a sort of pedestal which you may use in case

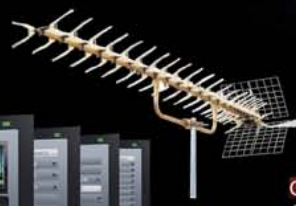
8dtek

Xtra-S T

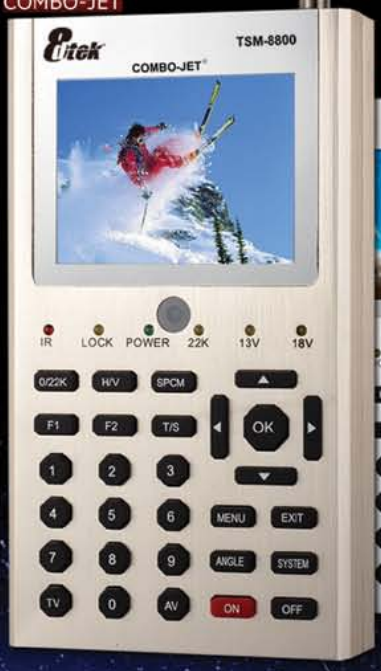
Minisat-plus S2 NIT DSS

Minisat-basic S2 NIT

Unicable Ready



COMBO-JET



SAT-JET

SIZE:129mmx101mmx35mm

- Installation Meter & Full Measurement Device for DVB-S & DVB-T
- Input Frequency : 950~2150 MHz [DVB-S] & 46~868MHz [DVB-T]
- Input Impedance : 75 Ω, Input Level -65~-25dBm
- BER, S/N (MER), FEC Measurement, [DVB-S]
- BER, S/N (MER), CON, GUA, MOD Measurement [DVB-T]
- Auto Search, Blind Search, NIT Search, Manual Search [DVB-S]
- TP Scan, Auto Full Frequency Scan [DVB-T]
- DiSEqC1.0/1.1/1.2, USALS Supported [DVB-S]
- 13V/18V, 22K [DVB-S] & 5V/12V/18V/24V output support [DVB-T]
- Real Time & Multi Analyzing Spectrum for both DVB-S & DVB-T
- Dish Antenna Angle Calculator [DVB-S]
- Multi-Language OSD: English, German, French, Spanish, Italian, Swedish, Russian, Arabic, etc.
- Global Satellite List [DVB-S], Global UHF & VHF Frequency List Selection [DVB-T]
- LED & Audio Indication for Signal Lock
- Satellite Name & Degree Auto Detect & Display [DVB-S]
- Multi-Channel (8) Simultaneous Measurement [DVB-T]
- Satellite List Editable by Editor via PC
- 3.5 Inch High Definition TFT LCD Screen
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- RCA AV-OUT for External Display, TV, etc.
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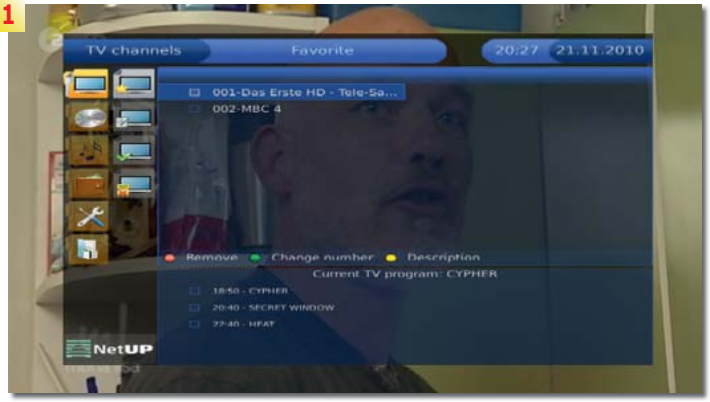

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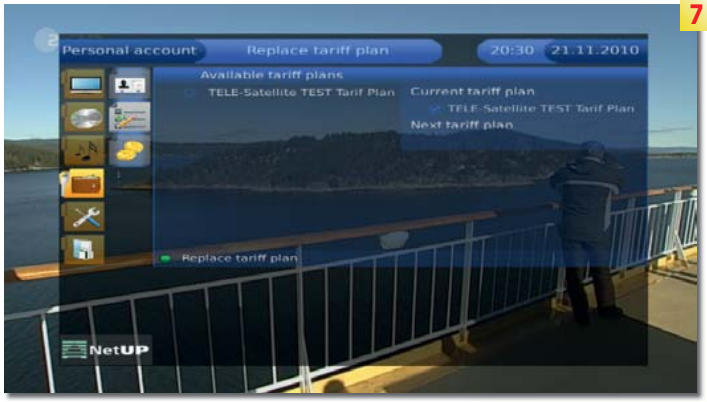

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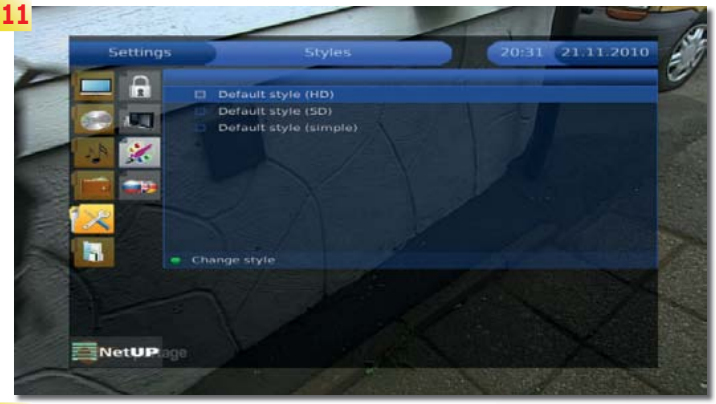

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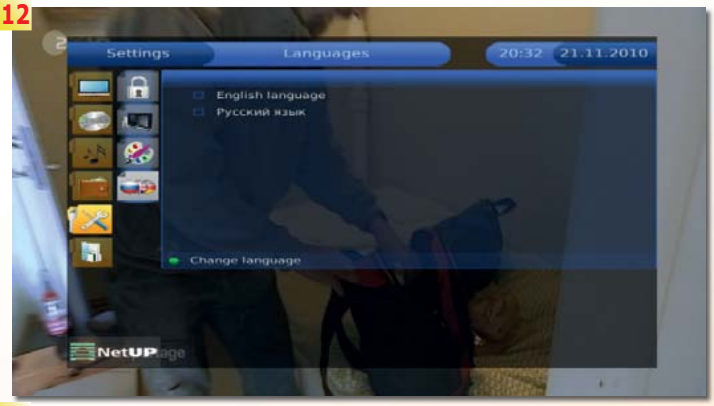

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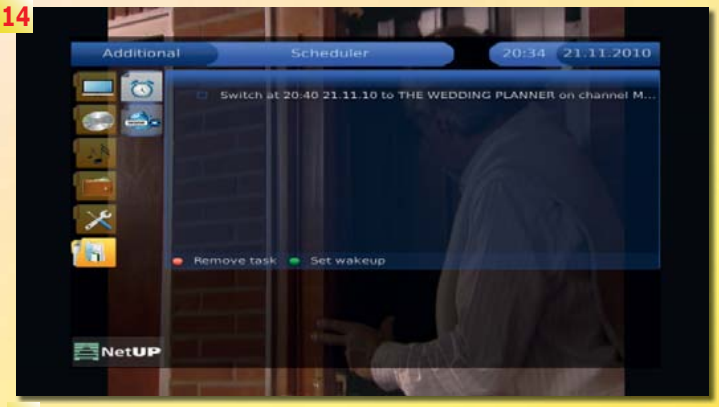

15

IPTV receiver OSD

1. Favourites list with EPG
2. EPG overview of all available channels
3. List with IPTV channels
4. Additional channels can be purchased and added by simply using the remote control
5. VOD content by genre
6. Access to personal user account
7. The current channel package can be changed directly on the set-top box using the remote control
8. Customer account overview (credits / debits)
9. A PIN code can be activated to avoid unauthorised access to the IPTV box
10. IP status information
11. Available OSD skins
12. The OSD can be translated into additional languages by the operator, if required
13. Marking an event in the EPG overview for automatic channel switching
14. Listing and editing timer entries
15. Keying in an address in the web browser
16. Favourites list of the web browser
17. Info bar with details about the current event
18. Language selection

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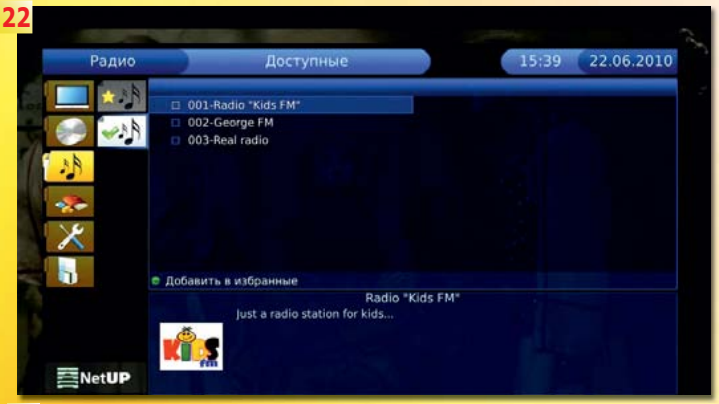

23

you want or need to place the receiver in an upright position to save valuable space. Also included in the package are HDMI cable and remote control with a convenient design and nicely laid out buttons that provide just the feedback you require. At the time of our test the operating manual was available in Russian only, but even with additional languages provided in future chances are you will never need to open it. This is because – contrary to a satellite receiver – an IPTV box receives its entire OSD and control interfaces from the IPTV server and requires no user input in this regard.

Installation

Before we even begin with the first step we have to discard conventional thinking stemming by and large from satellite receivers. Terrestrial, cable or satellite receivers come complete with pre-set software and all we need to do is hook up all required cables and press the ON button. It's a totally different story with an IPTV box, which runs via middleware and therefore has no integrated default operating software. With the middleware structure an IPTV box connects to the IPTV server which then provides the user software. This is to make sure both IPTV server and IPTV box are perfectly compatible with each other, and it makes setting up a new box so much easier. After all, there's nothing you can do wrong if the IPTV server takes over the task of setting up your box. All required settings and parameters are provided by the IPTV server, which means they will always be correct.

While in theory this almost sounds to good to be true, in actual use the DHCP server of the IPTV Combine 4x must be activated so that each new IPTV box within the existing IPTV network is assigned an individual IP address immediately and automatically. This at the same time makes sure the box is able to receive IP data from the server and its DNS server. So we first have to activate all required functions via the web interface of the IPTV Combine 4x and define a range of IP addresses to be assigned to IPTV boxes. Only then can we connect the AmiNET130M to our flat screen TV via HDMI and to the IPTV network with an RJ45 cable. Finally, we connect the supplied power unit to the mains. The box powers up, immediately detects the IPTV Combine 4x server and downloads all software elements. One minute later this process is finished and we are asked to key in a valid activation key.

Everyday use

With regard to the IPTV Combine 4x we have mentioned before that the activation key is required to customise the IPTV box and to create a tailor-made channel list, channel availability and billing system for

19. Each channel can be stored with a short station description and channel logo (seen here: Das Erste HD from Germany)

20. Each channel can be stored with a short station description and channel logo (seen here: MBC 4 from Dubai)

21. Changing the rate plan

22. Radio stations can be transmitted as well via the IPTV network

23. Selecting VOD content from the dedicated menu item using the IPTV set-top box software

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each registered customer. As we have already created a specific customer account through the billing feature of the IPTV Combine 4x we can quickly key in the activation code generated by the system. The code consists of a total of six blocks with five digits each.

We did not specifically define each and every option for our test environment, so the AmiNET130M first wants to know our preferred skin and presents us with all available OSD languages.

As soon as these basic settings are determined the IPTV box switches to the first available channel and TV viewing please is about to begin. With a touch of the MENU button the main menu pops up on screen and is divided into six sections with the skin we have chosen before: TV channels, Video-on-demand, Radio, Personal account, Settings and Extras.

The 'TV channels' section shows a list of all TV content available to the respective customer. If required, individual entries can be added to a favourites list for quick access. EPG data is available either for a single channel or as an overview so that it is easy to check at a glance what is currently shown on available channels. It is of course possible to call up EPG data for events on coming days, and timer entries can be created directly by marking an event so that the box will automatically switch to the corresponding channel before that event starts. The system we tested, however, does not support a PVR feature for selecting events to be recorded.

The 'Radio' section is not shown right below the 'TV channels' section, which presumably is for commercial reasons. We should still like to mention it at this stage, as it is organised just like the TV section.

The second menu item deals with 'Video-on-demand' content, which is organised according to name, group or genre. Every available film is shown on the upper area of the screen complete with its title. The screen section dedicated to EPG information in TV mode shows extended information about each video-on-demand (text, cover image, price, etc.). If you decide to buy content you only need to press the OK button, with the price of the film being deducted from your credit. Purchased on-demand content is shown in a dedicated sub-menu that lists all content you have purchased with your available credit.

This is also the menu section you may use to select and activate near-VOD content.

Thanks to the sheer size of the IPTV server hard disk it is possible to make available quite an impressive range of on-demand content, and a virtual keyboard assists customers in looking for specific content. User-friendliness is the key to success, and with the solutions provided by NetUP chances are customers will use the on-demand feature more readily.

The 'Personal account' section provides access to user data, selected packages and account credit. Here, customers can also upgrade to an extended package or look at all past transactions (credit top-up, used credit). With this feature in place customers can change packages, buy on-demand content and keep a check on purchases without requiring assistance from hotel staff (as in our test scenario). This gives customers full control while not wasting valuable staff resources. In the 'Settings' menu it is possible to change OSD language and appearance, and for service technicians to call up information on IP data and other relevant network parameters.

The range of features of the AmiNET130M is completed with the 'Extras' section of the main menu. All timer entries can be listed here, and a rather basic but nonetheless very functional web browser is available for surfing the web. To that end a virtual keyboard is shown on screen, and frequently visited sites can even saved onto a favourites list for easy access at a later stage.

During our test we noticed that NetUP has also thought about implementing basic functions in TV, radio and on-demand modes. For example, the colour-coded function keys can be used to change the language of the current event (in case more than one is available), and a smartly designed info bar is inserted in the lower section of the screen every time a new channel is selected. Apart from channel name this info bar also shows program information for the current channel. We were impressed at how quickly a new channels shows up on screen – it only takes about one second, and together with very fast reaction to commands sent from the remote control zapping is real fun with the AmiNET130M.

During playback of on-demand content it is of course possible to rewind and fast-forward (at different speeds) and pause. A PVR system at large, however, cannot be implemented with the IPTV set-up tested by us.

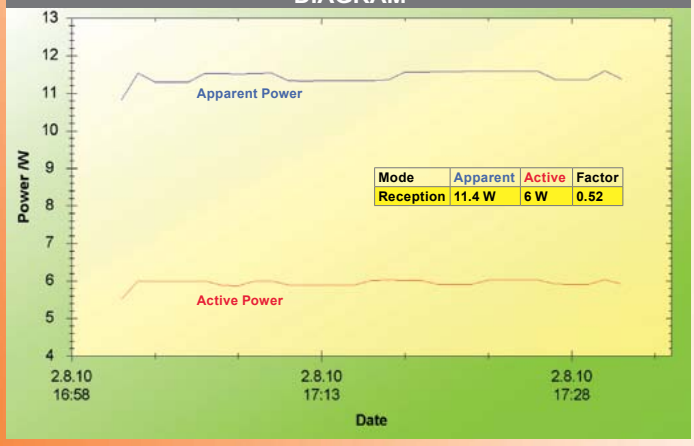
As far as security and access control are concerned either the entire IPTV box or only the purchasing function can be blocked by way of an access code.

Conclusion

The AmiNET130M IPTV box from Amino is a perfectly capable and well-built IPTV box. Contrary to DVB-S, DVB-T and DVB-C reception IPTV boxes come without default software, which means our conclusion covers the Amino box as the hardware component on the one hand, and NetUP as software provider on the other hand. To put it short, the Amino hardware leaves nothing to be desired. What's more, the build quality achieved by Amino surpasses that of many competitors and easily sets an example when it comes to workmanship. The same goes for the remote control that comes with the IPTV box. Apart from its high-quality appearance it can also be used as a universal remote to control all currently available TV panels – who could ask for more?

Thanks to the fact that server and receiver are in perfect harmony the IPTV box is in a brilliant position for exploiting all features provided by the IPTV Combine 4x. In particular, we appreciated the simple and logical control of the box which should be self-explanatory even to the technologically challenged. If you add to that the complex control module of the IPTV server for business applications the two are a perfect match. With a whole range of customisable settings the IPTV Combine 4x together with the AmiNET130M should to the trick for almost any scope of application.

ENERGY DIAGRAM



Active use with channel switching and watching live TV during the first 15 minutes, standby during the second 15 minutes.

TECHNICAL DATA

Manufacturer	Amino Technologies, Buckingway Business Park, Anderson Road, Swavesey, Cambridge CB24 4UQ, United Kingdom
Fax	+44 (0) 1954 234 101
Email	info@aminocom.com
Model	AmiNET130M
Function	IPTV Set-top-Box
HDMI connector	yes (HDMI 1.2a with HDCP)
Scart connector	no
Audio/Video output analogue	no
YUV output	no
S-Video output	no
Digital audio output	yes (optical)
Ehternet	yes
WLAN	no
USB connector	yes
Codecs	MPEG-2 MP@HL, MPEG-4 pt10 A, VC/H.264 HP@L4
Video resolutions	up to 720p and 1080i
Input Voltage	5V DC
Dimensions	114x102x35mm
Weight	262g

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The number of TVs in the average household is consistently increasing. It all started in the living room and then expanded to the kid's room all the way to the bedroom and the kitchen until now there's hardly any room in the house that doesn't have a TV. Just a few years ago, when HDTV was an unknown entity, it was enough to have one central receiver that supplied all the TVs in the house with a signal whether it was done via coaxial cable or wirelessly. You were limited to watching one TV channel at a time on all the TVs but not much was needed for an installation like this.

As HDTV began entering the picture, end users naturally wanted to be able to watch their favorite programs in the best possible quality.

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But this led to a problem: HD content could not be distributed via coaxial cable or through a wireless system and the HDMI cables linking the receiver and the TV are limited in length to a few meters.

For the average household this meant that multiple receivers would be needed – one receiver for each TV. Distributing the signals of a single satellite reception system to all of these receivers is easy and as long as you limit yourself to watching free TV, that is channels without any encryption, there won't be any problems. But what about PayTV?

Unfortunately, it doesn't look good at all; a PayTV provider usually only supplies one SmartCard to a customer and thus PayTV content can only be received and decrypted on just one receiver. There are a few PayTV providers that offer additional cards but, of course, this comes at an additional monthly charge and it really is the exception rather than the rule. The end user has the problem of deciding whether to take out multiple PayTV subscriptions at the same time – a solution that for most PayTV customers is both financially and also on principle a problem; who likes the idea of paying double or triple? – or he has to look around for another solution.

The Clone+ System from the Polish company PYCH International Electronics is precisely one of those solutions and it works like this: the original card from the PayTV provider is inserted into a card reader unit that works with an integrated transmitter. Instead of the original card, a special reception card is placed in the receivers (up to eight boxes are supported) that then creates a wireless link to the transmitter section of the Clone+ system. If you're using a linked receiver and switch to an encrypted channel, the Clone+ card communicates with the Clone+ server and receives the necessary decryption information so that you can enjoy your selected program.

In this way it's possible to use only one PayTV card and operate up to eight receivers independently from each other. Since the range of the transmitter section inside the home is only about 30 meters, the PayTV provider doesn't have to worry about anyone else using the PayTV card illegally.

When the Clone+ system arrived at the TELE-satellite test lab, we were curious how well it would work considering that similar systems have been around for some time now from a variety of manufacturers but as was often the case those systems had to deal with software bugs, they could only be used with one encryption system or the processor couldn't handle more than two receivers at a time. In the Clone+ package we received there was the transmitter section along with two reception cards. We were able to get to work right away.

The transmitter section comes in a very elegant black housing and at 2.5 x 9.5 x 11cm was very easy to handle. On the front panel you immediately notice the slot for the internal card reader while on the back a USB interface and a jack for DC power from the included external power supply could be found. The top side of the housing sports five LEDs that show the system's current status as well as the signal quality of the wireless link.

The reception cards are also made out of black plastic and come with six small status LEDs that also graphically indicate operational status

■ **Twin Slot Interface - enables you watching different channels of digital pay TV of 2 different subscription cards**

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1. With one mouse click the Clone+ transmitter section automatically downloads the latest firmware from the manufacturers servers and installs them in the unit.

2. Standard mode A for operation with the most PayTV cards

3. Compatibility mode B for those cards that can't be used in mode A. The use of this mode was not necessary in our tests.

4. Even the required drivers for MS Windows are downloaded automatically with the update software.

5. The Soft Interface elegantly accommodates the reception cards even with the CI flap closed.

and signal strength. Because of the required receiver section as well as the necessary electronics to process the incoming signals, these cards are somewhat longer than standard SmartCards. They can be plugged into the internal card reader of a receiver or a CI module but you probably won't be able to close the front panel flap on the receiver or the CI module. It's a visual disadvantage that the manufacturer recognized and because of that offers an optional Soft Interface. This involves using a standard format SmartCard that disappears fully into a receiver's card reader or CI slot allowing you to close the receiver flap. The electronics from the SmartCard are now separated with a single thin cable connecting the two pieces together. The Soft Interface was not part of the test package we received so we were unable to put it to the test.

For our test report, Clone+ included a twin adapter for the transmitter section so that we could use two PayTV cards with up to eight different receivers. More on that later though.

We were very impressed with the Clone+ system. The included user manual provided information on the installation and operation of the system that was so detailed that every possible question was answered. The included CD and USB cable can be used to upload new firmware into the Clone+ transmitter section so that the manufacturer can not only work on improvements to the system but also add new encryption systems or react to other changes in the system.

PYCH Electronics recommends that the transmitter section be connected to an MS Windows PC using the USB cable so that the firmware of the system can be brought up to the most current level before the system is used for the first time. Just like the overall operation of the Clone+ system, this update procedure is handled just as simply and problem-free. As soon as the system is connected to a PC and the software started, the current drivers are loaded from the manufacturer's server via the Internet. After that, they are automatically installed and activated.

The Clone+ system can operate in two different modes, A and B, each with its own firmware. While mode A is the normal operating mode for the Clone+, the manufacturer integrated a mode B which is a form of a compatibility mode that really should only be activated when there's a problem with the SmartCard. Our tests involved the use of a variety of PayTV cards and we found that activating mode B wasn't necessary. The transferring of the latest firmware occurred automatically without any difficulties and was taken care of in just a few seconds.

Once the update process is successfully completed, there's really not much more for the end user to do since the system is very easy to set up and configure. The first step is to insert the PayTV card into the slot in the transmitter section and then turn on the power. The Clone+ system automatically recognizes the encryption system used by the card, reads a few more parameters and then sets up the reception cards with the necessary settings.

As soon as this job is done – in our tests it took a mere one second – the "Ready" LED illuminates to let you know that the Clone+ transmitter section is ready to go.

The only other task that needs to be done is to configure the reception cards. To do this the original PayTV card is removed and each reception card to be used is momentarily inserted into the card reader. The "Upgrade" LED on the reception card starts to blink indicating that the necessary settings are being transferred to the card. Once this process is successfully completed, the "Upgrade" LED goes out and only the "Ready" LED remains lit.

This programming step is absolutely necessary since the reception cards can only be prepared and activated in this way. If you decide to use a different SmartCard, then this programming process must be repeated since every encryption system and each card type require different settings. In our tests the reception card was programmed and ready to use in just about eight seconds. Once this process has been completed for each reception card to be used, the original PayTV card is once again inserted into the card reader slot while the reception cards are inserted in each receiver or CI module. At this point the entire system installation and setup is completed.

As soon as power is applied to the reception cards via the receiver or the CI module, a link is created to the Clone+ transmitter section. The signal strength is shown via LEDs on the reception cards as well as on the transmitter section. Once the green "Link" LED lights up on the reception cards, a successful connection has been placed with the Clone+ server. Now you can enjoy uninterrupted PayTV channels with multiple receivers.

According to the manufacturer, the Clone+ system is compatible with the Conax, Crptoworks, Irdeto, Seca Mediaguard and Viaccess encryption systems. During our testing process, we were able to verify this with multiple SmartCards; even the latest generation cards worked perfectly with the Clone+ system. The manufacturer included a total of three reception cards with our test system so we were able to select three receivers for our testing: two receivers with CI slots and one with an integrated card reader. A reception card was inserted into the CI slot or internal card reader of all three receivers and we began channel surfing through all of the PayTV channels. No matter how hard we tried, we could not disturb the Clone+ system as it decrypted the selected channels on all three receivers without any problems or other interruptions. And it didn't matter if it was HD or SD channels.

We were impressed with the performance of the radio link. Depending on the type of building, a range of up to 30 meters can be achieved indoors. Outside the range could be as far as 150 meters although 100 meters is more realistic as long as there is a clear line of sight from transmitter to receiver.

The Clone+ system is also not affected by a WLAN router or other wireless device (such as a wireless headset) and

functions without any interruptions. We tested this by setting a WLAN router to its highest possible power output and placing it in close proximity to the Clone+ system. We also operated two wireless headsets at the same time.

The icing on the cake though would have to be the Twin Slot Interface with which two different SmartCards can be used at the same time. We tested this feature using an Austrian ORF Card (Cryptoworks) and a Swiss SRG TV card (Viaccess). At first we really had doubts that both cards could be used at the same time especially considering that the Clone+ system would have to work with two entirely different encryption systems. But our doubts were quickly laid to rest! The Clone+ system was easily able to handle both encryption systems without any problems using the Twin Slot Interface. Even in this mode the constant changing of channels and the operation of three reception cards could not disturb this system.

We thoroughly enjoyed putting the Clone+ system from PYCH Electronics to the test. It is a sophisticated system and functioned effortlessly with the encryption systems specified by the manufacturer. It is so easy to install and operate this system that every user should have no problems with it. The status LEDs on the reception cards and on the transmitter section highlight the current operational status of the system and are also a valuable guidance tool.

Expert Opinion

Thomas Haring
TELE-satellite
Test Center
Austria

\+

Incredibly simple and reliable operation plus comes with the ability to use two SmartCards at the same time. At only 1.2W, the power usage of the Clone+ system is negligible.

\-

The encryption systems Nagravision and NDS Videoguard are not supported.

TECHNICAL DATA

Manufacturer	Pych International Electronics Sp. z.o.o.ul. Lipkowska 21, 04-801 Warsaw, Poland
Phone	+48 22 2442831
Fax	+48 22 2442847
Email	cok@pychinternationalelectronics.com
Model	Clone+
Supported CAS systems	Irdeto, Seca Mediaguard, Viaccess, Cryptoworks, Conax
Max. receivers	8
Max. distance	outdoor: max. 150m indoor: 30m
Transmission band	RF 868-915 MHz, BW 150 kHz, GFSK, NRZ 38.4 Kbps
Transmitter power	variable from -20 to 5 dBm
Power supply	9-12V DC
Power consumption	~ 1.2W

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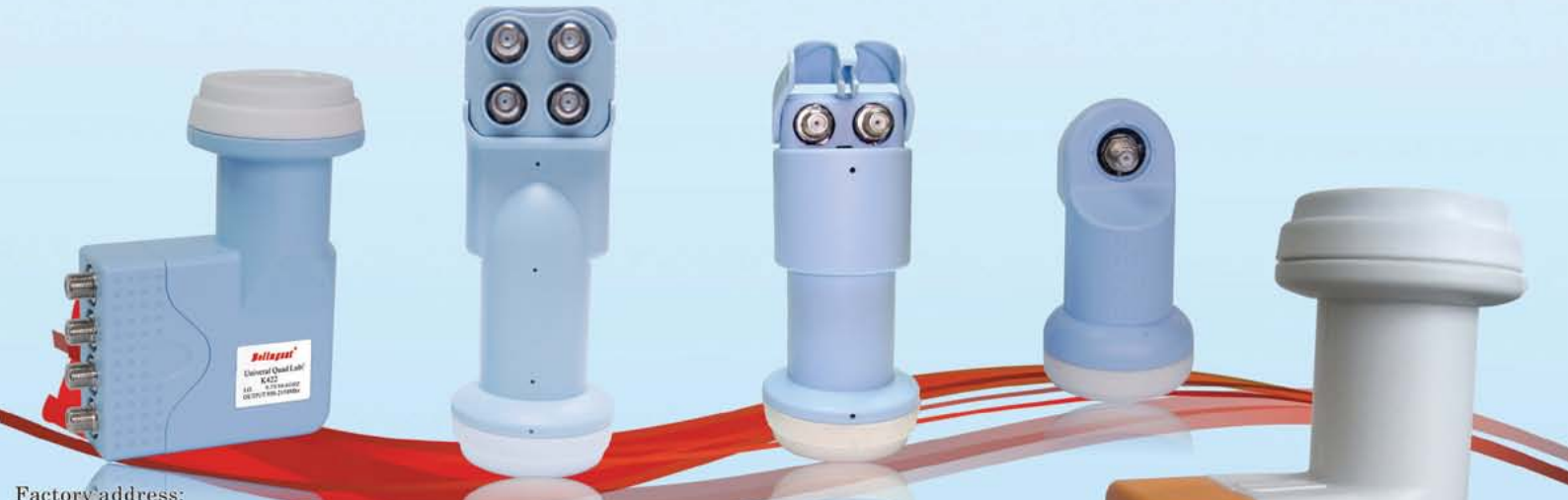

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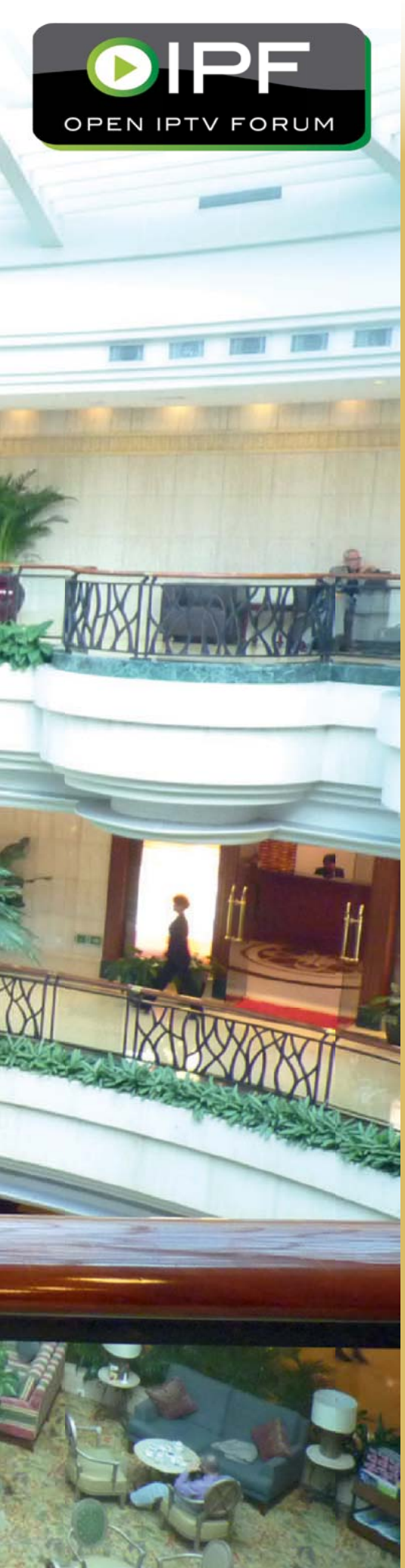
The New IPTV Standard OIPF

■ Yun Chao Hu is president of the 'Open IPTV Forum'. He discussed the future of the OIPF standard with TELE-satellite during the first OIPF workshop held in Asia.



- ***OIPF is the new global standard for Internet TV***
- ***OIPF is already in use in Singapore and Taiwan***
- ***The new standard incorporates existing technologies and specifications***
- ***OIPF has the same specifications world-wide, making it THE standard for Internet-based TV applications***

It was exactly four years ago, in March 2007, that five telecom heavyweights founded the 'Open IPTV Forum', with major players such as Sony, Samsung, Philips and Panasonic, but also with telecom companies focusing mainly on the Internet, like France Telecom, AT&T and Telecom Italia. Added to that were corporations from the mobile sphere, such as Ericsson or Nokia Siemens Networks. What started with nine founding members has meanwhile grown to 66 OIPF member companies, all of which have defined a single goal: to establish a uniform global standard for TV services via Internet (IPTV) and stimulating a horizontal retail market for IPTV end devices.

On the journey to this goal the challenge does not lie in video and audio transmission – more than enough established standards are used for that already. The tricky part is interactivity and personalization, as that is the main distinguishing feature of IPTV when compared with terrestrial or satellite reception. In the past, each IPTV provider seemed to do its own thing, developing applications and technologies that best fit its particular purpose. IPTV had become a playground for unregulated proprietary developments, and that is exactly what hindered further growth. Software engineers and hardware manufacturers were having a hard time trying to incorporate as many of these diverging developments as possible, which at the same time meant too much energy had to be wasted on developments and technologies that would simply come and go.

Yun Chao Hu is the president of OIPF, and we had the pleasure of meeting him during an OIPF workshop in China. "There is a solution in sight," he states. „A uniform standard that is accepted and implemented by all players and that establishes a level playing ground for all interested parties." The challenges that come with creating the new OIPF standard are twofold:

For one, there is no need to start from scratch again and re-invent something that is already available at our fingertips. Rather, existing standards should be the foundation onto which the new OIPF standard is being built. Secondly, all applications that arise from IPTV interactivity need to be integrated into the open standardized application enablers. "The OIPF specifications will address the necessary application enablers that will be the basis for an open application ecosystem securing transparency towards the IPTV application developers. This will ensure that the application development will be independent of the IPTV middleware and the specific IPTV end-devices. The increased availability of IPTV applications will enrich the end user Quality of Experience of the standard based IPTV deployments," Yun Chao Hu adds.

Interactivity does not only mean that end users – i.e. TV viewers – select the channel they want to watch from a list of offerings by using a remote control to send a request to the provider. There's way more to it. The OIPF standard creates a log with information about which channel is currently being watched, how many times a new channel is selected and at what time channels are switched. This way a user profile with a precise viewing pattern can be created to provide valuable information for advertisers and content providers. Commercials can be inserted at a time that creates most viewer attention and a whole range of offerings can be tailor-made to maximise their effect.

In order to collect the required data there needs to be an established and uniform standard across platforms. What's more, the OIPF standard defines how advertisements and other offers are transmitted to the viewer.

As you can see, simply watching TV is already based on a rather complex technological structure. If we now consider pay TV or pay-per-view – both of which also have to be implemented in the OIPF standard – it becomes plain for all to see that establishing a new standard involves overcoming a great many stumbling blocks. And then there's the Internet, which offers even more possibilities, according to OIPF marketing director Monika Gadhammar: "Interactive EPG, video calling, chatting, file sharing, online voting, mobile TV and the like are only some of the applications that can be real-

■ **Monika Gadhammar is marketing manager of OIPF. Here she can be seen in front of a presentation of all current 'Open IPTV Forum' member companies.**

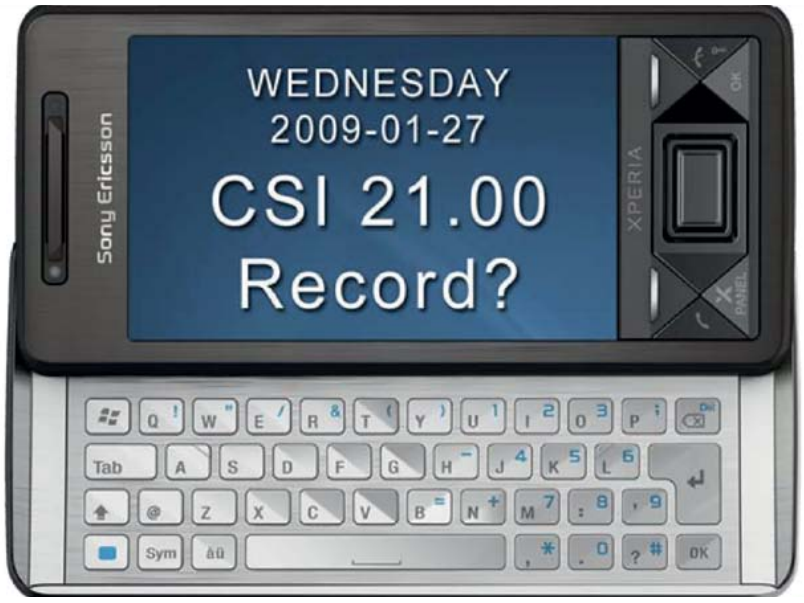
ised. To give you an example: If a phone call comes in while you are watching TV the caller's number and name will pop up on the TV screen. If you decide to accept that call the system automatically starts PVR recording so that you are able to continue watching after hanging up, without missing a single second."

This just goes to show that the list of possible applications is virtually endless. Major landline phone companies and Internet service providers are free to implement as many features as they think fit, and that's one of the major draw cards of the new OIPF standard. Yet, all these features that are made available to consumers are only one side of the coin. The other is the fact that all features need to be implemented at the provider's end – and the OIPF is the right answer for that as well.

OIPF president Yun Chao Hu adds that OIPF is already being used in large-scale test set-ups. "There's the NIMS project in Singapore, and another one in Taiwan." Both make sure OIPF can make the quantum leap from developer's playground to real-world application. OIPF is right on track to becoming a reality of TV viewers in the future!

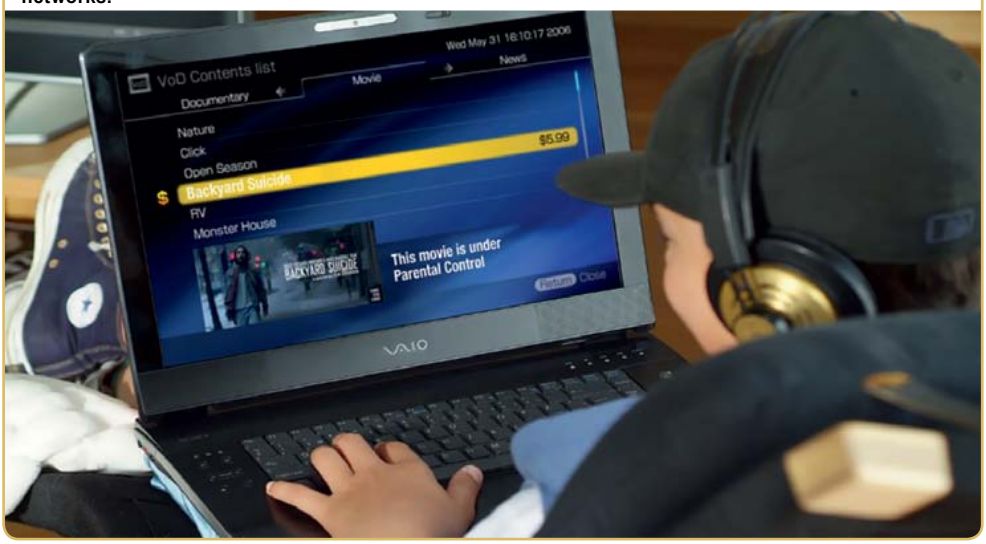
More information available at:
www.oipf.tv
For the latest technical specifications have a look at:
www.oipf.tv/specifications.html

OIPF in Mobile Use



■ **Business executives are given a tool for coordinating appointments while on the go.**

■ **OIPF also incorporates specifications for TV via mobile phone networks.**



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List of All Current OIPF Member Companies

The New IPTV Standard

IPF
OPEN IPTV FORUM

- **OIPF** provides the IPTV market with open end-2-end IPTV specifications
- **OIPF** includes most IPTV stakeholders
- **OIPF** stimulates a go-to-market drive from the IPTV industry

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For external HDD or USB-Stick

HDMI

High Definition Multimedia Connection

1 x SMARTCARD-READER

FEATURES:

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- PVRready. Direct recording via USB on external storage media possible
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1080I, 720 P

USB 2.0 HOST

For external HDD or USB-Stick

HDMI

High Definition Multimedia Connection

1 x COMMON INTERFACE

FEATURES:

- 1 x Common interface slot
- HDTV & SDTV
- Video-resolution 1080i, 720p, 576p
- USB 2.0 host for playback of external hard drive or USB flash drive
- Easy find software (works only in conjunction with easy find LNB)
- 5000 Program presets
- HDMI out with HDCP

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A Look Behind the Scenes: The New OIPF IPTV Standard in The Making

This modern office complex in northwestern Berlin (Germany) houses the Fraunhofer FOKUS institute. A range of other well-known telecom providers also rent office space here. The Fraunhofer FOKUS institute participates in exhibitions as well and can be found exhibiting at the CeBIT in Hanover, IFA in Berlin, IBC in Amsterdam and IPTV World Forum in London.

One of the strong technical partners of the Open IPTV Forum is Fraunhofer-Gesellschaft from Germany, which has been looking at IPTV since 2005. We wanted to learn more about their approach to that topic and met with Robert Seeliger, the OIPF project manager at Fraunhofer. He occupies an office on the fourth floor of a recently built office complex in northwestern Berlin (Germany). Yet, it's not only Fraunhofer which is renting office space at this building, but also other well-known businesses from the telecom field. One of them is Media Broadcast, a satellite broadcaster on which TELE-satellite reported only recently in issue 08-09/2010.

We started out with asking Robert Seeliger about the nature of Fraunhofer-Gesellschaft. Naturally, he can fill us in with all the details: „Fraunhofer-Gesellschaft employs a technical workforce of 17,000 and generates an annual turnover of 1.7 billion EUR." We're not talking about a commercial company here, but rather an association with an exclusive focus on technical research. „Some 30% of Fraunhofer's budget are received from the German state, with the remaining 70% being generated from commercial corporations with all sorts of manufacturers. Some monies also come from the

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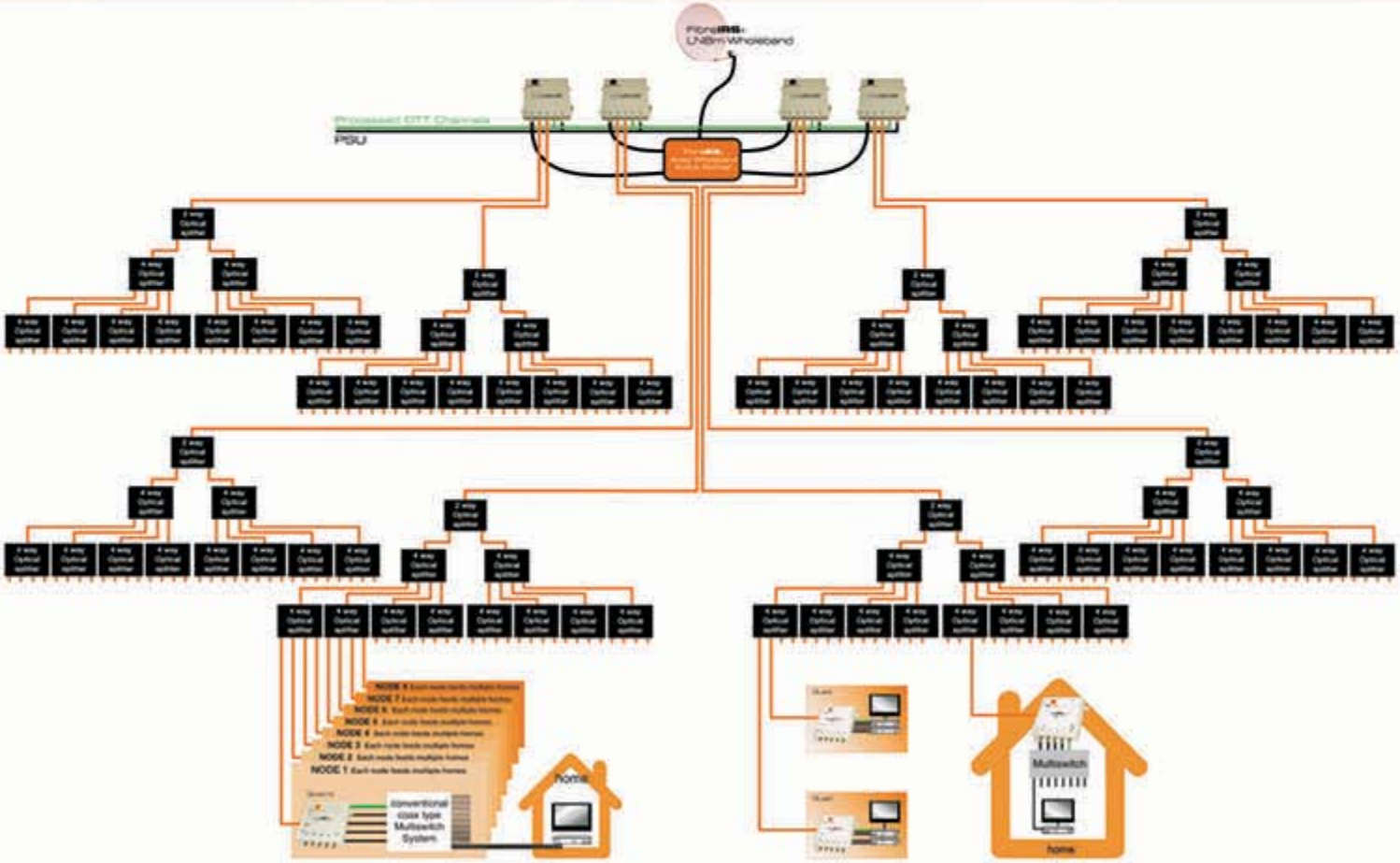

*Compared with existing Fibre Systems

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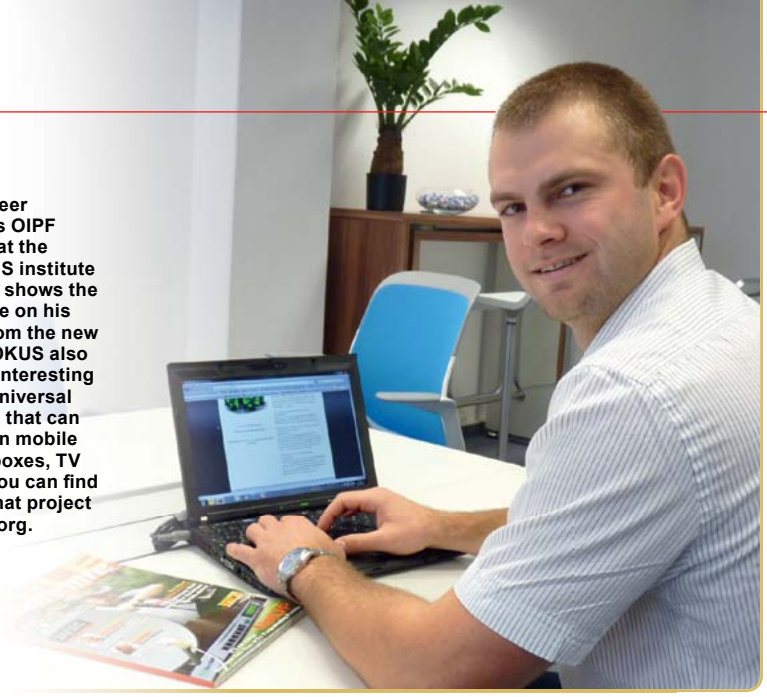

Graduate engineer Robert Seeliger is OIPF project manager at the Fraunhofer FOKUS institute in Berlin. Here he shows the institute's website on his monitor. Apart from the new OIPF standard FOKUS also looks at another interesting development: a universal operating system that can be implemented in mobile phones, set-top boxes, TV sets and so on. You can find out more about that project at www.webinos.org.

European Union's research funds."

Fraunhofer-Gesellschaft is divided up into different institutes. „We currently run 57 institutes, each of which does research on a specific field," Robert Seeliger goes on. One of the institutes caries the name FOKUS, which is the German acronym for ‚Fraunhofer Institute for Open Communications Systems'. FOKUS consists of seven departments and one of these departments is FAME, short for ‚Future Applications and Media', with a permanent staff of 40 employees."

The FAME department within FOKUS deals with the new IPTV standard. It is headed by Dr. Stefan Arabnowski, with Robert Seeliger running the project group that looks at OIPF. „Altogether we are 15 scientists," Robert Seeliger explains, „which means employees with a degree in either software development or engineering." Their work consists mainly of looking at technological niches and developing solutions for them. „IPTV has been around for some time, which means huge efforts have already been put in doing research in this field," Robert Seeliger continues. „Our job is to define gaps that are still around and then combine all aspects to arrive at a point where all the pieces of this puzzle fall into place."

By the way, this particular Fraunhofer institute can proudly look back on an extremely successful Internet development: „We were the ones to come up with the Session Initiation Protocol that is being used for VoIP," Robert Seeliger reveals and lends further proof to the fact that Fraunhofer scientist are spot on when it comes to developing solutions that are required in a real-world scenario.

One task on the path to the new OIPF standard is to design a HTML-based user interface for implementation in IPTV receivers. „To this end we use the CE-HTML programming language," Robert Seeliger explains. „It's the same language that is also used for HbbTV, for example." CE stands for consumer electronics and is perfect for calling up and displaying media content.

Several monitors and boxes in the lobby of the Fraunhofer FOKUS institute display applications that were developed at the institute.

What is CE-HTML?

HTML is the programming language used to create web pages. You do not have to be an accomplished expert to realize that the web pages you surf on with your PC or a laptop are not so easy to navigate when displayed on the TV screen and handled with a remote control. There are several things that make reading and navigating them difficult:

- sometimes simply the font is too small to be read from a distance by a regular TV viewer

- they often require a mouse action or keyboard entry rather than the directional arrows and OK button that the regular remote control units have

- they lack a highlight that show the user what will happen when he/she presses the OK button

- they use different audio/video object implementations

- they use specific extensions like Adobe Flash that require more software and more powerful hardware to be used than is available in popular consumer electronics equipment

Therefore, the manufacturers of consumer electronics products decided to create a special version of HTML and called it CE-HTML. More precisely, CE-HTML is based on XHTML and has additional extensions.

The pages created with CE-HTML are well suited to be viewed from a distance and be controlled with 4 arrows and an OK button. CE-HTML can be used to create the regular (online) pages but also to create the user interface screens of the CE devices you use at home, like digital TV receivers.

Additionally, CE-HTML simplifies interfacing of various multimedia devices you use at home. We can say that thanks to such standardization efforts like CE-HTML, the development of new CE equipment is faster and simpler, and the compatibility between different brands and models is better.

CE-HTML is already incorporated in CEA-2014, HbbTV, OpenIPTV and Digital Living Network Alliance industry standards. There are already TV-sets on the market which are CE-HTML compatible.

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Output NTSC / PAL
Video Format 576i, 576p, 720p, 10801

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Input impendence: 75 ohms
Input level: -65dBm to -25dBm
Input socket: F type connector
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4 Kinds of Sort Function for Channels
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7 days EPG (Electronic Program Guide) for On-Screen Channel Information
1 Scart, (RGB, CVBS)
Multi Language Menu
Supported FTP Download S/W, Channel List, Message and other additional information.
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Supported Unicable
8 favorite group and parental lock supported.
PIG-Small screen picture and zoom in function.
Supported setting timer, you can add up 8 timer event at most.
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Jiuzhou greatly expands into IPTV Box Production

- ***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***

Sales Director Huang Wei is, amongst many other tasks, in charge of the IPTV boxes' development, sales and marketing

The Chinese large manufacturer Jiuzhou is very well known by our readers. The company originated in Sichuan and has been in existence since 1958. In 2008 they celebrated their 50th birthday (see TELE-satellite issue 02-03/2008). In 2009 the company expanded into HDTV and in 2010 terrestrial TV was the theme. In 2011 Jiuzhou is planning on taking a huge step further into the IPTV market with enormous production numbers. Huang Wei is Jiuzhou's Sales Director and reveals to us what Jiuzhou has planned for 2011.

First, though, Sales Director Huang Wei took us on a trip into the past: "The first IPTV boxes were manufactured by Jiuzhou in 2007; back then about 20,000 boxes were produced and involved pure IPTV boxes." Production numbers only increased slowly. "In 2010 we produced 60,000 boxes", comments Huang Wei.

But 2011 looks to be completely different: "We will be manufacturing a minimum of 200,000 boxes and it could go as high as one million." It all depends on negotiations that are currently in progress with a variety of retail chains in North America as well as Europe. The reason: these retail chains are in

Jiuzhou constructed an impressively large building in Shenzhen's High-Tech Park. The engineers are here continuously working on new products – currently they're mostly occupied with IPTV.

Shenzhen
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Available online starting from 28 January 2011

■ **Jimmy Zhang is Marketing Vice Manager and deals with the global marketing of Set Top Boxes**

the process of becoming their own programming providers!

This is a rather interesting development: obviously transmitting via the Internet is opening up new possibilities; now there are programming providers that can join the bandwagon that really didn't have any interest in doing so before since it would've meant delivering the programming either terrestrially or via satellite. With IPTV comparatively simple technology using Gateway servers is all that's needed. But even more important, the customer no longer needs to install an antenna; almost every household has an Internet connection.

Large business enterprises that have for quite some time been not only sell-

■ **Marketing Specialist Zoe Liu finds the graphics in TELE-satellite to be so good that she pins them on her wall.**

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- Support Timeshift function & PIP function
- Multi-language OSD supported
- Electronic program guide (EPG)

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- Fully DVB-S and DVB-S2 compliant
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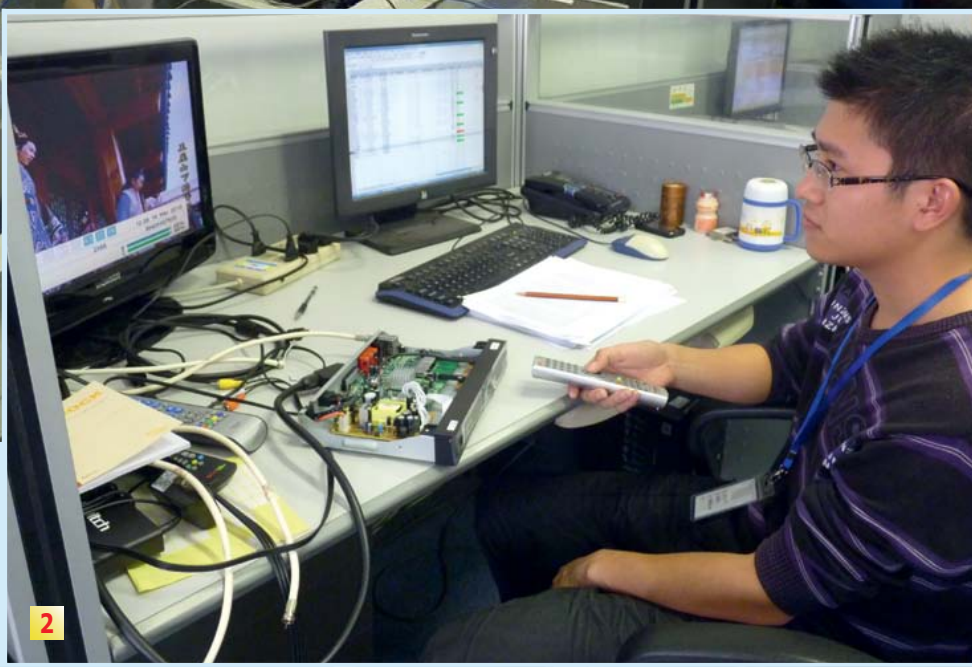
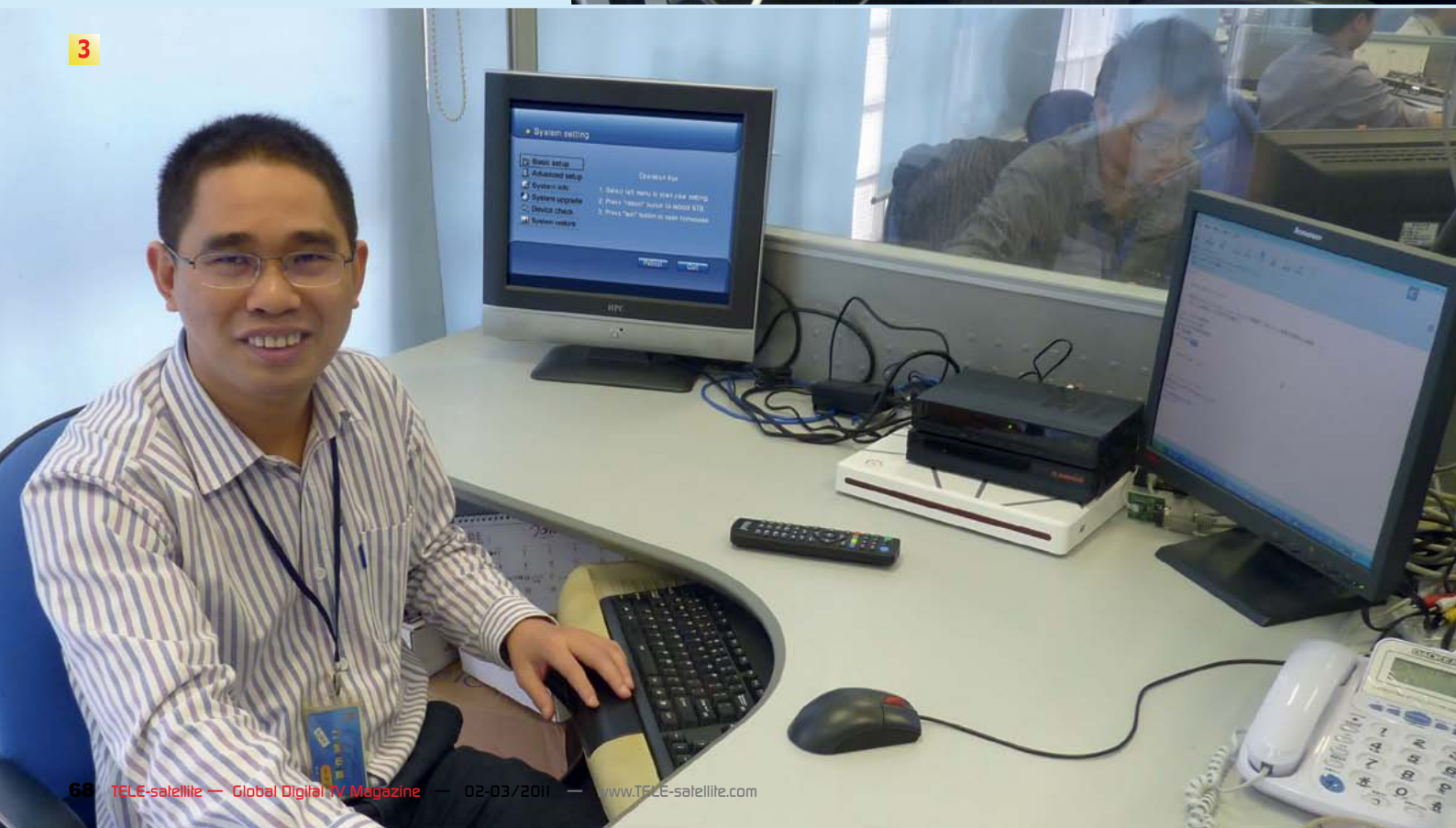


1. A look in the IPTV Engineers office: here the software for the IPTV boxes is developed.

2. The functionality of test samples are checked out here.

3. This is Vice Manager Yongjun Zhang; he is responsible for the IPTV R&D team and is in charge of 20 engineers.



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Jiuzhou's Overseas Marketing Team. Third from the left is Linda Lee; she has been working consistently since 2006 with TELE-satellite Editor-in-Chief Alexander Wiese (behind Linda Lee) to make Jiuzhou a recognizable name in the digital TV sector through the pages of TELE-satellite magazine. To the far right is Yang, Jiuzhou's graphic designer; he regularly updates the Jiuzhou ad that appears on the back of each new TELE-satellite issue.

ing products in their super stores, but services as well, don't want to miss out on this opportunity. In the case of IPTV, these companies could offer not only the TV channels but the necessary receivers as well. This is an enormous opportunity for manufacturers such as Jiuzhou to display their receiver mass production competence and begin supplying these new providers with the proper electronic equipment. Huang Wei is proud that Jiuzhou is leading the pack.

The fact that Jiuzhou is so nicely set up for this has to do in part to the fact that Jiuzhou has been delivering IPTV boxes domestically for China Telecom for quite some time now. Yongyun Zhang is Vice manager and runs the R&D team with 20 engineers that is responsible for IPTV. He explains to us: "We deliver IPTV boxes to the Chinese market with the IPANEL software." For other markets the IPTV software would of course be matched to the region.

For the R&D team it won't be any problem to develop the necessary software. "Naturally we'll give the customer what he wants", insists Yongyun Zhang.

Sales Director Huang Wei has some more for us: "In 2010 we delivered 50% of our IPTV boxes domestically within China; 40% went to North America and 10% were shipped to the rest of Asia. This will drastically change in 2011: production for domestic shipments will drop to 30% while North America will climb to 50%. 15% of our production will go to Europe with the remaining 5% going to Asia."

This projection for 2011 clearly shows the strong increase in the North American market as well as the beginning of the IPTV market in Europe. Huang Wei continues: "Jiuzhou operates an office in Dallas, Texas, USA where six employees work to prepare our products for the North American market."

Jimmy Zhang is Jiuzhou's Marketing Vice Manager. He tells us something interesting regarding the European market: "We will shortly start production on a hybrid box with DVB-S2 and HbbTV as well as a variant with DVB-T and HbbTV." These boxes will be available in Germany and France since HbbTV is already in use there; later on they'll become available in other countries as well.

Jiuzhou is fully committed to expand this new market on a worldwide scale. Not only will the company's extensive experience in receiver production help them, but so will their exceptional international exposure.

Linda Lee from their Overseas Marketing Department highlights for us at what trade shows Jiuzhou will be attending in 2011: "We'll be at the CSTB in Moscow, CABSAT in Dubai, NAB in Las Vegas, ANGA in Cologne, IBC in Amsterdam, ABTA in Sao Paulo and for the domestic market the CCBN in Beijing. In addition, we'll be at the Canton Fair as an exhibitor as well as at the Hong Kong Electronics Fair trade shows."

This gives you many different opportunities to meet up with the team from Jiuzhou and learn more about their product palette plus have a look at their new IPTV and HbbTV boxes. Jiuzhou is showing that even an old company can stay young when they consistently take on new challenges!

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HIGH DEFINITION MEDIA PLAYER
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Spark online also includes an Online User's Manual and F.A.Q service, which make the installation and usage of the receiver even more easier.

CONTINOUS DEVELOPMENT GUARANTEE
Thanks to the Embedded Linux Operating System and Plugin Suport the Amiko SHD-8900 Alien is a platform for continous development of new functions such as Network Streaming and Internet Browser.

plugin support

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New Products from Trimax

- ***New from Trimax: HDTV Signal Analyzer with HDTV Monitor***
- ***Expansion into New Business Sectors such as Fiber Optics***
- ***Manufacturing on Their Own Since 2008***

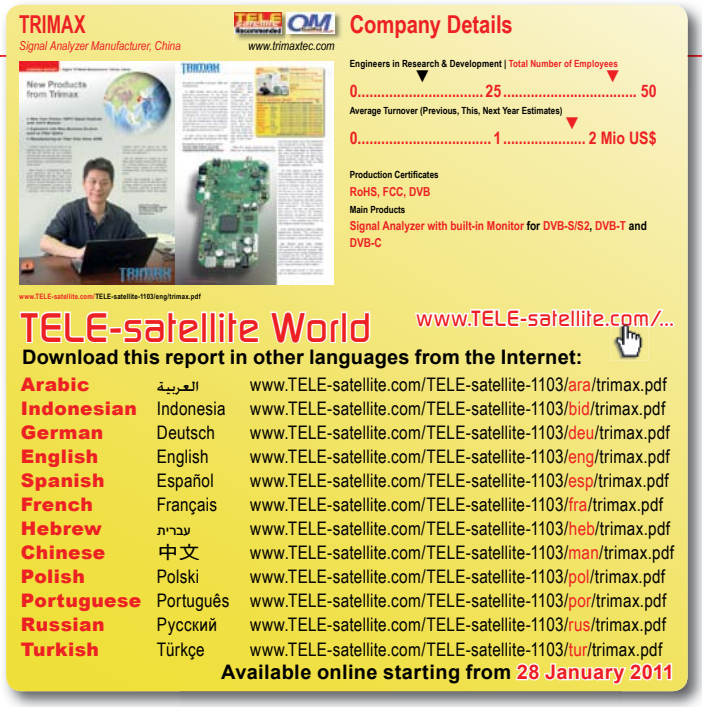
Trimax's trademark is the easy-to-use signal analyzers with built-in monitors: this lets the installer set up a satellite system with ease and also lets him show the customer a live satellite picture. And as we all know, a picture is worth a thousand words.

Now Trimax is expanding their analyzer spectrum and is also offering tuners for DVB-C and DVB-T; even CI+ is in the works. We met up with Jerry Chu, Trimax's General Manager, at the headquarters in Shenzhen to find out more. "I founded Trimax in 2001 together with a partner: Tim Heinrichs in the USA", explains Jerry Chu about the past, "Before that I was a Sales Director at a receiver manufacturer."

But he wanted to realize his own ideas and founded Trimax with his partner. "Trimax stands for 'try maximum', in other words, 'always try your best'", comments Jerry Chu about the company name.

Trimax was originally a dealer: "I looked for and found the manufacturers in China while my partner in the USA, Tim Heinrichs, sold the products from those manufacturers." Back then Trimax

Jerry Chu is General Manager of the signal analyzer manufacturer Trimax. Here we see him in his office in Shenzhen, China.

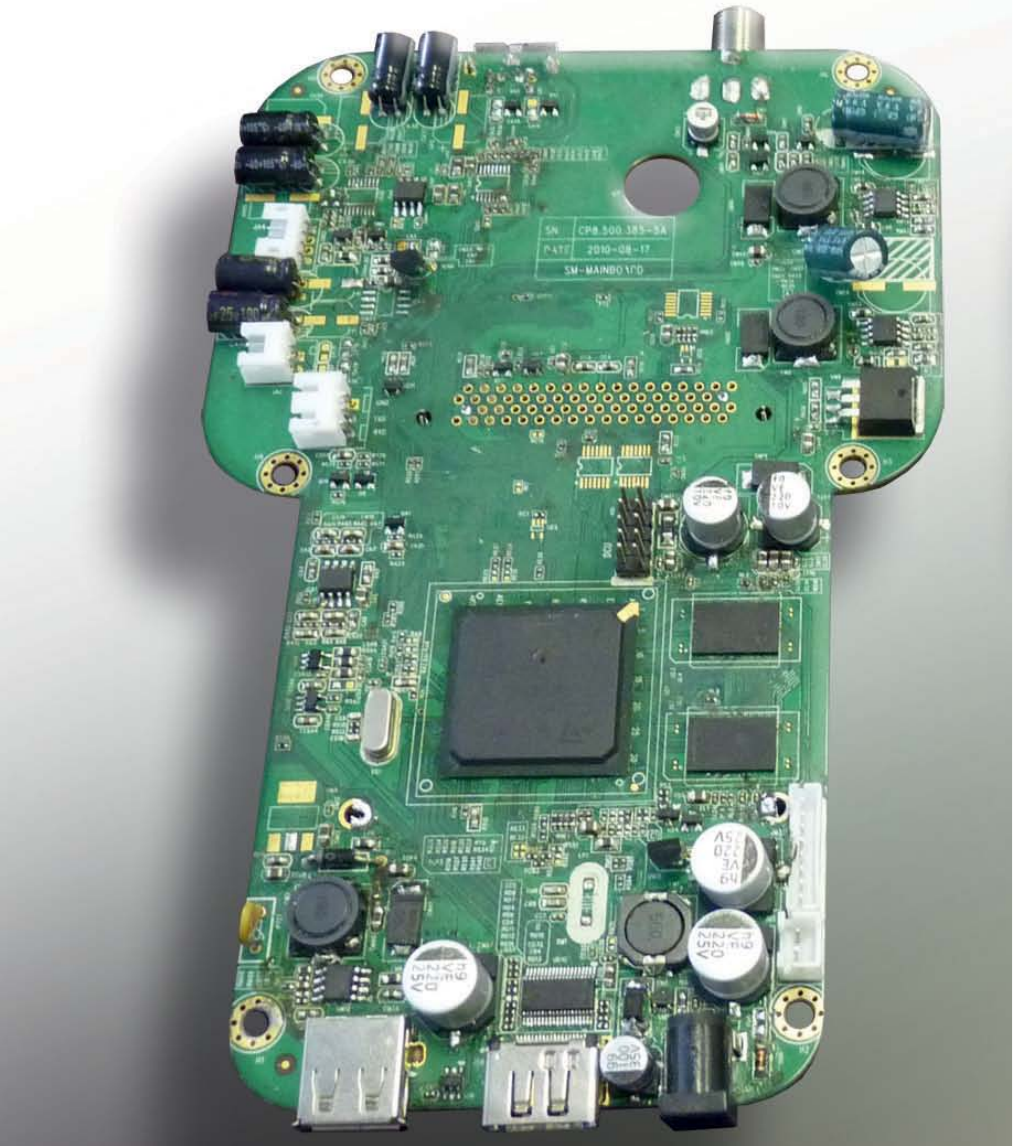


focused on satellite receivers, LNBs and multiswitches.

In 2006 though, Jerry Chu had an interesting experience: an old friend from the USA acquired an apartment in Shenzhen and asked Jerry Chu to help him install a satellite system so that he could receive English-language programming. Armed with a professional satellite signal analyzer, Jerry Chu started the job of aligning the antenna. But frustration soon set in; operating that professional unit was too complicated. And suddenly a light bulb came on in his mind: "That's when I got the idea to develop an easy-to-use signal analyzer and market it."

In 2007 Jerry Chu hired a software engineer who then developed the first satellite signal analyzer with a built-in monitor. More employees were quickly added – today Trimax has 12 employees – and Trimax was able to deliver the first units in the same year. "It was less than 1000 analyzers in 2007 but in 2008 we sold more than 10,000 units", says Jerry Chu proudly regarding their initial success, "Our best year was 2009 when we sold 12,000 analyzers."

■ **A first PCB production sample of Trimax's new HDTV signal analyzer: this sample will soon lead to an HDTV analyzer with swappable tuner on the international market.**



While the signal analyzers were produced by an independent manufacturer the first two years, Jerry Chu started his own production in 2008: "20 employees work there to produce the signal analyzers." Trimax only ships to distributors but does manufacture for some providers as an OEM. "We sell 80% of our signal analyzers under our own Trimax brand name, the other 20% are OEM shipments", explains Jerry Chu.

The first signal analyzers in 2007 were simple DVB-S models but already in 2008 they came out with models that had software-generated spectrum analyzers. In 2009 a model with a real-time spectrum analyzer was introduced and for 2011 Jerry Chu told us, "We will be introducing an HDTV model!" By the time this issue of TELE-satellite is published, the first HDTV models will have already been delivered and with a swappable tuner at that: "We offer a tuner for every application – for DVB-S2, DVB-C and DVB-T. The user can easily insert and remove the tuner; the software automatically recognizes the currently inserted tuner." This is an exciting development; a TELE-satellite test report of this analyzer will be forthcoming.

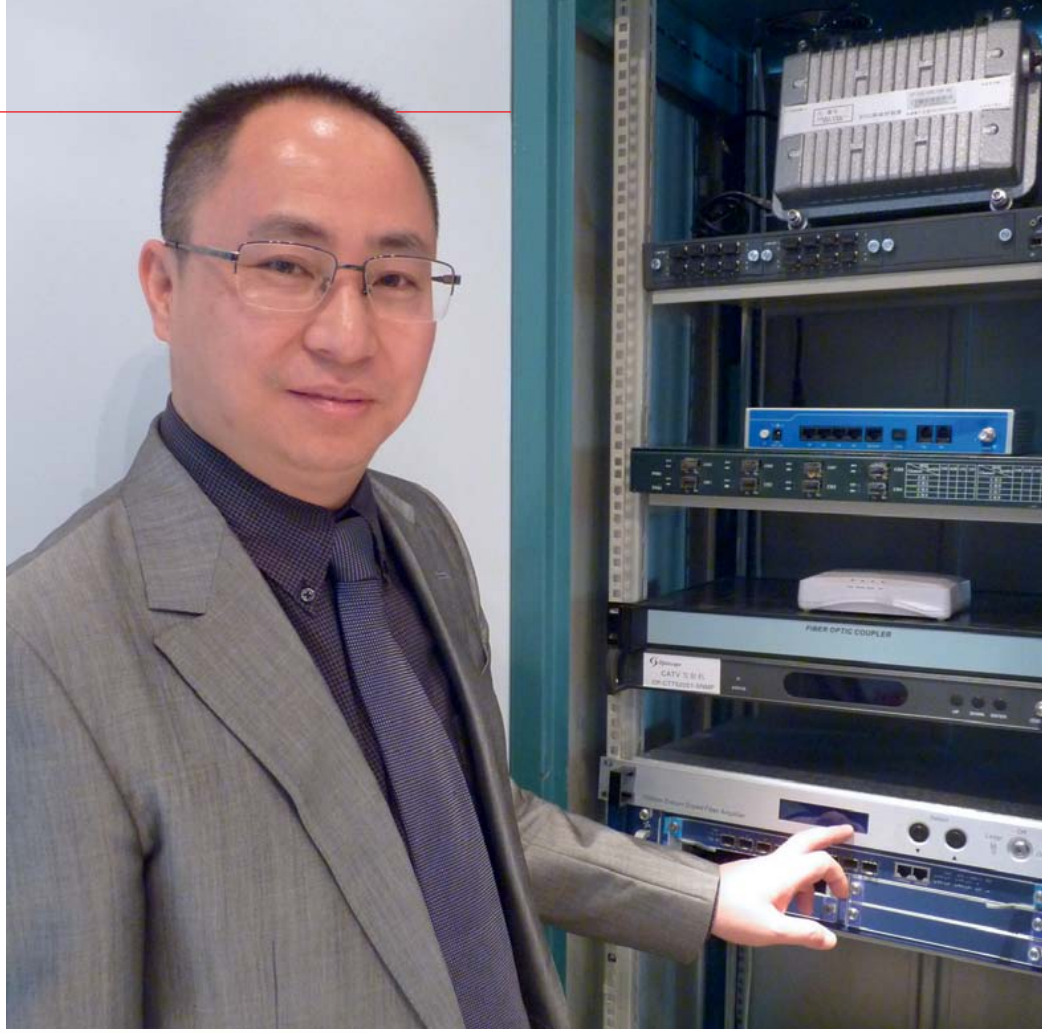
A CI+ version will also make its market appearance shortly: "The software is ready to go; we're just waiting on a production sample", comments Jerry Chu.

But there's more from Trimax: "Recently we entered into a cooperative agreement with the company Hilton Optoelectronics whose headquarters is located not too far away from us." Trimax is planning to offer optical products to CATV systems and cable operators, "since the future is fiber optics."

But that's still not all! In 2011 Trimax will be starting a completely different

product division: formaldehyde analyzers. "In the USA regulations require that these values be measured", he explains, "We already have secured a large contract from there."

Jerry Chu and his partner are expanding their company in two directions: the building up of the signal analyzer segment to include chemical measurements and the expansion of their products in the direction of fiber optics. Both of these business sectors are in their infancy and are therefore perfect for a young and energetic company. The two partners are clearly honoring the meaning of their company name!



William is President of Hillton Optoelectronics. Trimax is cooperating with this company in marketing fiber optic products. President William is gesturing towards one of the professional units for use with large cable systems and tells us: "From 500 to roughly 10,000 households can be provided with a cable system's Triple Play service using this system. Production costs not including installation are under US$ 200.00 per connected household for our system."

Schematic of Hillton Optoelectronics' fiber optic system. Trimax prepares a smaller version of this system for use with smaller cable systems.

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■ SKYWORTH's futuristic headquarters located directly on Shennan Boulevard, the main street that runs directly through Shenzhen.

SKYWORTH is Expanding

One of the larger receiver manufacturers in China is SKYWORTH. They've consistently been in expansion mode and have managed to make a phenomenal entrance into the South American marketplace in 2010: a large contract with the government of Argentina involving 400,000 receivers for the terrestrial ISDB-T standard resulted in SKYWORTH's intense production activity. "All these receivers have already been shipped", we learn from Jack Jiang, Sales Director of SKYWORTH's receiver division. The company's official name is Shenzhen SKYWORTH Digital Technology Co., Ltd.

We met up with Jack Jiang in SKYWORTH's futuristic headquarters located in Shenzhen's High-Tech Park. He told us of some of the companies additional highlights: "Next to Europe, the Middle East including Turkey are large markets for us", he reveals, "we sold half a million receivers in this region in 2010 and we're actually expecting this number to double for 2011."

There's a reason for this optimism as can be seen by the type of receivers sold there; the Middle East still has quite a bit of potential for HD receivers. According to Jack Jiang, "70% of the receivers sold in the Middle East in 2010 were DVB-S SD models and only 25% were DVB-S2 HD models." It's clear from these numbers that the market for HD receivers in this region hasn't really picked up yet. The remaining 5% were twin receivers.

Jack Jiang has more to tell us: "Up until now in the Middle East only Iran has made DVB-T official; SKYWORTH delivers OEM DVB-T MPEG4 receivers to a local partner in Iran." Thousands of units have already been shipped to Iran and SKYWORTH foresees a significant increase in these deliveries for 2011.

But let's get back to South America. "We shipped our first ISDB-T receiver to Brazil in 2009", explains Jack Jiang, "in 2010 we shipped roughly 30,000 OEM receivers to our partner in Brazil."

For 2011 SKYWORTH expects that number to rise since more and more countries in South America are starting regular service of terrestrial TV in the ISDB-T standard.

"We can offer three different models for South America: a standard ISDB-T box, a box with ISDB-T and the Middleware Ginga - this allows access to interactive programming content - as well as a combo box with ISDB-T and DVB-S2." SKYWORTH is quite capable of deliver-

1. Jack Jiang is SKYWORTH's Sales Director

2. A look at the large open office area with SKYWORTH's software developers

SKYWORTH
OEM Receiver Manufacturer, China
www.skyworth.com

Company Details

Engineers in Research & Development | Total Number of Employees
0 ..... 1250 2500

Average Turnover (Previous, This, Next Year Estimates)
0 ..... 1.250 ..... 250 Mio US$

Production Certificates
RoHS, CE, REACH, DVB

Main Products
Receiver for DVB-S/S2, DVB-T, ISDB-T with single, twin and combo tuner, Receiver Sticks for USB, SCART in DVB-S and HDMI in DVB-S2

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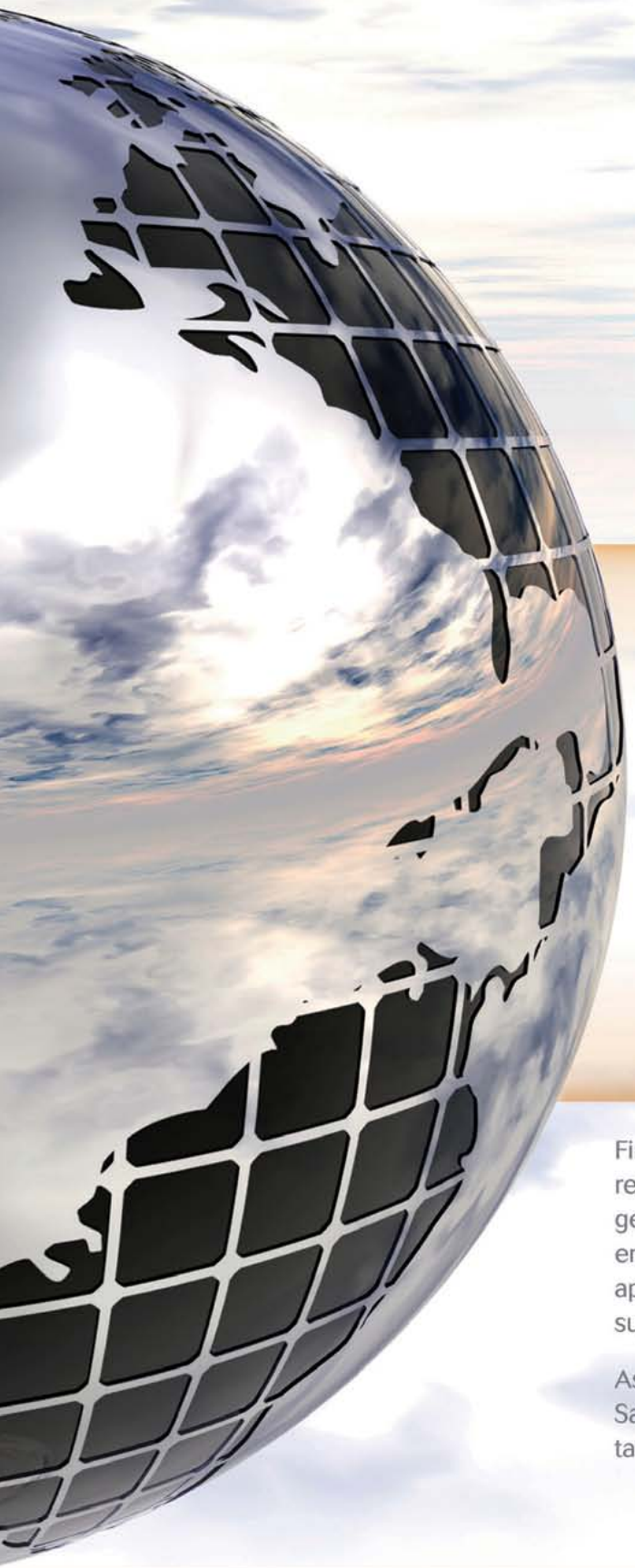

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ing receivers to this new and upcoming market!

As long as we're on the subject, how does it look for new DVB products? Jack Jiang has the answers: "We recently started a DVB-S2 receiver with the HDTV variant CI+." A test report on this new receiver in TELE-satellite is forthcoming. By the time you read this issue, there will be an especially interesting highlight from SKYWORTH: "We will be introducing an HDMI stick to the market for DVB-S2 and of course with a PVR function", explains Jack Jiang.

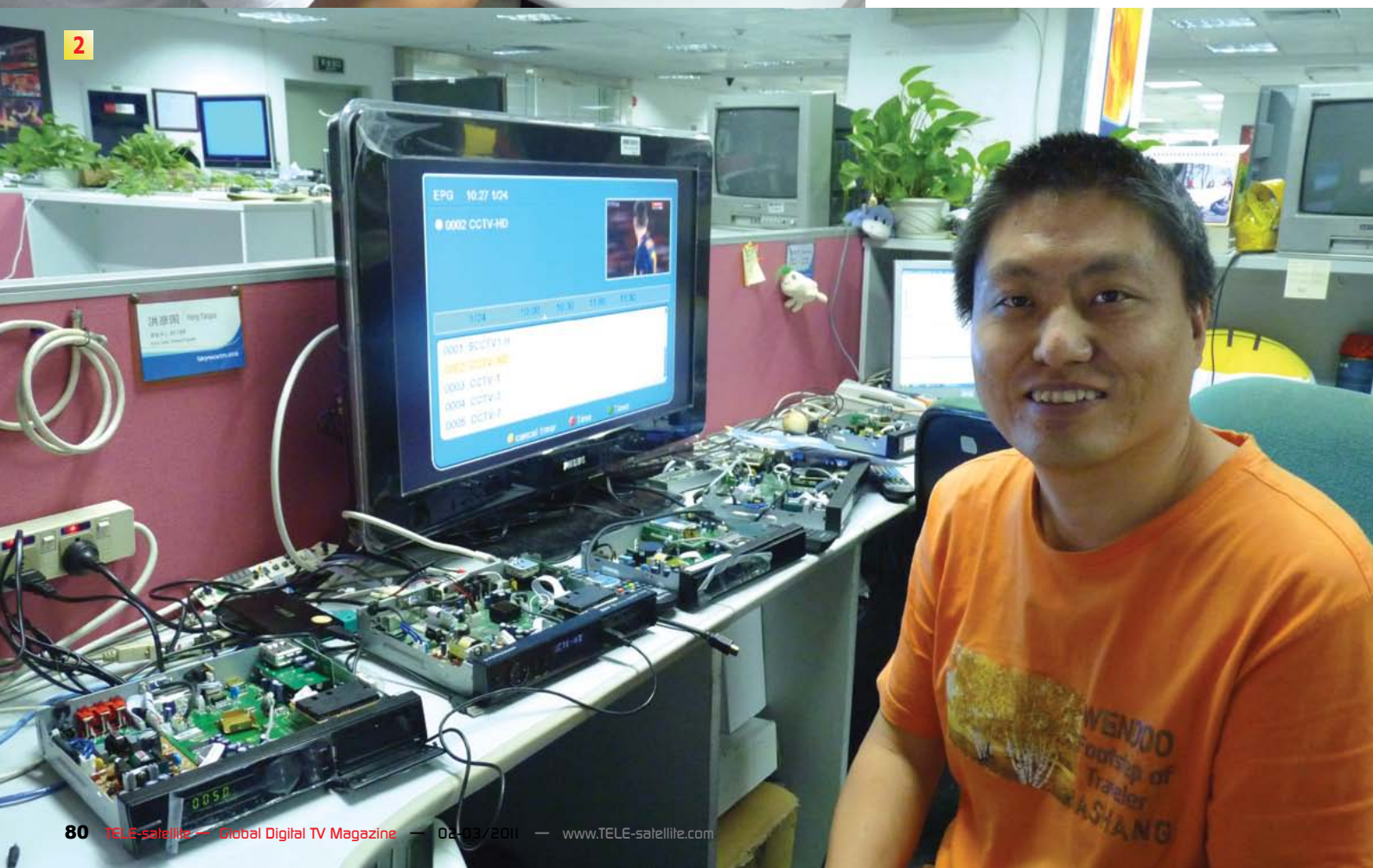
SKYWORTH already has plenty of experience with receivers in stick format; in TELE-satellite's issue 04-05/2010 we introduced a receiver stick - it was in SCART format and naturally in standard definition - only the HDMI interface is qualified to be used with HDTV. "And for the third quarter of 2011 we will also offer HbbTV", comments Jack Jiang as he lists SKYWORTH's new products.

Vice General Manager David Ken has more information for us: "We have 2500 employees", explains David Ken, "of which 400 are engineers in the R&D department."

An important reason for SKYWORTH's success is their technical support. "Nine engineers are in the technical support department and are immediately there to help our customers should there be a problem with a receiver."

1. Are there technical problems? Then all you need to do is send an e-mail to SKYWORTH's technical support team. Here we see Rock Cai; he is manager of the nine-engineer strong technical support team. He gives us insight into what kind of problems they see: "The hardware typically functions error-free. When there are problems, it's usually with the software." The reason for this is that the software is always being updated. "Most of the problems can be corrected with a software upgrade", explains Rock Cai, who has succeeded thus far to track down every problem.

2. SKYWORTH is currently introducing a receiver with CI+. Gong Yangno, shown here, is responsible for technical development. He runs the CI+ software development team with 22 engineers.

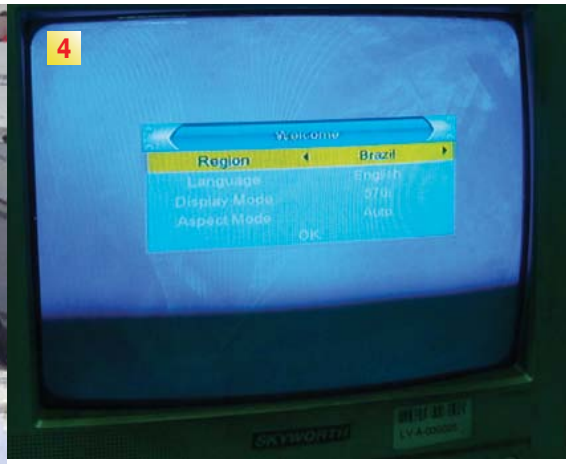


In this case the customers aren't the end users but rather the large distributors and trademarks that get their receivers from SKYWORTH as an OEM supplier. For these companies it's especially important that the receivers function flawlessly since only then can they stay successful in the market.

If you want to find out more about SKYWORTH's receivers, you can meet up with Vice General Manager David Ken and Sales Director Jack Jiang at many different trade shows.

Jack Jiang lists the trade shows that SKYWORTH will be part of in 2011: "We'll be at CABSAT in Dubai, SET in Sao Paulo, IFA in Berlin, ANGA in Cologne, IBC in Amsterdam and at the Fall trade show in Hong Kong." This provides many opportunities to take a much closer look at SKYWORTH's product line and to discuss delivery options.

With their many innovative products and their extensive technical know-how, SKYWORTH's customers are in very good hands!



1. Wong Wei is responsible for the South American ISDB-T receiver's software. He's in charge of four ISDB-T engineers.

2. Front panel of the South American ISDB-T receiver

3. Rear panel of the South American ISDB-T receiver

4.A TV monitor is used to test a SKYWORTH ISDB-T receiver. Country selection can be seen here in the menu which for this receiver is limited to South American countries that have adopted the ISDB-T standard.

SKYWORTH ISDB-T Receiver for South America

Shenzhen
30

Innovative PC Cards from China

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

■ Tenow is in the process of setting up new offices on the second floor in this new office complex in Shenzhen's High-Tech Park. These offices will give Tenow room to expand.

■ Tenow's four partners: they founded the company in 2005. From left to right: Richard Zhang, Bob Liu, Eric Deng and James Liu

Two of the founders, James Liu, in charge of Marketing, and Bob Liu, responsible for Software Development, met each other while studying at Wuhan University. The two other partners, both of whom previously worked at a receiver manufacturer, are Richard Zhang, in charge of Hardware Development, and Eric Deng, who is also involved with Software Devlopment. All four of them founded the new company in 2005 using a starting capital of 500,000 RMB (roughly 50,000 Euros).

Tenow then operated as a commercial enterprise: DVB-T was just starting to become popular and they distributed DVB-T demodulator chips to local manufacturers in Shenzhen.

Then, as a design house, Tenow developed complete applications for manufacturers. One success story involved DVB-T USB sticks: Tenow developed the

TENOW

PC Card Manufacturer, China

www.tenower.com

Company Details

Engineers in Research & Development | Total Number of Employees

0 ▼ 12 ▼ 25

Average Turnover (Previous, This, Next Year Estimates)

0 ▼ 1.5 ▼ 3 Mio €uro

Production Certificates

RoHS, DVB

Main Products

PC-Cards for DVB-S/S2, DVB-T/T2, DVB-C with single, dual and quad tuner, CAM Box for DVB-S2, USB-Stick for DVB-S/S2, DVB-C and ISDB-T

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application which was then acquired by a local manufacturer who then marketed the completed sticks.

That was actually the trigger that compelled the four founders to reorganize their business model: instead of designing solutions for other manufacturers who then ended up profiting from the sales, the four partners decided to take their designs and manufacture and distribute them themselves.

For Tenow though, the DVB-T stick was old news; the prices for this product segment were already too low to continue with that product. A new idea had to be found; it didn't take long: a PCI card for DVB-S that was marketed under the brand name Tenow at the end of 2006.

Then each year after that it was something new: in 2007 there was the new DVB-S2 PCI card and then in 2008 the time was right for cards with a PCI Express slot. The first of those was a DVB-S2 card followed by a dual DVB-S2 card in 2009 which was introduced by TELE-satellite in the 12-01/2011 issue. But now it's 2011 and the four partners are really giving it all they've got: by the time this issue reaches your hands, there will be a firestorm of innovative new PC cards as well as boxes that can be connected to a laptop:

- a CAM Box in DVB-S2 with the ST0903 chip
- a PCIe Card with 4 x DVB-S2 with the CX24117 chip
- a PCIe Card with 1 x DVB-T2 with a Samsung tuner
- a PCIe Card with 2 x DVB-T2
- a professional PCIe Card with the ST0900 chip supporting VCM/ACM/CCM and multi-stream-input

The second quarter of 2011 should see other highlights:

- a double PCIe- Card with 2 x DVB-S2 and 2 x CI

An especially tasty treat for satellite DXers will appear in the third quarter of 2011:

- a PCIe Card with 4 x DVB-S2 and the NXP 10074 chip

It's special because this chip permits Blindscanning! Bob Liu, in charge of Software Development, reveals a few other features to us regarding Blindscan: "Our CAM box with the ST0903 chip comes with the Blindscan function as does our data card with the ST0900 chip." But for feed hunters and satellite Dxers it's the card with the NXP 10074 chip that brings with it the long-awaited all-around solution to Blindscanning.

Software Developer Eric Deng explains a few more features to us: "Our target

1. Irene Jiang is responsible for International Sales

2. Susanna Zhao is responsible for International Sales. She speaks English and German

3. Lucky Lu is a Software Engineer. She is currently working on an application for DVB-T2

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1. Steven Liu is also a software engineer and is working on a DVB-S2 application

2. Tenow has outsourced the actual production process but they still perform quality control on the finished product: here we see engineer Zhang testing product samples.

group for the 4 x DVB-S2 cards are actually the IPTV providers. They require simultaneous reception from as many sources as possible. At the same time our data card with the ST0900 chip targets the professional market; it supports CCM, ACM, VCM and multi-stream input - a requirement for professional satellite data download applications." With these new products, that currently are or soon will be appearing on the market, Tenow is clearly covering every possible application. But now we want to get an idea of how Tenow performed at the start.

Marketing Manager James Liu gives us some insight: "In our first year in 2005 we were just able to cover our expenses. We already began to show a profit in 2006: we managed sales of 5 million RMB (about 500,000 Euros)." In 2010 sales reached 20 million RMB (about 2 million Euros). "For 2011 we are expecting sales of about 30 million RMB (or 3 million Euros)."

Software developer Bob Liu highlights their employee numbers over the years: "In 2005 it was just the four founders, in 2006 we added two employees and now in 2010 we have 18 employees." This includes four software engineers, four hardware engineers, three sales managers, one in accounting and three in administration.

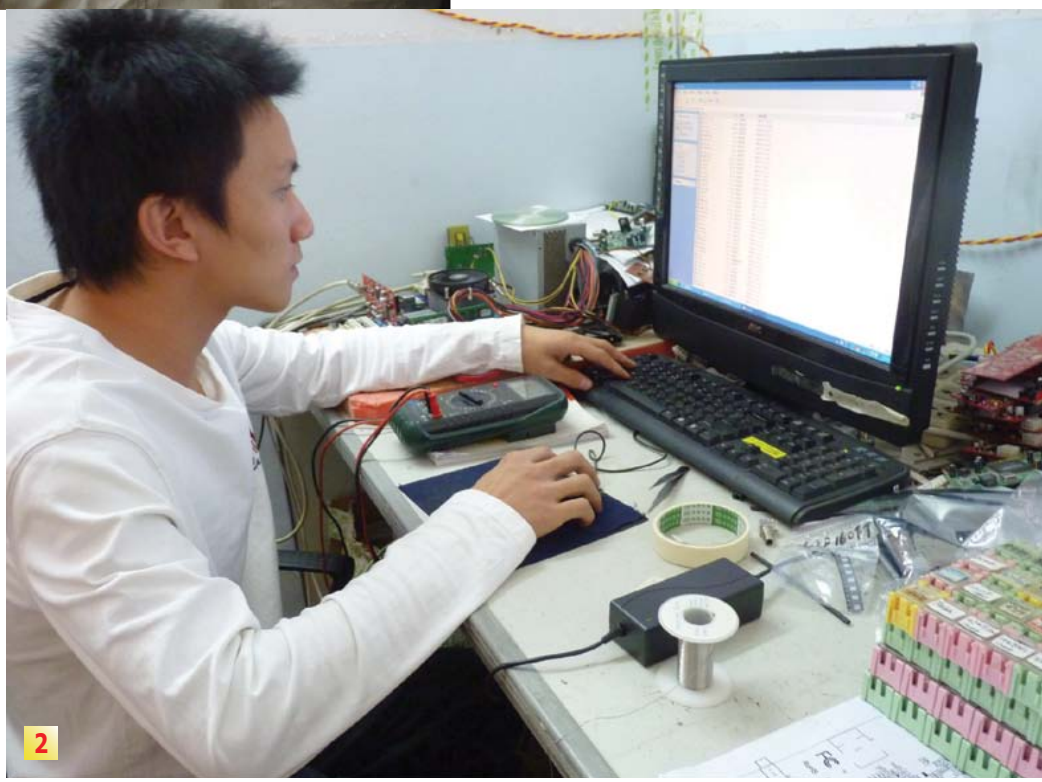
In their new office there will be plenty of additional room so that Tenow could expand to 40 employees.

If you take a closer look at Tenow's product palette, you might notice that they are focusing on DVB-S2 and DVB-T2. Hardware engineer Richard Zhang confirms this: "DVB-C doesn't play a very big role; the sales numbers are rather low."

Irene Jiang, responsible for international sales, expands on this: "80% of our sales are in Europe, 15% go to the Middle East and the remaining 5% to the rest of the world such as North America. Inside Europe, 40% of sales each go to Germany and England with the remaining 20% going to countries like Poland, France, Italy and Sweden."

Marketing Manager James Liu has something else for us: "We're in the process of setting up a branch office in Sophia, Bulgaria. We would then have direct access to Europe making product distribution much easier."

This new branch office would not only be a storage warehouse but also a sales office for Europe from which Tenow could support their customers in Europe. Equally important according to Bob Liu, "We would also use the Sophia office as a test center for our PC cards. We could then check the performance of our cards on actual satellite signals." The branch office in Bulgaria is set up for five employees; three would be from the local region while the other two would be for software and hardware developers from the main office in Shenzhen.



This young team has managed to write an impressive success story in just a few years. With self-developed applications and above all a focus on innovative products, that is products that don't yet exist, Tenow should have no trouble expanding its reach in the marketplace.

Tenow is a private company and it's remarkable how these four partners have managed to work so close together

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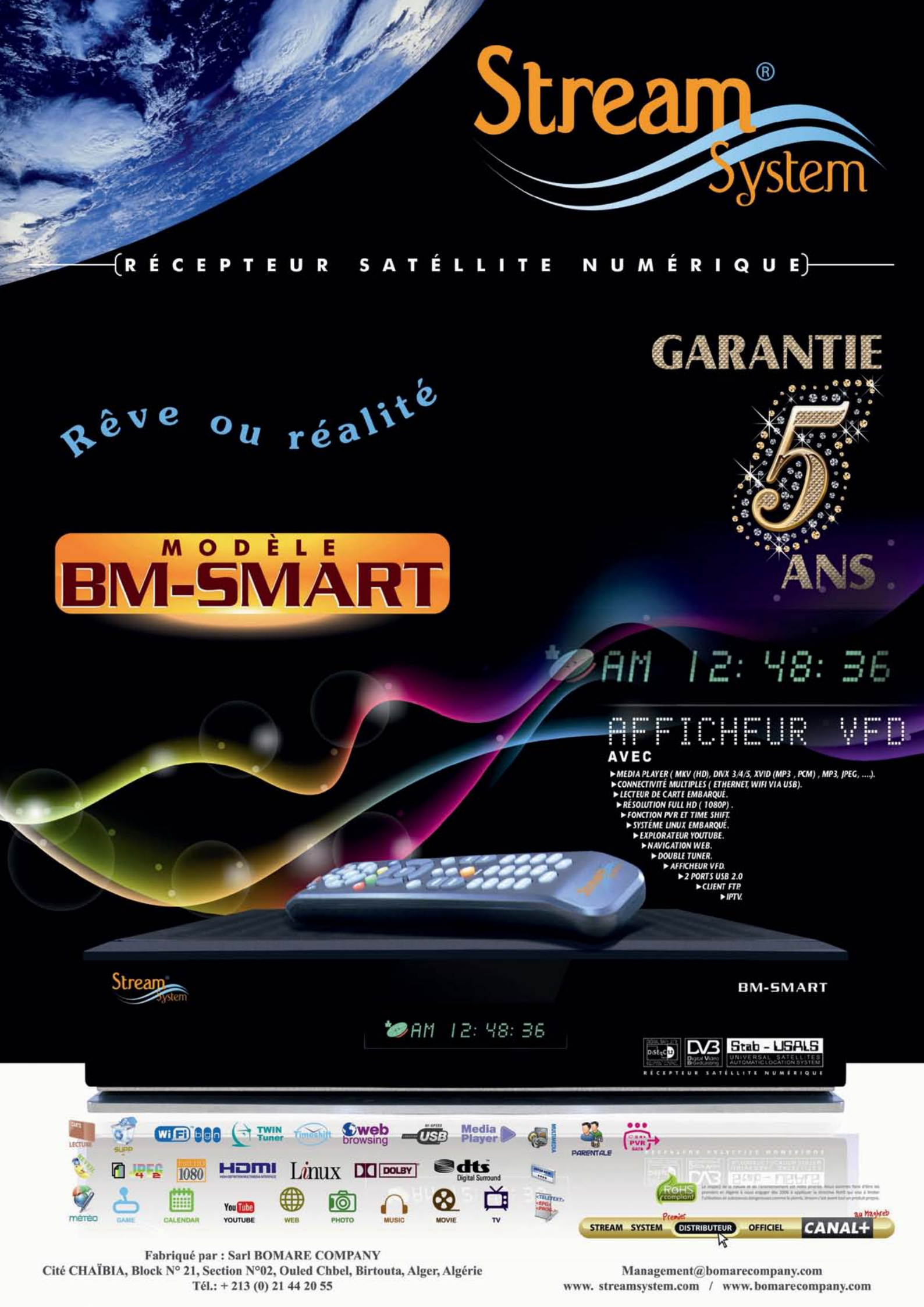

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over the years expanding and growing their company and this not only in terms of product development but also in the conquest of new markets.

If you want to meet the Tenow four, simply take a trip to the upcoming ANGA show in Cologne, Germany: there they'll be introducing their newest products as well as be open to meetings with new dealers and distributors for their products.

Tenow is an excellent example of a company that knows how to develop exactly those products that the market is looking for. The trick is not showing up too late with a product when price reductions have already begun to take place, but rather to market a product at a point when demand is just beginning.

Tenow's Newest Products

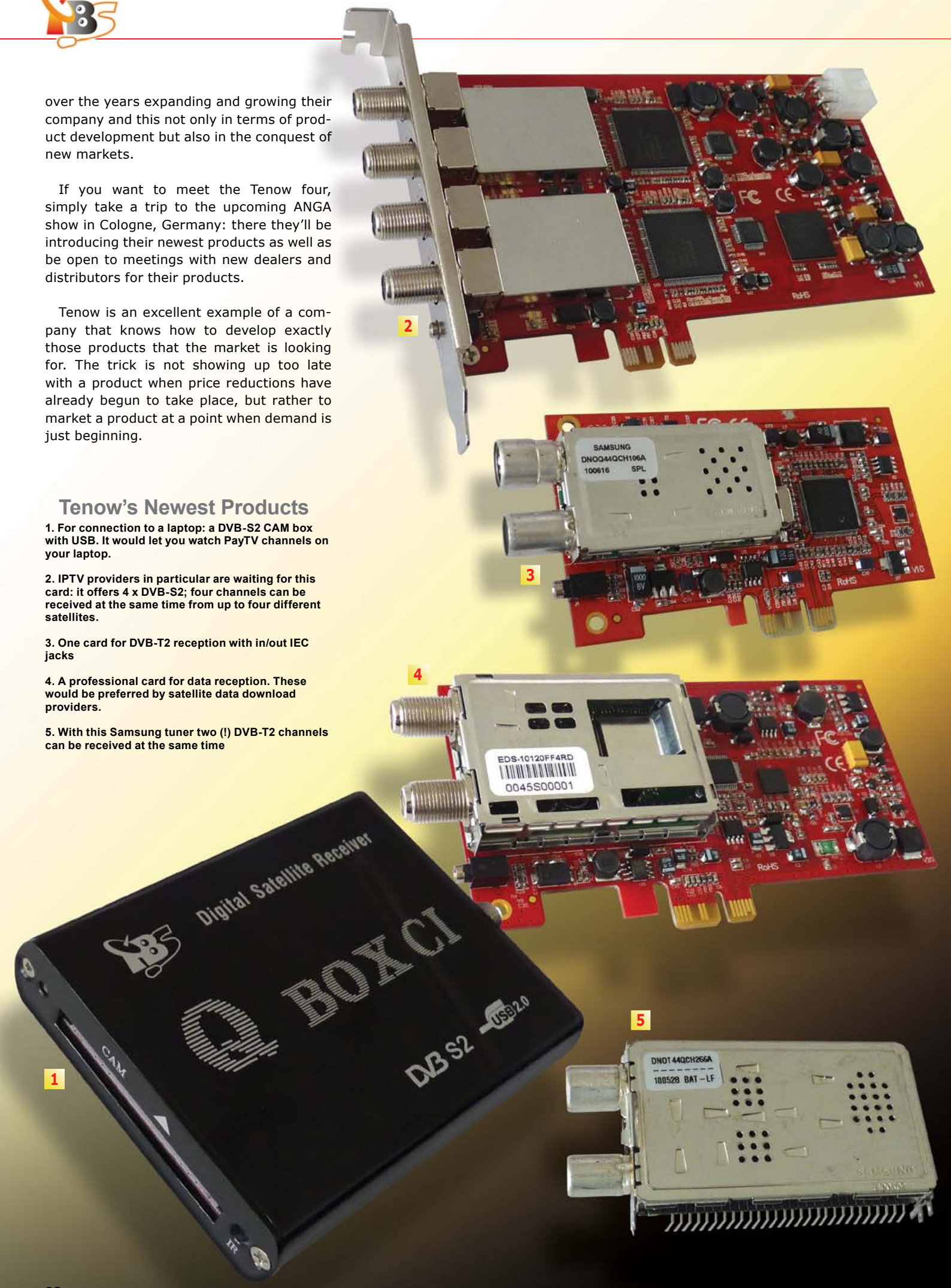
1. For connection to a laptop: a DVB-S2 CAM box with USB. It would let you watch PayTV channels on your laptop.

2. IPTV providers in particular are waiting for this card: it offers 4 x DVB-S2; four channels can be received at the same time from up to four different satellites.

3. One card for DVB-T2 reception with in/out IEC jacks

4. A professional card for data reception. These would be preferred by satellite data download providers.

5. With this Samsung tuner two (!) DVB-T2 channels can be received at the same time



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Millions of Receivers from Globalsat

- ***GLOBALSAT opens a new production facility in Zhuhai (west of Shenzhen)***
- ***Production capacity of up to 8 million units per year***
- ***More than 100 engineers in R&D***
- ***New multimedia receiver in 2nd quarter of 2011***
- ***Distribution of their own brand name by 2012***
- ***Sales numbers expected to double in 2011***

With a new production facility that will just be starting operations when this issue of TELE-satellite hits the newsstands, Globalsat in China is launching a new offensive in 2011 in the manufacturing of high-quality receivers; and this includes boxes for satellite TV, terrestrial TV and IPTV. The export of these boxes to Europe and America tops the list for this expansion.

To accomplish this, Globalsat is planning on doubling their production capacity from the current four million boxes per year: the new production facility will be able to handle a maximum of eight million receivers every year. We met up with Alvin Sun, Globalsat's Sales and Marketing Director, in their current office in Shenzhen to learn more about what's going.

Globalsat was founded in 2004 by Mike Miao together with a team of investors and partners including Sales Manager Alvin Sun, R&D Hardware Manager Ian Wu and R&D Software Manager Bean Zhou. In their first year 210,000 units were produced and were delivered

■ This is the China Youse building on Shennan Boulevard, the main street that runs directly through Shenzhen on which many manufacturers in the digital TV sector have their headquarters.

as OEM boxes primarily to the Middle East. Up until 2008, the Middle East was their primary target market but then the company set up a sales team for Europe. "Back then we concentrated our efforts mostly on Germany, England, Italy, Turkey as well as Russia and the Ukraine', says Alvin Sun, "We sold OEM satellite and DVB-T receivers to local distributors."

Another region was added in 2009: the incorporation of the terrestrial TV standard ISDB-T in Brazil opened up this enormous market to Globalsat. Globalsat also set up a sales team for Australia for the DVB-T receiver business there. Globalsat more than anything is a design firm. All four founders were previously employed with similar receiver companies in the past. In the beginning in 2004, there were six employees; in 2005 that number increased to 20 and by 2010 there were 200 employees. Alvin Sun comments, "Half of our workforce, 100 engineers in all, work in the Development Department." Their far-reaching expertise in software can be seen in the impressive number of cooperative agreements: Globalsat designs applications for almost every chip maker including NXP/CONEXANT, BROADCOM, ST, FUJITSU, NATIONAL CHIP and SUNPLUS.

Globalsat is an OEM manufacturer that produces boxes for local distributors and name brands. The Operator business, that is, boxes for programming providers, was up until now not really part of their business strategy. That will be changing. "We already have the licenses for Conax, Crypton and XCrypt and are working on acquiring the licenses for Nagra, Irdeto and NDS", explains Alvin Sun. Globalsat already has the licenses

Mike Miao is Globalsat's founder. He develops the company's strategy and is consistently involved in driving the company forward. He managed in just the few years that the company has been in existence to elevate it into the league of million-unit manufacturers and is now determined to raise it to the upper-most level of high-quality manufacturers.

GLOBALSAT
Receiver Mass Manufacturer, China
www.globalsatdvb.com

Company Details

Engineers in Research & Development | Total Number of Employees
0 ..... 125 250

Average Turnover (Previous, This, Next Year Estimates)
0 ..... 75 ..... 150 Mio US$

Production Certificates
RoHS, FCC, UL, CE, DVB, ISO

Main Products
Receiver for HDTV and SDTV in DVB-S/S2, DVB-T, DVB-C, ISDB-T, HD+, CI+ and HbbTV, Multimedia Receiver, IPTV Boxes, Media Player

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for HDMI, CI+, Macrovision, Dolby and WMV; soon DTS and DiVX will be added to the list. This makes Globalsat fully prepared to manufacture for all of these markets. Alvin Sun expands on this: "In 2010 we shipped less than 5% of our products to programming providers; in 2011 we expect that to increase to 15%."

President Mike Miao gave us some insight into their long-term strategy: "Thus far we outsourced our production but with our own manufacturing facility we'll be able to offer even better quality products as well as comply with all the different standards." This involves mostly the RoHS and ISO standards and the safety standards of the FCC, UL and CE. Once the production facility is fully operational, expected to be around mid 2011, Globalsat will be able to guarantee all the standards placing them in the elite circle of high-quality manufacturers. Sales, which for 2010 were around 80 million US dollars, are expected to nearly double thanks to the new production facility. "We're expecting sales of around 150 million USD in 2011", predicts Mike Miao.

■ **Alvin Sun is Globalsat's Sales and Marketing Director and one of the founding partners. Here he is showing us a model of a 3D TV that is currently being distributed domestically under their own label SVC. He can easily imagine this product eventually being exported but for the time being Globalsat is concentrating on exporting their HD and multimedia receiver products that are manufactured in their own facility. Globalsat also manufactures LED and LCD TVs for the domestic market.**

■ **Sharon Yan is at the reception desk and greets visitors with a smile.**

NetUP Dual DVB-S2-CI

Professional high-density satellite reception card

Overview

The NetUP Dual DVB-S2-CI is a professional PCI-e satellite reception card designed for high-density appliances such as DVB-IP gateways, home theaters, satellite Internet systems, etc. In contrast to standard DVB-S cards NetUP's Dual DVB-S2-CI provides fourfold density – two DVB-S/S2 receivers and two Common Interfaces (CI) occupy only one PCI-e slot. The high density allows saving space on installation and using the card for satellite signal reception in confined environments. For example, a standard 1U rack-mount server with two PCI-e slots can receive and fully decode 4 satellite transponders, such as NetUP's IPTV Combine 4x.

Features

- two DVB-S/S2 inputs - simultaneous reception of two DVB-S/S2 transponders;
- two CI slots - independent descrambling of two transponders;
- support of any professional CA modules (e.g., PowerCAM Pro, Aston Pro Solutions, etc.);
- PCE-e x1;
- DiSEqC 2.x;
- drivers for Linux OS.

Components Used

- Conexant CX23885;
- dual demodulator STM STV0900;
- tuner STM STV6110A;
- dual LNB STM LNBH24;
- SMARDTV CIMaX Sp2.

NetUP

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Josie Yang is Globalsat's Marketing Manager. She is standing here in front of a display wall with a selection of OEM products manufactured by Globalsat.

Globalsat will continue its position as an OEM manufacturer. Don't waste your time looking for receivers with the Globalsat logo. "Maybe in 2012 we'll start with receivers under our own brand name", reveals Sales and Marketing Director Alvin Sun to us.

Domestically, Globalsat has been very successful with the brand name SVC: TV sets are produced under this name. A completely new field involves 3D TVs; Alvin Sun believes that it won't be too long before they are offered internationally. For now, Globalsat only exports receivers: "In 2010 we exported 70% SD receivers and 30% HD boxes." In 2011 this ratio will substantially change with their new production facility: "The portion of HD receivers should increase to more than 50%."

Globalsat even has a Super Receiver in development. It should become available in the second quarter of 2011 and will come with a twin tuner for DVB-S2, an IPTV receiver section, web browser and most notably 3D graphics plus games as well as WiFi support and of course a PVR. The latter feature comes with the option to record the original signal. This makes this box compatible with HD+ and CI+; HbbTV is also being worked on. The TELE-satellite test team can't wait to get their hands on a sample receiver so that we can introduce it to you as soon as possible.

The sales team provided us with some numbers highlighting geographical distribution. In 2010 70% of all shipments still went to the Middle East with 15% going to Europe and the Americas. In 2011 a

■It's not quite ready yet but it won't be long before this production facility kicks into high gear. Administration will also move into this building which is located in Zhuhai, west of Shenzhen opposite Macao.

substantial shift will be seen here: the Middle East, which has been their primary target market since the founding of the company, will be further reduced to 50% while Europe will climb to 30%, South America will be around 15% with North America receiving the remaining 5%. For South America it will be mostly ISDB-T receivers and in North America Globalsat will be focusing on IPTV and media players.

Globalsat has set some lofty goals for themselves in 2011: "We're planning on production of seven to eight million receivers as well as 500,000 TV sets and 20,000 signal analyzers", lists Alvin Sun. The reason for this is the startup of their own factory that will be used to manufacture highquality products for the European and North American markets thus greatly expanding their position in the OEM market.

You'll find Globalsat at almost every appropriate trade show. Marketing Manager Josie Yang gives us an overview: "For 2011 Globalsat will be at CES, CSTB, CABSAT, CCBN, ANGA, SET, IBC as well as the two KDTC shows in the Spring and in the Fall."

Globalsat is clearly on an expansion course. The original business plan of manufacturing inexpensive boxes for the Middle East has been replaced by the start of a high-quality production line: now with high-quality products the European and North American markets are in focus. The company Globalsat is in the process of taking the next step in their development: they are moving from a manufacturer of inexpensive boxes to one of high-quality products that come with all the features that are expected by today's customers. It's a very forward-looking strategy!

■One of the many new products by Globalsat: an ISDB-T + DVB-S2 HD Combo, model name IS1-19HD. Some technical specifications: ISDB-T Compliant (MPEG-II/ MPEG-IV/ H.264), DVB-S/S2 Compliant (MPEG-II/ MPEG-IV/ H.264), SCPC & MCPC receivable from Ku and C band satellites, Universal, Single, Single Ku & C Band Wideband LNB compatible, Sensitive Tuner with Loop-Through, DiSEq C 1.0/1.1/1.2/1.3(USALS), SCR Support, PAL/SECAM/NTSC, Blind Search, variable aspect ratio (4:3, 16:9) with PAN&SCAN, CE, FCC, DTV compliant, supports Closed Caption (CC) function, optional Conditional Access (e.g. Conax) embedded. This Combo model is for the Brazilian market, but a European model with DVB-T plus DVB-S2 HD has been launched simultaneously.

Hardware Design at Globalsat

1. Ian Wu is in charge of the Hardware R&D team. He is also one of Globalsat's founding partners and runs a team of 22 engineers.

2. The hardware for Globalsat's boxes is designed here.

3. Sample units are manually assembled and checked out here to see if they can be produced that way.

4. These two employees solder sample circuit boards together for the sample units. In this way the theoretical units designed by the engineers can be tested in practice before they go into production.

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Globalsat Sales Team

1. Anna Zhang is the sales team leader for northern and eastern Europe

2. Belinda Bi is in charge of the sales team for southern and western Europe as well as for Australia.

3. Ryan Wang is the sales team leader for OEM customers in North and South America.

4. The Middle Eastern team leader is Fenny Ji

5. A look at the sales team: the orders from the OEM customers are handled by four teams that may each consist of up to four employees.

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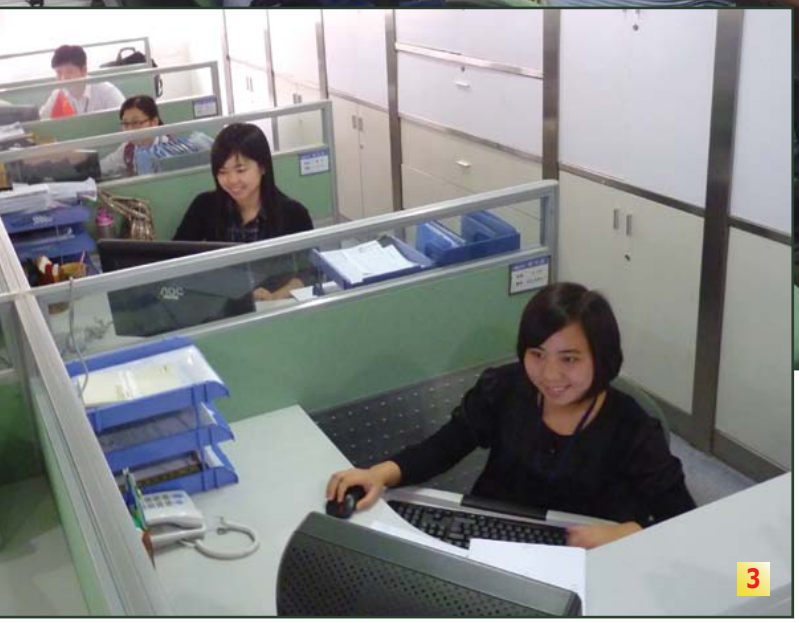

3

1. The design team: not only is the packaging for their products fashioned here, but also the front panel as well as the rear panel of the boxes. Even the chassis' are designed here.

2. Production samples are tested here. Five engineers work here to identify production flaws as quickly as possible.

3. The accounting team: customer invoices are prepared here.

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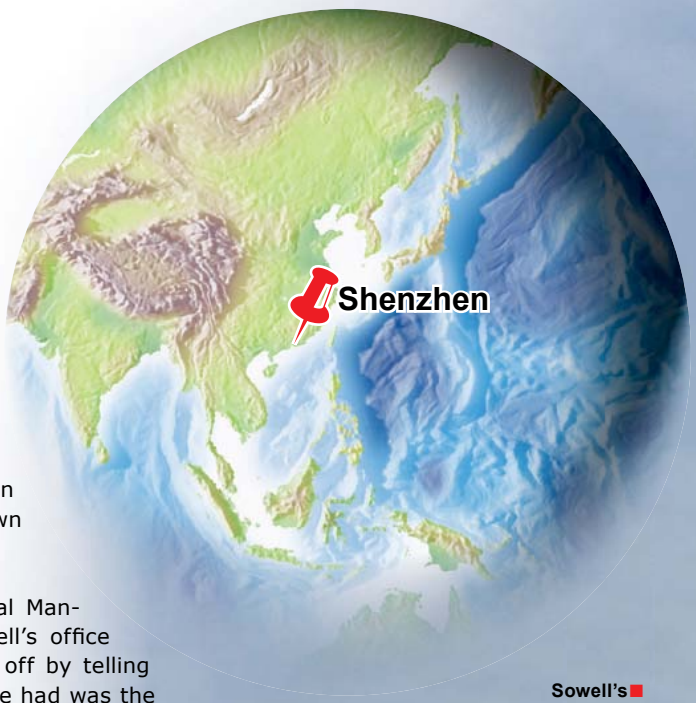
Sowell, an Engineering Firm that's an OEM

- ***Founded by 5 Partners***
- ***ISDB-T and DVB-T2 Receiver in 2011***
- ***Overseas Offices in the Plan***
- ***User Friendliness is Company Philosophy***



A team of five R&D engineers are the founders of the OEM company Sowell. The driving force and General Manager of the young company is Eagle Chain. He was, like his four colleagues, an R&D employee with a large receiver manufacturer but over time didn't feel so comfortable with that company. All too often he was assigned projects that had nothing to do with receivers. His four colleagues felt the same way and so in 2004 they founded their own company Sowell.

We met up with General Manager Eagle Chain in Sowell's office in Shenzhen who started off by telling us how it all began: "All we had was the money we had saved while employed with that other company. We pooled

■ General Manager Eagle Chain working in his office in front of a painting of the Great Wall.

Sowell's ■ offices with their 70 employees are located on the seventh floor of this office building in Shenzhen. Receiver production takes place in Baoan which isn't too far from here and close to Shenzhen's airport. 200 employees work in the production facility. 200,000 receivers per month can be produced by one shift; if all three shifts are used, receiver production climbs to more than 500,000 boxes a month.

SOWELL
OEM Receiver Manufacturer, China
www.sowell-tech.com

Company Details

Engineers in Research & Development | Total Number of Employees
0 ..... 50 100

Average Turnover (Previous, This, Next Year Estimates)
0 ..... 25 ..... 50 Mio US$

Production Certificates
DVB

Main Products
Receiver for DVB-S/S2, DVB-T/T2, DVB-C and ISDB-T, Receivers with 3D graphics

www.TELE-satellite.com/TELE-satellite-1103/eng/sowell.pdf

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Available online starting from 28 January 2011

■ **Receptionist Lisa provides a friendly greeting to all visitors.**

all of our money together and came up with about US$ 70,000 which we used as starting capital." The company's name in Chinese is actually Shi Wei; from that came the anglicized version Siwei and so that it would sound better in English, the name became Sowell. "That name actually matches our company philosophy", comments Eagle Chain, "we want to do everything 'so well'."

The five partners originally founded Sowell as a software designing firm. "It took us only five months before we were able to sell our first software to a manufacturer", remembers Eagle Chain, "At that time it was a software solution for the Conexant chip."

But the days as a simple software provider lasted only a few years: Sowell started their own receiver production in 2006. Back then they manufactured DVB-S receivers for the Middle Eastern market. Sales Director Amanda gives us some more details: "Up until 2009 we delivered most of our products to the Middle East but in 2010 that began to change." Geographical product distribution was 80% to the Middle East, 15% to Europe and 5% to Southeast Asia. "2011 will bring with it even more significant changes; we will start exporting to Eastern Europe and above all to South America."

Wait, did she just say 'South America'? That could only be ISDB-T receivers! This led us to Pan Smile. He is one of Sowell's five founding partners and is not only Vice General Manager but is also first and foremost the Director of the Research and Development team. Oh, and incidentally, he's also Production Manager. He gives us the latest Sowell product news.

Up until now Sowell's success product has been a receiver series based on the ST7101 chip. The product palette includes a DVB-S2 receiver as well as two combo variants: a DVB-S2 + C and a DVB-S2 + T. The newest receiver series is based on the NXP chipset and is introduced by Sowell in their TELE-satellite ad. "The advantage of the NXP chip is that it's not only more economical but also sports additional features such as multimedia and is also compatible with Linux", reveals Pan Smile the reason for switching chips.

But what's the situation with ISDB-T? Pan Smile tells us, "In the second quarter of 2011 we'll be coming out with a combo receiver with DVB-S2 and ISDB-T built on the Mstar 782X chip family."

But Sowell isn't just concentrating on the South American market; Europe is just as much in focus: "In the third quarter we'll be introducing a combo receiver with DVB-S2 and DVB-T2 based on the Mstar 785X chip family which is also Linux compatible." For the fourth quarter they're planning on a multimedia unit: "It will be based on the new Trident Apollo series chips with which the OSD can for the first time be presented in 3D." Since it will be a multimedia receiver, it won't necessarily be just the OSD in 3D; but games can be presented in 3D as can other applications that work with 3D graphics.

If you take a closer look at Sowell's product development, you'll realize that the company is very close to the customer: there's ISDB-T in South America as well as DVB-T and 3D in Europe – these are segments that will very soon become the talk of the town.

If you're that close to reality, a great

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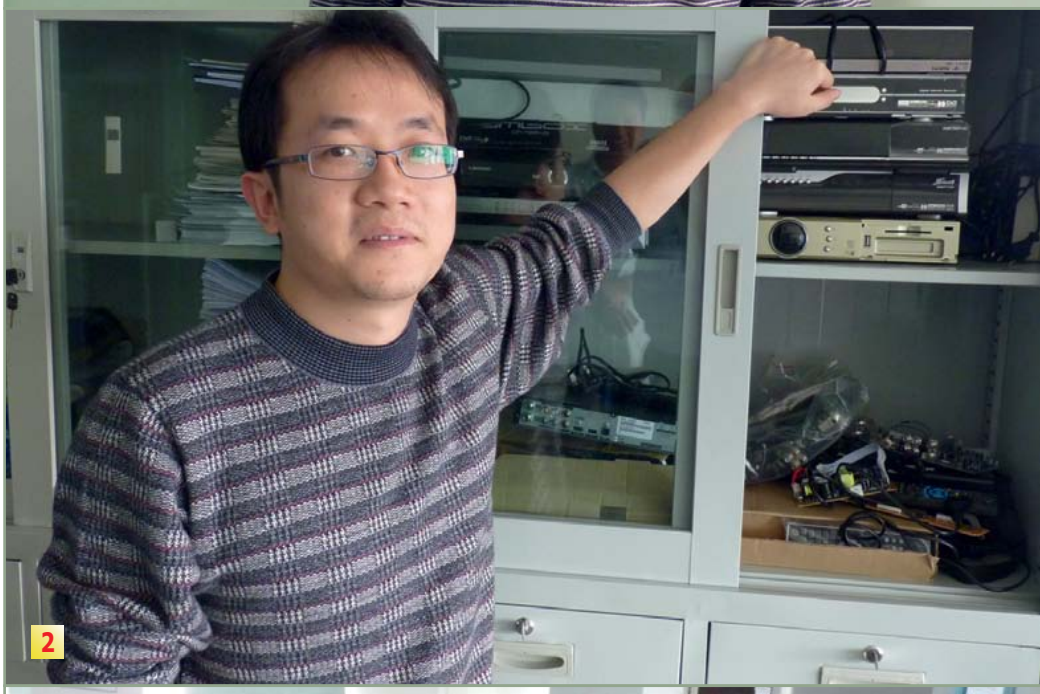
deal of thought must go into what features are currently in demand. In talking with Eagle Chain it's clear that quite a bit of observation and analysis is going on. Eagle Chain cites an example: "I'm amazed with Apple and their products. They are precisely geared towards the end-user and thus very successful." The conclusion according to Eagle Chain: "We have a similar view with our software development, namely a customer-friendly operation of our products." It is exactly for this reason that Eagle Chain is skeptical about how IPTV will develop; for TELE-satellite though, it's a subject that is being approached very ecstatically: "The large telecom providers all have their own agenda and that is selling their data packages to end-users; they are focused solely on that concept." He doesn't see that the user's point of view is considered regarding IPTV and wishes there'd be an approach similar to that of Apple: following a path based strictly on the end user without looking back at what the provider wants.

Sowell's General Manager Eagle Chain isn't just thinking about the further development of IPTV. The general future of the receiver is also on his mind. "Will the receiver transform into a multimedia receiver in the future", asks Eagle Chain, "or will the receiver's functions gradually shift over to the TV itself?" It's a question that's on all of our minds and for which we all don't yet have an answer.

But even if there aren't any answers, everyone at Sowell is still optimistic about the future. Pan Smile revealed to us that his current team of 40 engineers will be expanded to 80 in 2011. "We also employ five engineers from Europe here in Shenzhen who are primarily responsible for customer support", comments Pan Smile. Sales Director Amanda is also optimistic: "Over the past several years we were able to increase our sales 50% every year. In 2010 our sales were around US$ 30 million and for 2011 we expect that to rise to US$ 45 million." General Manager Eagle Chain added some more optimism: "In 2011 we are planning to open our own offices in Sao

1


2

3

1. Sun Guanghua is also a Software Engineer and a founding partner.

2. Software engineer Peng Yi is one of Sowell's founding partners.

3. What magazine is laying there on Designer Zoe Lee's desk? Yes, she takes care of Sowell's ads in TELE-satellite. She also works on the graphical layout of a receiver's OSD as well as the packaging, user manual and everything else at Sowell that involves graphics.

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Paulo for the South American market, in Dubai for the Middle Eastern market and in Europe – most likely in Germany – for the western and eastern European markets."

The young company Sowell, founded more out of necessity rather than a conscious decision, has maybe because of this developed itself extremely fast and dynamically. The five partners are fixated on the success of their company and immediately invest any profits back into the company. That's why Sowell is growing so fast. "We are currently looking for a new and larger office here in Shenzhen", revealed Eagle Chain just before we left. Sowell: a company firmly on an expansion course that does everything 'so well'.

Sowell's Sales Team

1. Sowell's Sales Director Amanda. You'll run into her at trade shows such as CABSAT in Dubai. She says, "All of our managerial staff have many years of experience in this area because they all previously worked successfully in this sector with other companies."

2. The customer is taken care of here in the Sales Team. For every region there's one responsible employee.

3. Always busy: Roger Xu is responsible for the European Sales Team.

4. Pan Smile is not only one of Sowell's founders and partners, he is also Vice General Manager. But above all else he's in charge of the R&D team and is also a Production Manager on the side.

5. Sowell's software engineers work here.

6. Six test engineers check out the software here in the Test Center. Liu Xiongzi is seen here testing the functions of a receiver's OSD.

7. Even the hardware has to be tested. Six engineers work in the Hardware Test Center. Satellite antennas are also available here; one is pointed to AGILA at 146E, another is aligned to TELSTAR at 138E with a third one pointing to CHINASAT at 115E.

BEST DIGITAL TV COMPANIES in W EUROPE

SATSHOP24

Satellite Shop, Germany

www.TELE-satellite.com/TELE-satellite-1101/eng/satshop24.pdf

SATBEAMS

Software Programming, Belgium

TELE satellite Recommended

www.satbeams.com

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

SMARTINNOVATIONS

Satellite Distributor, Netherlands

www.TELE-satellite.com/TELE-satellite-1011/eng/smartinnovations.pdf

GLOBALINVACOM

Fibre Optic Products, UK

TELE satellite Recommended QM Qualified

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EESHOP

Satellite Shop, Netherlands

www.TELE-satellite.com/TELE-satellite-1005/eng/eeshop.pdf

DISHPOINTER

Software Programming, UK

www.dishpointer.com

www.TELE-satellite.com/TELE-satellite-0803/eng/dishpointer.pdf

WORLDWIDE SATELLITE

Satellite Shop, Netherlands

www.TELE-satellite.com/TELE-satellite-0903/eng/worldwidesatellite.pdf

SEATEL

Maritime 3-Axis Dish Manufacture, UK

www.cobham.com

www.TELE-satellite.com/TELE-satellite-0803/eng/seatel.pdf

CLARK

Distributor, Netherlands

www.TELE-satellite.com/TELE-satellite-0811/eng/clark.pdf

HORIZON

Manufacturer of Measuring Instruments, UK

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BEST DIGITAL TV COMPANIES in N EUROPE

DOEBIS

Satellite Wholesaler, Germany — *www.doebis.de*

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SMARTWI

Wireless Card Reader Producer, Denmark — *www.smartwi.net*

www.TELE-satellite.com/TELE-satellite-1011/eng/smartwi.pdf
www.TELE-satellite.com/TELE-satellite-0709/eng/smartwi.pdf

SPAUN POWER

Power Supply Manufacturer, Germany — *www.spaun.com*

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

GOLDEN MEDIA

Manufacturer and Distributor, Germany — *www.cynextra.com*

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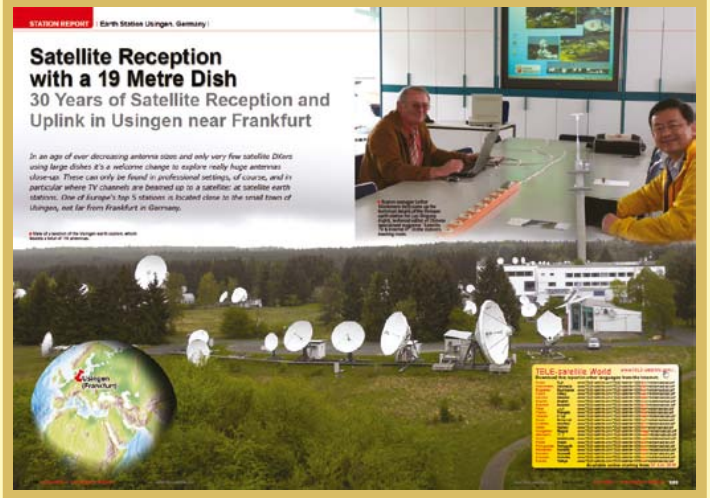
MEDIA BROADCAST

Broadcasting Services, Germany



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SPAUN

High Quality Accessory Manufacturer, Germany *www.spaun.com*

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SMART

Receiver Manufacturer, Germany

www.TELE-satellite.com/TELE-satellite-0901/eng/smart.pdf

GT SAT

LNB Distributor, Luxembourg

www.TELE-satellite.com/TELE-satellite-0805/eng/gtsat.pdf

NANOXX

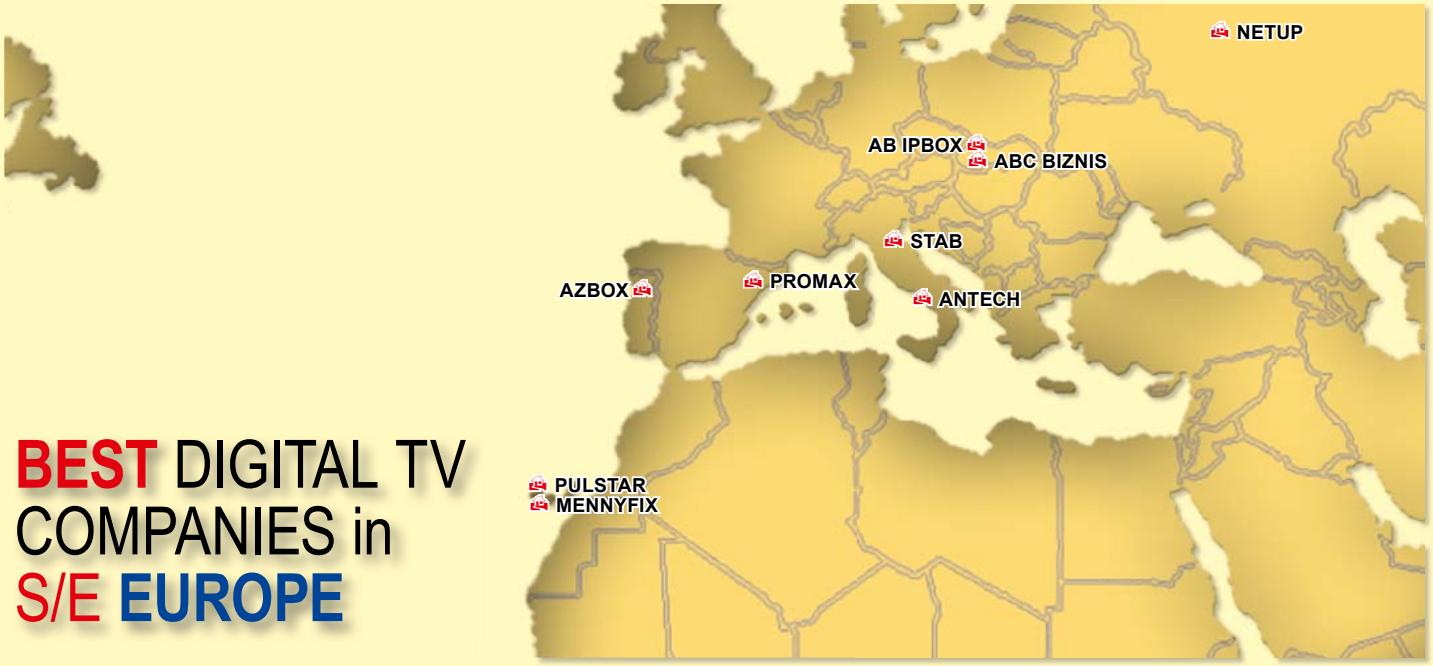
Wholesaler and Receiver Manufacturer, Germany

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

TECHNISAT

TV Manufacturer, Germany

www.TELE-satellite.com/TELE-satellite-0709/eng/technisat.pdf



BEST DIGITAL TV COMPANIES in S/E EUROPE

NETUP

IPTV Software and Hardware Producer, Russia — *www.netup.tv*

TELE satellite Recommended

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

Company Details

Engineers in Research & Development | Total Number of Employees

0 ..... 25 50

Average Turnover (Previous, This, Next Year Estimates)

0 ..... 5 ..... 10 Mio US$

Production Certificates

ISO, RoHS, PCI SIG, IEEE, DVB

Production Categories

OEM, ODM

Main Products

Professional PC Cards for DVB-S/S2, DVB-T/MPEG-4, DVB-C, ASI, IPTV Gateway/Streamer, IPTV Middleware, IPTV Conditional Access Systems, IPTV Billing Systems, Video on Demand

AB IPBOX

Satellite Receiver Manufacturer, Slovakia — *www.abipbox.com*

TELE satellite Recommended | QM Qualified

www.TELE-satellite.com/TELE-satellite-1009/eng/abipbox.pdf

AZBOX

Satellite Receiver Manufacturer, Portugal — *www.azbox.com*

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www.TELE-satellite.com/TELE-satellite-1001/eng/azbox.pdf

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PULSTAR

Satellite Installer, Spain

www.TELE-satellite.com/TELE-satellite-0911/eng/pulstar.pdf

MENNYFIX

Satellite Shop, Spain

www.TELE-satellite.com/TELE-satellite-0903/eng/mennyfix.pdf

PROMAX

Accessory Manufacturer, Spain

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

ANTECH

Uplink Technology, Italy

www.TELE-satellite.com/TELE-satellite-0809/eng/antech.pdf

ABC BIZNIS

Satellite Receiver Manufacturer, Slovakia

www.abcbiznis.sk

www.TELE-satellite.com/TELE-satellite-0903/eng/abcbiznis.pdf

STAB

Antenna Motor Manufacturer, Italy

www.TELE-satellite.com/TELE-satellite-0809/eng/stab.pdf

BEST DIGITAL TV COMPANIES in MIDDLE EAST

ATLANTA

Satellite Wholesaler, UAE

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ECHOLINK

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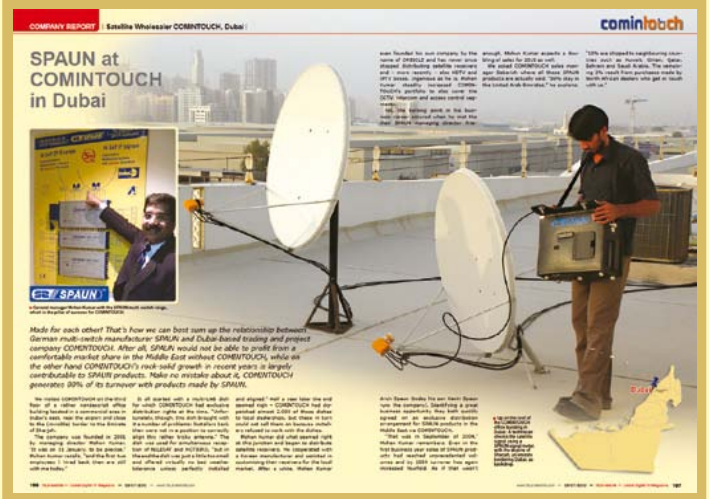
Satellite Wholesaler, UAE



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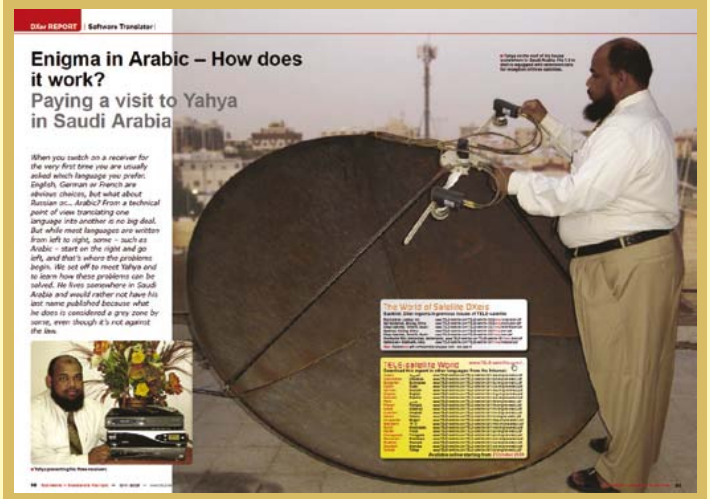
YAHYA

Software Programming, KSA



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OM Qualified – Operator Market Qualified

BEST DIGITAL TV COMPANIES in AFRICA

SQUARE PLAN

Satellite Dealer, South Africa

www.TELE-satellite.com/TELE-satellite-0811/eng/squareplan.pdf

CNBC

Satellite Channel, South Africa

www.TELE-satellite.com/TELE-satellite-0709/eng/cnbc.pdf

SAMMEG

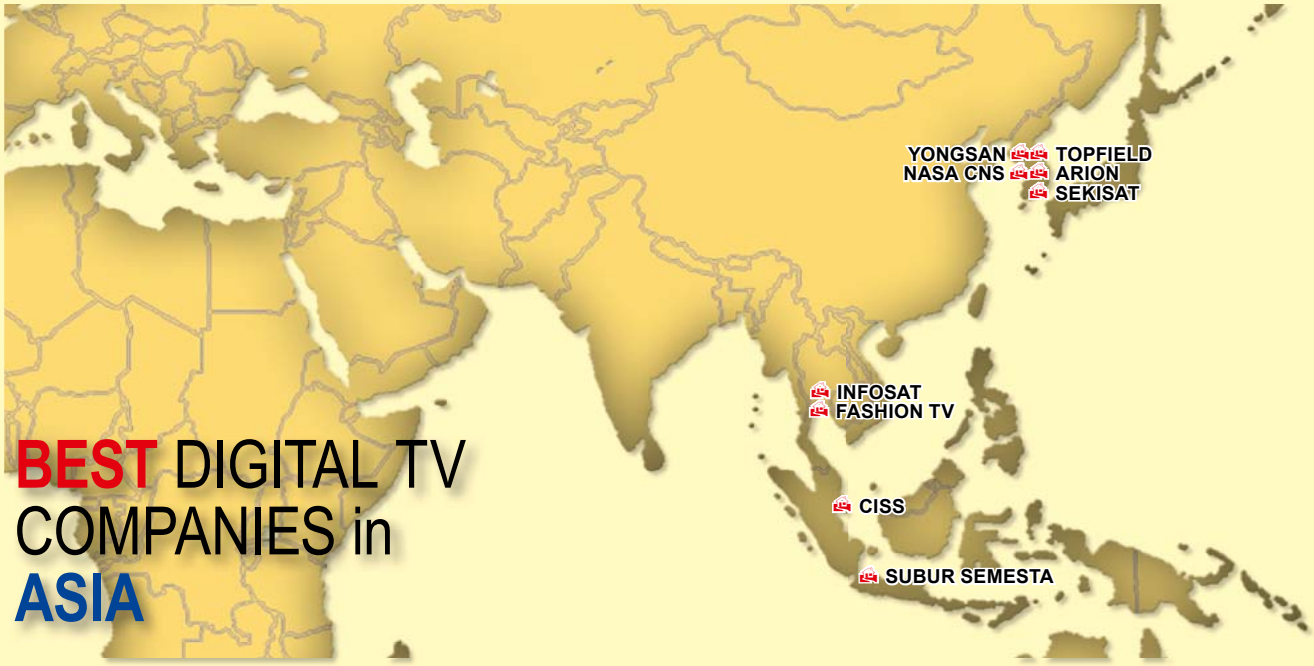
Satellite Wholesaler, South Africa

www.TELE-satellite.com/TELE-satellite-0801/eng/sammeg.pdf

TELEMEDIA

Satellite Uplink, South Africa

www.TELE-satellite.com/TELE-satellite-0709/eng/telemedia.pdf



BEST DIGITAL TV COMPANIES in ASIA

CISS

Satellite Wholesaler, Singapore

www.TELE-satellite.com/TELE-satellite-1007/eng/singapore.pdf

TOPFIELD

High-End Receiver Manufacturer, Korea

www.TELE-satellite.com/TELE-satellite-0905/eng/topfield.pdf
www.TELE-satellite.com/TELE-satellite-0801/eng/topfield.pdf

INFOSAT

Dish Manufacturer, Thailand

TELE satellite Recommended

www.infosats.com

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www.TELE-satellite.com/TELE-satellite-0803/eng/infosat.pdf
www.TELE-satellite.com/TELE-satellite-0705/eng/infosat.pdf

ARION

High Quality Receiver Manufacturer, Korea

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OPERATOR MARKET Qualified

Classification for Best Digital TV Companies

Attributes of Qualified Company:

■ High Production Volume ■ Quality Controlled
■ Customized Product Case ■ Customized Product Software
■ Aftersale Service

NASA CNS

Satellite Wholesaler, Korea

www.TELE-satellite.com/TELE-satellite-0805/eng/nasacns.pdf

FASHION TV

Satellite Channel, Thailand

www.TELE-satellite.com/TELE-satellite-0811/eng/fashiontv.pdf

SUBUR SEMESTA

Dish Manufacturer, Indonesia

www.TELE-satellite.com/TELE-satellite-0805/eng/subursemesta.pdf

YONGSAN

Satellite Shop, Korea

www.TELE-satellite.com/TELE-satellite-0807/eng/koreasatshop.pdf

SEKISAT

Satellite Wholesaler, Korea

www.TELE-satellite.com/TELE-satellite-0801/eng/sekisat.pdf

BEST DIGITAL TV COMPANIES in CHINA

TEVII

TELE satellite Recommended

PC Card & Receiver Manufacturer, Taiwan

www.tevii.com

Tevii Tapping Into New Markets

www.TELE-satellite.com/TELE-satellite-1101/eng/tevii.pdf

Company Details

Engineers in Research & Development | Total Number of Employees

0 ..... 25 50

Average Turnover (Previous, This, Next Year Estimates)

0 ..... 2.5 ..... 5 Mio US$

Production Certificates

RoHS

Production Categories

OEM, ODM

Main Products

PC Cards for DVB-S/S2 and DVB-T/MPEG-4, Boxes for DVB-S/S2, DVB-T/MPEG-4, PC Sticks for DVB-S/S2

BOXSAM

TELE satellite Recommended | QM Qualified

Receiver Manufacturer, China

www.boxsam.com

Receivers made by BOXSAM

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

YINHE

TELE satellite Recommended | QM Qualified

High Volume Receiver Manufacturer, China

www.yinhe.com

Organized for the Future
Receiver Manufacturer YINHE Presents Their Factory

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

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SVEC

Professional Dish Manufacturer, China

www.svec.com.cn

www.TELE-satellite.com/TELE-satellite-1003/eng/svec.pdf

AZURESHINE

Professional Dish Manufacturer, Taiwan

www.azureshine.com.tw

www.TELE-satellite.com/TELE-satellite-0707/eng/azureshine.pdf

CHANGHONG

Receiver and TV Manufacturer, China

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

MOTECK

Antenna Motor Manufacturer, Taiwan

www.moteck.com

www.TELE-satellite.com/TELE-satellite-0707/eng/moteck.pdf

SHALOM

Satellite Installer, China

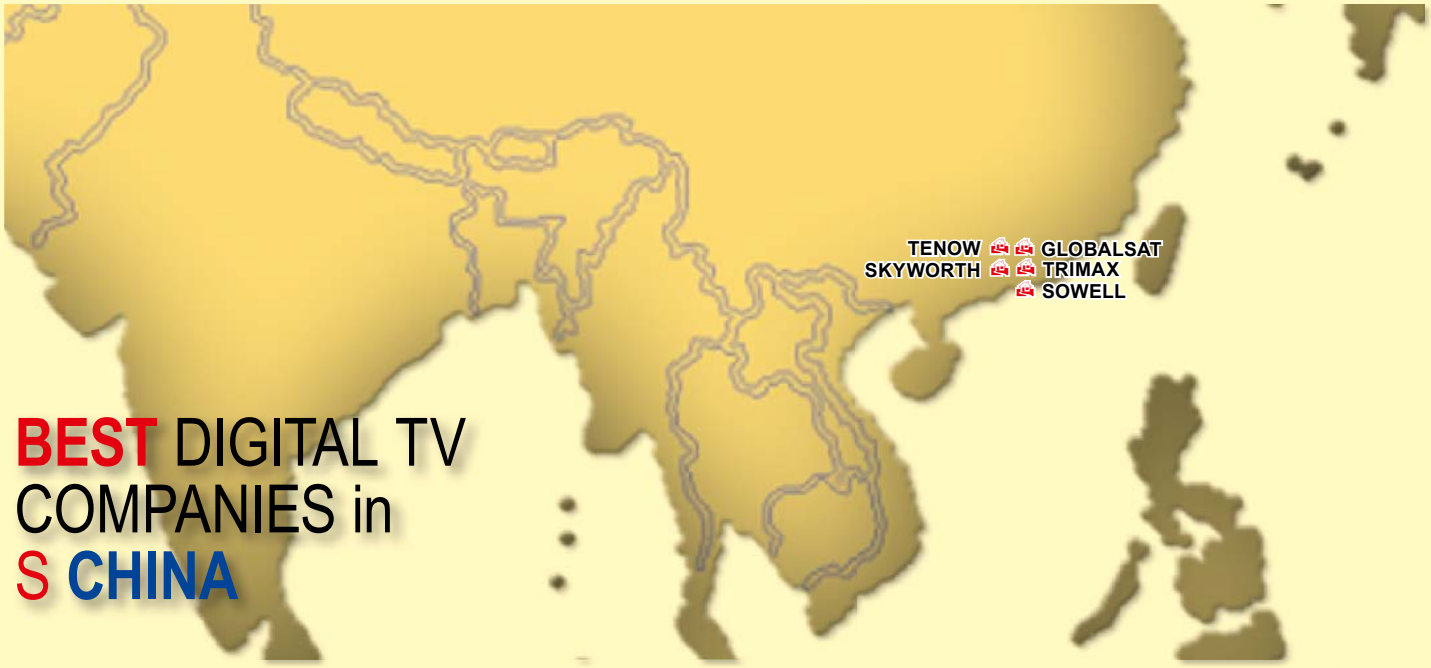
www.TELE-satellite.com/TELE-satellite-0911/eng/shalom.pdf

OPERATOR MARKET Qualified

Classification for Best Digital TV Companies

Attributes of Qualified Company:

■ High Production Volume ■ Quality Controlled
■ Customized Product Case ■ Customized Product Software
■ Aftersale Service



BEST DIGITAL TV COMPANIES in S CHINA

TENOW

TELE satellite Recommended

PC Card Manufacturer, China

www.tenower.com

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

Company Details

Engineers in Research & Development | Total Number of Employees

0 ..... 12 25

Average Turnover (Previous, This, Next Year Estimates)

0 ..... 1.5 ..... 3 Mio €uro

Production Certificates

RoHS, DVB

Main Products

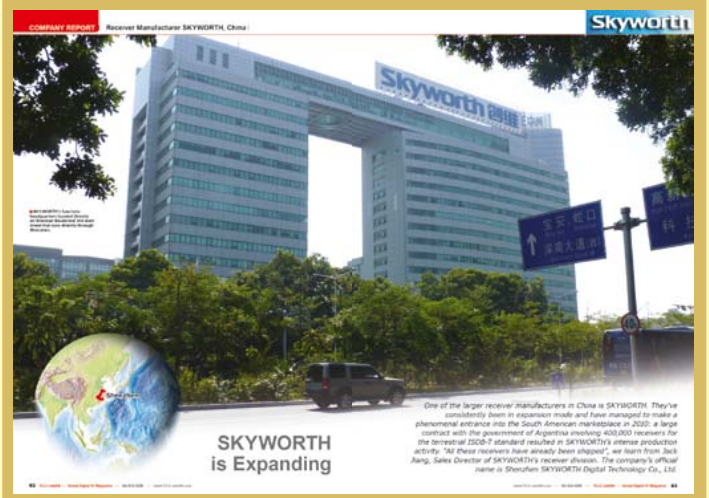
PC-Cards for DVB-S/S2, DVB-T/T2, DVB-C with single, dual and quad tuner, CAM Box for DVB-S2, USB-Stick for DVB-S/S2, DVB-C and ISDB-T

SKYWORTH

TELE satellite Recommended | QM Qualified

OEM Receiver Manufacturer, China

www.skyworth.com



www.TELE-satellite.com/TELE-satellite-1103/eng/skyworth.pdf
www.TELE-satellite.com/TELE-satellite-1003/eng/skyworth.pdf

Company Details

Engineers in Research & Development | Total Number of Employees

0 ..... 1250 2500

Average Turnover (Previous, This, Next Year Estimates)

0 ..... 1.250 ..... 250 Mio US$

Production Certificates

RoHS, CE, REACH, DVB

Main Products

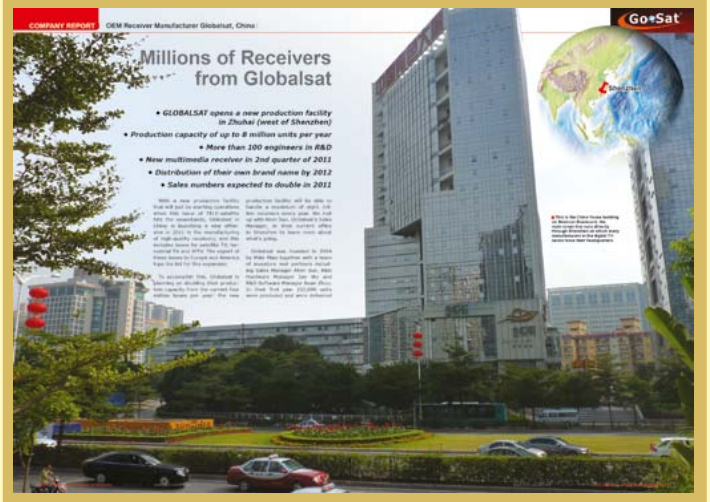
Receiver for DVB-S/S2, DVB-T, ISDB-T with single, twin and combo tuner, Receiver Sticks for USB, SCART in DVB-S and HDMI in DVB-S2

QM Qualified – Operator Market Qualified

GLOBALSAT

Receiver Mass Manufacturer, China

www.globalsatdvb.com



www.TELE-satellite.com/TELE-satellite-1103/eng/globalsat.pdf

Company Details

Engineers in Research & Development | Total Number of Employees

0.....125.....250

Average Turnover (Previous, This, Next Year Estimates)

0.....75.....150 Mio US$

Production Certificates

RoHS, FCC, UL, CE, DVB, ISO

Main Products

Receiver for HDTV and SDTV in DVB-S/S2, DVB-T, DVB-C, ISDB-T, HD+, CI+ and HbbTV, Multimedia Receiver, IPTV Boxes, Media Player

TRIMAX

Signal Analyzer Manufacturer, China

www.trimaxtec.com

www.TELE-satellite.com/TELE-satellite-1103/eng/trimax.pdf

Company Details

Engineers in Research & Development | Total Number of Employees

0.....25.....50

Average Turnover (Previous, This, Next Year Estimates)

0.....1.....2 Mio US$

Production Certificates

RoHS, FCC, DVB

Main Products

Signal Analyzer with built-in Monitor for DVB-S/S2, DVB-T and DVB-C

SOWELL

OEM Receiver Manufacturer, China

www.sowell-tech.com

www.TELE-satellite.com/TELE-satellite-1103/eng/sowell.pdf

Company Details

Engineers in Research & Development | Total Number of Employees

0.....50.....100

Average Turnover (Previous, This, Next Year Estimates)

0.....25.....50 Mio US$

Production Certificates

DVB

Main Products

Receiver for DVB-S/S2, DVB-T/T2, DVB-C and ISDB-T, Receivers with 3D graphics

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GLOBAL SATELLITE

Satellite Dealer, USA

www.TELE-satellite.com/TELE-satellite-1007/eng/globalsatellite.pdf

COWMIX

Satellite Dealer, USA

www.TELE-satellite.com/TELE-satellite-1003/eng/cowmix.pdf

QUALITY SATELLITE

Satellite Dealer, USA

www.TELE-satellite.com/TELE-satellite-1005/eng/qualitysatellite.pdf

SEATEL

TELE satellite Recommended

Maritime 3-Axis Dish Manufacturer, USA

www.cobham.com

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www.TELE-satellite.com/TELE-satellite-0901/eng/seatel.pdf

QM Qualified – Operator Market Qualified

WORLDWIDE SATELLITES

Satellite Wholesaler, Canada

www.TELE-satellite.com/TELE-satellite-0905/eng/worldwidesatellites.pdf

SADOUN

Satellite Dealer, USA

www.TELE-satellite.com/TELE-satellite-0707/eng/sadoun.pdf

SONICVIEW

Satellite Receiver Manufacturer, USA

www.TELE-satellite.com/TELE-satellite-0903/eng/sonicview.pdf

SATMAN

Satellite Dealer, Canada

www.TELE-satellite.com/TELE-satellite-0705/eng/satman.pdf

MFC

Satellite Filter Manufacturer, USA

TELE satellite Recommended — QM Qualified

www.microwavefilter.com

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

FORTECSTAR

Receiver Manufacturer, Canada

www.TELE-satellite.com/TELE-satellite-0705/eng/fortecstar.pdf

Silicon Tuners

Jacek Pawlowski

- ***Miniature tuners with great advantages***
- ***More sensitive***
- ***Extremely fast BlindScan***
- ***Economical***

There seems to be consistent progress in digital TV technology; features like HD, PVR, upscaling or BlindScan were not available a few years ago. In most cases this progress is only possible when a new generation of integrated circuits is developed. This is especially obvious when we consider, for example, the migration from SDTV to HDTV. Other times, these advances in technology are less obvious and harder to detect from the end user's perspective. This is the case with the so-called "silicon tuners". This term was coined to distinguish the new generation of tuners from the classical tuners made of discrete components. The classical tuners are referred today as "can tuners". That's because they require electromagnetic shields – metal enclosures surrounding the electronic components that look a little bit like tin cans.

But what is a tuner? According to Wikipedia, the definition of "TV tuner" is: "A television tuner converts an RF television transmission into audio and video signals which can be further processed to produce sound and a picture. Different tuners are used for different television standards such as PAL, NTSC, ATSC, SECAM, DVB-C, DVB-T, ISDB, T-DMB, open cable." We will see that while the first part of the definition is absolutely true, the second part is not necessarily valid for the silicon tuner.

Many difficult hurdles had to be jumped before a practical silicon tuner could be manufactured at a reasonable cost. However, once it happened, silicon tuners began gaining rapid acceptance among manufacturers because of their advantages compared to traditional can tuners. Can tuners are built using a number of discrete components. Naturally, the more components there are, the more it will cost to assemble it. Silicon tuners are based on a single chip and require a minimal number of external components – for example they don't need expensive SAW filters as are used in can tuners. A higher level of circuit integration enables a 75% reduction in space and a 25% reduction in the cost over can tuners.

Moreover, the integrated circuits of modern silicon tuners are compatible with many TV standards. This is important for the manufacturers because it enables them to offer just one multistandard receiver model in different regions of the world. There's no need to keep stock of several models to match various digital and analog standards. You can now offer just one set-top box or TV set model for cable, terrestrial, analog and digital TV. The versatility of the chip results in increased software commonality between regional receiver designs and this in turn significantly decreases development costs.

Silicon tuners guarantee better repeatability of their parameters and this means that when testing receiver after receiver, there's hardly any difference in their performance. They do not require manual tuning or adjustments. Consistent performance and quality is one thing but superior specifications over can tuners is another. And we're not talking about just secondary parameters but better sensitivity, adjacent channel rejection, phase noise and dynamic range. For example, a modern silicon tuner has a signal-to-noise ratio of 54dB and a noise figure better than 6dB. These numbers significantly exceed the parameters of a typical can tuner. Also, other characteristics, like uniformity of gain, are very constant across the entire frequency band – something that is very difficult to achieve with can tuners.

There are already ICs available that offer additional very exciting features – like a complete channel scan of more than 100 channels in less than two seconds (chip makers claim that the channel lock is a mere 5 ms as opposed to 150 ms for the can tuner) or advanced picture-in-picture (PIP) television technology providing multiple PIP capabilities that let the viewer watch up to 12 video channels simultaneously around the main channel.

The key success factor in this case is the innovative internal design architecture that enables spur-free reception of analog and digital signals. Many silicon tuners include internal digital signal processors (DSP). These are special purpose processing units (i.e., computers) optimized to do very fast calculations on real world signals. It enables implementation of many functions and features not possible or very, very difficult to obtain without DSP. With DSP, it's quite easy to configure on-board filters that meet all television standard requirements.

To use DSP, the analog signal at the input of the tuner has to be converted into digital form using an analog-to-digital converter (ADC). After the DSP has done its job, the signal is converted back to analog using a digital-to-analog converter (DAC). So, silicon tuners contain not only DSPs but also ADC and DAC subcircuits. The architecture varies from manufacturer to manufacturer and from type to type and the available features will also vary with different silicon tuners, but one thing's for sure: they all outperform can tuners.

Naturally, the smaller overall size of silicon tuners and the ability to mount them directly on the audio/video motherboards of set-top boxes or TV sets is another important feature. In this case, printed circuit boards need to be designed with greater care and expertise in order to avoid radio interference. For-

tunately, the silicon tuner vendors help the designers with reference layouts making their job easier. And the tuners are extremely small. For example, one type of tuner is encapsulated in a plastic package 5x5 mm (0.2”x0.2”) while some can tuners can be as large as 50x100 mm (2”x4”).

Silicon tuners also generate far less heat than can tuners. Because of this, they are not only more eco-friendly but consume less energy; that makes them suitable for use in battery operated devices like mobile phones.

For TVs and receivers, silicon tuners lower their production costs, simplify the manufacturing process and improve their quality and reliability. It should come as no surprise that the silicon tuner market has expanded rapidly since they first became available back near the turn of the century. Nearly every chip provider that is involved with the digital TV market today is offering silicon tuner solutions. Although can tuners have been the standard since the beginning of the small screen, set-top box and TV makers will eventually abandon the can tuner and switch to single chip silicon tuners. Business analysts predict that over 60 percent of the units produced worldwide are expected to rely on the single-chip silicon tuner by 2014. Why not 100%? Well, some TV OEMs are vertically integrated with can tuner producers; they may prefer to keep them in business for now, however, the days of the can tuner are numbered.

We, the end users, should only welcome this change. Our future products will perform better, will be smaller and more universal, will offer more features and be less expensive. This is very exciting for set-top box fans, but let’s not forget that silicon tuners will also be used on a larger and larger scale in PCs and mobile phones. The silicon tuner is poised to unseat the can tuner in virtually every application. In a couple of years almost everything having a screen (PC, tablet, cell phone) will have a built-in TV tuner by default.

So, to reiterate the explanation quoted at the beginning of this article: with a silicon tuner you only need one single tuner for every standard. Now that’s what we call progress!

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Single- and Multi Frequency Networks in Digital Terrestrial Television

Jacek Pawlowski

DVB-T/T2 and DVB-H standards for digital terrestrial TV use COFDM modulation. COFDM stands for Coded Orthogonal Frequency Division Multiplexing and is a quite complex sort of digital modulation developed to ensure high bit rate capacity along with interference immunity. The latter feature is what makes single frequency networks (SFN) practically possible.

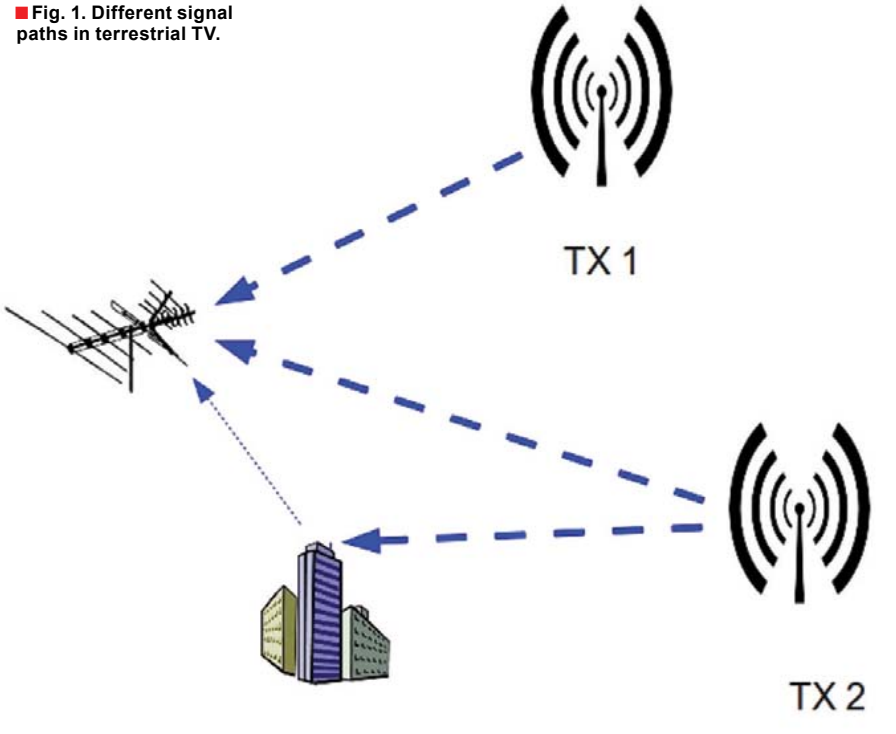

Fig. 1. Different signal paths in terrestrial TV.

Before the digital era, the analog TV transmitters located in neighboring areas had to use different frequencies to avoid interference. It is intuitively understandable that using the same frequency to transmit channel A from transmitter 1 and channel B from transmitter 2 is not a good solution. There would always be a location where the reception antenna would not only receive the desired signal (say, channel A) but also the undesired signal. The undesired signal (channel B), even if transmitted from a completely different direction, could interfere because of electromagnetic wave reflections or scattering on various obstacles (like buildings, masts, etc.). So the reception antenna properly directed to receive channel A from transmitter 1 has always a chance to pick up some signal from transmitter 2.

But what if the two transmitter broadcast the same channel? If they use the same frequency to transmit the same analog channel, the reception antenna could again receive signals from both transmitters simultaneously. In practice, one of the signals would always be delayed in relation to the other one. That's because the distance between the reception antenna and any of the transmitters would be different. Time delays cause phase shifts what in turn leads either to constructive or

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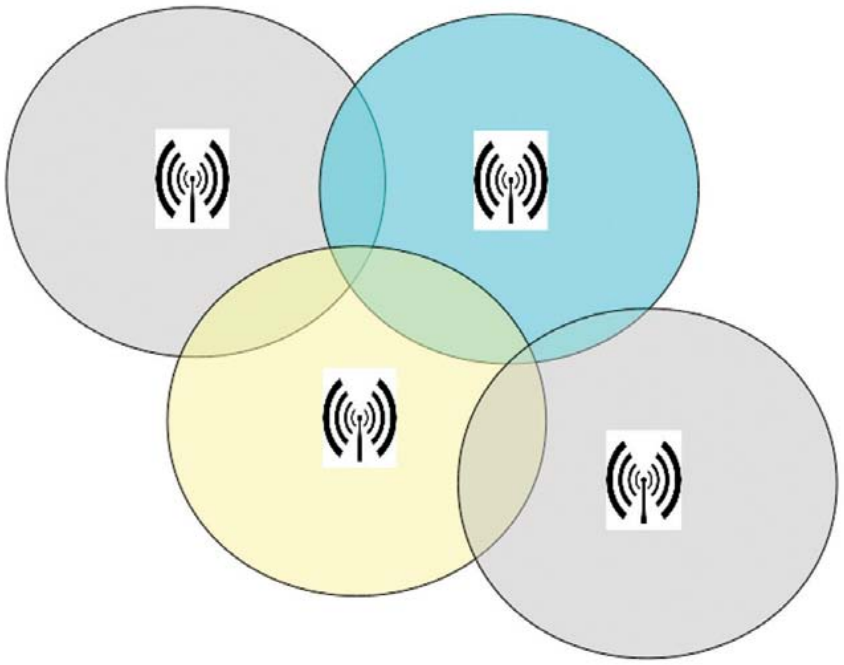


Fig. 2. In a Multi-Frequency Network the neighboring transmitters must use different frequencies. Only those separated by larger distance may use the same frequency. The transmitters can broadcast the same or different digital or analog content

destructive interference. This would lead to signal fading. Additionally, due to time delays the "ghost" effect would be visible on the TV screen. The multipath effect resulting from reflections and scattering also would take place. Since analog TV used simple amplitude modulation for video, there was no other way to avoid interference but to ensure that the transmitters which cover overlapping areas had to use different frequencies. The same frequency channel is re-used only in regions separated by a large distance, to avoid harmful co-channel interference. Such arrangement is called Multi Frequency Network or MFN.

In COFDM modulation digital data is not transmitted continuously but with pauses among the symbols. These pauses are called the guard intervals. The guard interval should be chosen long enough to allow all symbol echoes to reach the receiver. So that when the next symbol comes there are no longer echoes from the previous one. If all delayed signals (symbol echoes) come to the receiver within the guard intervals, it is possible to process the signals so smartly to avoid fading. DVB-T permits to choose one of the following values for guard interval: 1/4, 1/8, 1/16, 1/32. The longer the interval the more echoes we can cancel but less useful data we can send in the same unit of time. To compensate for that, the number of carriers must be increased.

If such digital signal is transmitted from two transmitters on the same frequency, the signal originating from the more distant transmitter is seen as a long delay echo. And this is the important factor for designing single frequency network (SFN): if we used powerful transmitters located far away from one another, we would have long echoes – at least in some areas. Therefore, it is usually assumed that SFN requires a dense grid of small power transmitters. For a medium sized European country like Poland, it is assumed that some 350 transmitters with 40 m high antenna masts would be required. Creating such dense grid of transmitters is costly and takes time.

On the other hand, MFN can use the existing infrastructure of analog transmitters and antennae. In such configuration, the channels are transmitted on different frequencies and we do not have to care about the echoes from neighboring transmitters. We still have echoes resulting from the same transmitter (self interference) because there are still signal reflections from

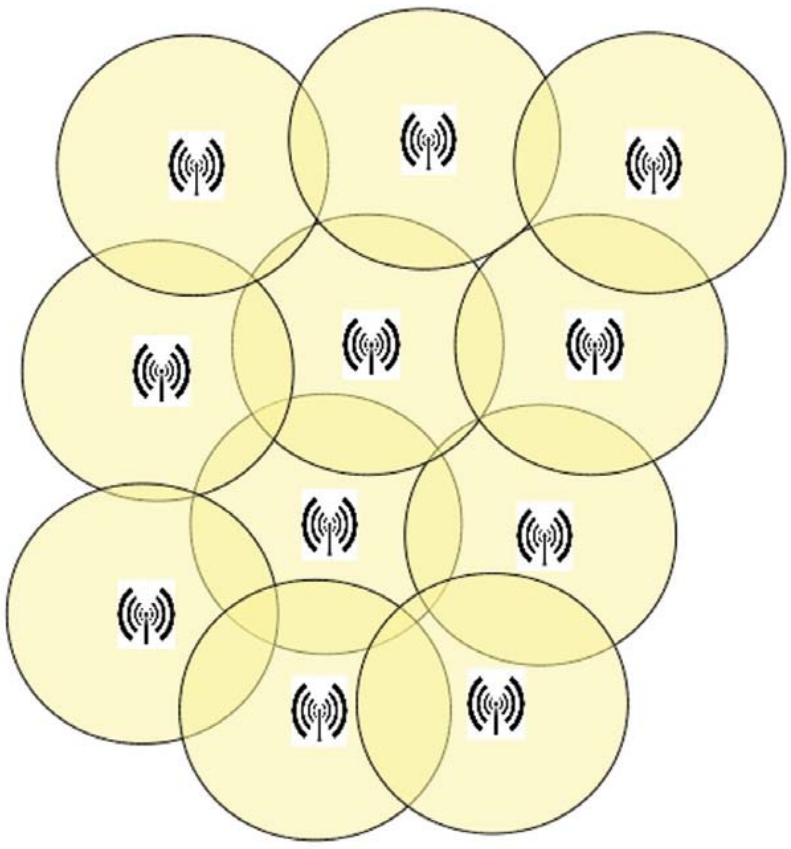


Fig. 3. SFN uses a grid of low power transmitters for more uniform field strength. All transmitters are perfectly synchronized, operate on the same frequency and broadcast the same digital data (multiplex).

different objects. But those echoes are shorter and do not pose serious problems for COFDM modulation.

Another advantage of MFN is the fact that it is convenient to use it in the interim period when analog and digital TV are broadcast concurrently. That's because the viewers do not have to rotate their antennae to catch new digital signal nor do they have to install new antennas. Analog and digital signals come from the same location.

In SFN arrangements one multiplex is transmitted on the same frequency all over the country. So SFN has one tremendous advantage over MFN – it spares a lot of precious bandwidth released after the analog transmission is completely switched off. This bandwidth can be either used to transmit many more digital channels or used for other purposes. Except for better spectral efficiency described above, SFN has better power efficiency. In other words, the electric energy consumed by all SFN transmitters is lower than that in MFN system with the same reception area. SFN uses more transmitters, but these are the low power units.

SFN is also much more desired for DVB-H signals, especially if SFN is built with a dense grid of small power transmitters. Such grid creates a much more uniform signal level what is important for reception on the move. Moreover, if we use the same frequency, the receiver can switch from cell to cell smoothly (handover). For MFN networks a second tuner is required in the receiver to check signals from the neighboring cells. SFN is also the better choice if we need to ensure the reception inside the buildings or in those places were it is difficult or impossible to install a roof-top antenna.

It is not difficult to figure out that SFN is more demanding from technological point of view. It requires very good synchronization of all transmitters both in time domain and in frequency domain. Usually, GPS is used to synchronize all transmitters.

Technology experts when comparing both solutions sometimes overlook non-technical aspects. For example, in some countries there are many regions that transmit local content to local viewers. Such local broadcasts are of little interest to the people living at the other side of the country. One can not split networks into regional or local area networks with different content using SFN. This is particularly a challenge for geographically large countries. Practically, SFN network requires everything be transmitted throughout the whole country.

As usually, it is not so easy to say which arrangement is better. It depends on the circumstances in a given country. One of the reasonable approaches could be to use MFN in the intermediate period and once the digital switch over is over and analog channels no longer exist, start building SFN. SFN will not only release bandwidth but also enable DVB-H reception almost everywhere. To become really popular, portable DVB-H devices should be operational everywhere where a mobile phone is used today. There are even some proposals to use the existing GSM infrastructure for DVB-T/H SFN transmitters.

Another approach, justified especially in large countries, could be a mixed solution: MFN and SFN together. In this way, one could have different local multiplexes delivered to different regions, and nationwide digital multiplexes delivered all over the country.

Before we conclude this article, a word about North America. COFDM modulation has been chosen for the terrestrial transmissions by DVB and ISDB, but the American standardization body ATSC has opted for 8VSB. Although 8VSB has not been designed with SFN in mind, this modulation is also good in ghost cancellation. So, at least theoretically, it is also possible to build SFN networks in North America.

	SFN	MFN
Advantages	» Excellent spectral efficiency= = low bandwidth consumption » Good power efficiency= = lower electric energy consumption » More homogeneous field strength distribution for portable and mobile reception (DVB-H) » Suitable for indoor reception	» No change in user antenna systems required » Easy coexistence with analog channels » Can re-use existing infrastructure of analog TV transmitters and antennae » Network splitting is easy= = different multiplexes in different regions
Disadvantages	» Network splitting for local content is difficult » Excellent synchronization required= =extra cost » Costly infrastructure of dense grid of transmitters needed to avoid self interference » New aerials often required on the user's side	» Not effective in spectral occupancy (though much better than analog) » Not so good for DVB-H » Cannot assure indoor reception » Lower power efficiency

Table 1. A comparison of pro's and con's of SFN and MFN networks

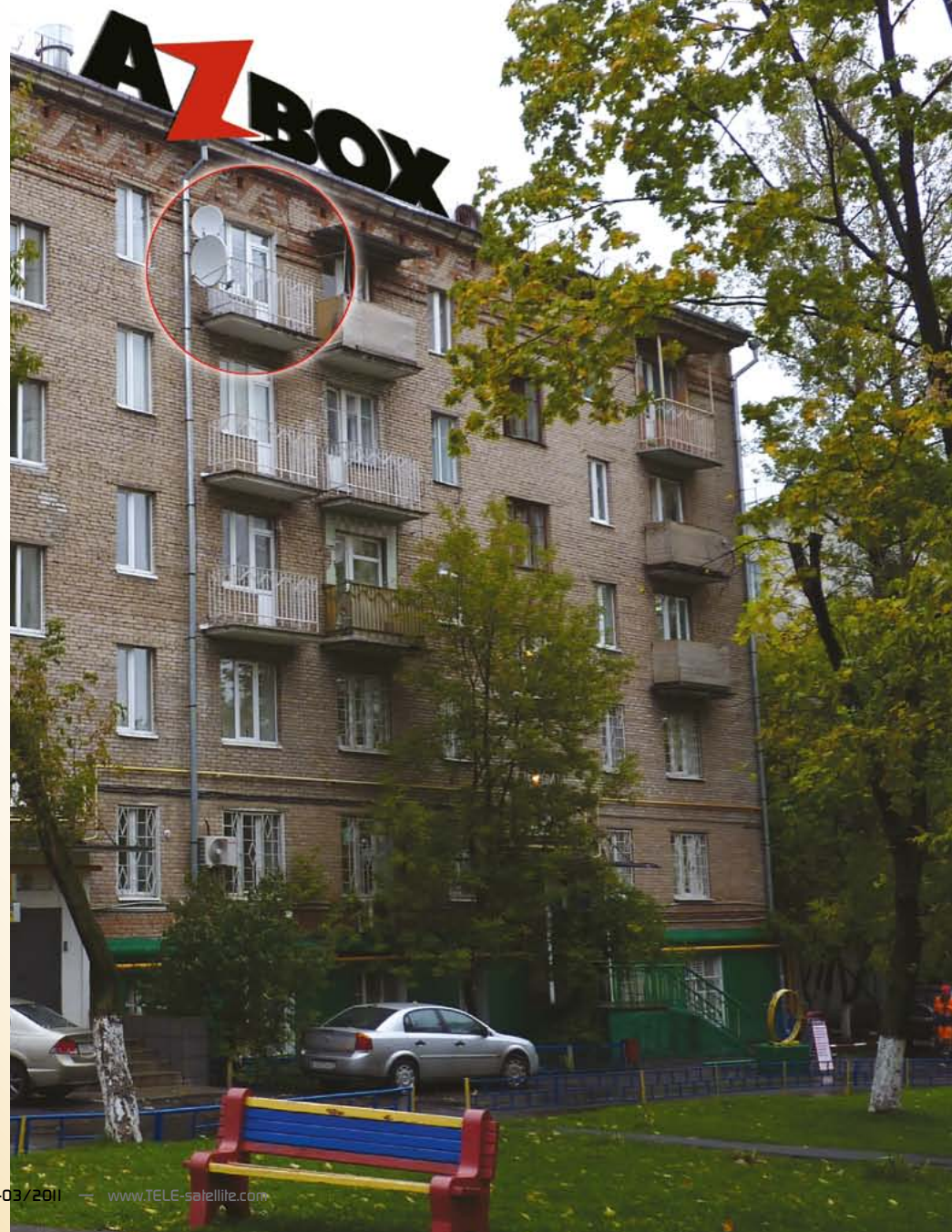
Two Buddies from School Days Found AZBox Russia

The two first met at the tender age of seven when they went to the same school. They embarked on different journeys afterwards, with one of them deciding to study economics while the other obtained a degree in electronics and software programming. Later on, their paths crossed again in the year 2006 when they together founded the company SatDream as exclusive distributor of AZBox products in Russia. Andrej Dolgopolov took on the role of Sales Manager, while Ruslan Rozanov became Technical Manager of the company. TELE-satellite met both founders in Moscow.

Technical Manager Ruslan Rozanov can justifiably be called a satellite enthusiast. "It was in 2001 when my interest in satellite reception awoke," he tells us. He used to repair satellite receivers for friends and family in his spare time, and he soon discovered that "it was the software aspect that I was really addicted to." This even went so far as to turn to receiver programming from 2004 onward. Looking at ways to turn hobby into profession he finally decided to start up a business. Together with his school-day friend Andrej Dolgopolov he raised an initial capital of USD 2,000 to get going. Right from the start the two have focused on repairing satellite receivers.

By and by they had gained an expert reputation for servicing receivers of a particular Korean brand, but unfortunately that manufacturer completely missed the leap from SDTV to HDTV, so they had to look elsewhere. "The option of customised receiver programming was a driving force behind that search," Ruslan Rozanov explains. "One day we came across the AZBox and immediately got in touch with Hugo Condessa, the founder of AZBox." The two have been exchanging thoughts and ideas via e-mail or skype ever since.

"Our first move was the Russian translation of the AZBox on-screen menus." Even more important, however, was the adapta-



Looking up the façade of this inconspicuous apartment building you can spot two satellite antennas. Right, next to the dishes are the office windows of AZBox Russia on the fifth floor. This building is only one block from the nearest metro station, which is called Kakhovskaya and is served by metro line 11. The company also makes use of a warehouse for storage, which is located elsewhere.

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tion of the AZBox to accept major smartcards used in Russia, like those of provider Tricolor. "It only took us three weeks to write the software so that the internal card reader of the AZBox was able to work with those smartcards," Ruslan Rozanov proudly remembers.

That happened in October 2009 and things really got moving from there. In November 2009 the first shipment of boxes arrived. "It consisted of 100 Elite boxes and 100 Premium boxes," Ruslan Rozanov recalls how it all began. And that pace has constantly increased up until today: For 2010 shipments totalled 1,000 units.

However the SatDream team was not at the end with after the on-screen display texts had been localised. "We wanted our customers to get the best," Ruslan Rozanov notes and mentions a CD-ROM which is shipped with every AZBox in Russia. The CD-ROM features a comprehensive FAQ covering all AZBox functions, as well as assistance for downloading new software versions. "We also cover the initial installation procedure of the AZBox receiver so that all channels demanded from a Russian audience can actually be received," Ruslan Rozanov adds.

Incidentally, he compiled the complete CD-ROM almost all by himself. Still, SatDream service does not stop there. "All AZBox receivers we sell come with a two-year warranty," Ruslan Rozanov explains and details the processes that have been set up in the background: "Each AZBox is labelled with a unique serial number right at the manufacturing premises and we take note of the serial number for every single customer of ours. This allows us to instantly look up the features and equipment level of every box ever sold by us." By the way, customers may even enter the serial number of their box at www.azbox.su themselves and check whether they have obtained their receiver through legal channels.

Currently, the young company employs a workforce of 15: Four work in administration, three are repair technicians, three are software developers and four are installers who set up complete reception systems all over Moscow and beyond. Added to that are the two owners.

"Our top-selling product right now is the AZBox HD Plus with two DVB-S2 tuners," Sales Manager Andrej Dolgopolov reveals. "We generate approximately 70% of AZBox sales with this model alone." The question that arises in this context refers to DVB-T. After all, AZBox does offer its receivers as DVB-T variants as well. Technical Manager Ruslan Rozanov has the answer: "While there have been some test transmissions in Moscow we don't expect a real DVB-T breakthrough in our market before 2012. By that time we'll be ready and prepared to jump on that bandwagon."

Our visit has clearly confirmed the general impression that AZBox Russia seeks to offer excellent customer service. Its employees are in a position to solve software problems in a timely manner, as well as address any hardware issues that might arise. This makes AZBox Russia very well placed for keeping up its steady expansion pace.

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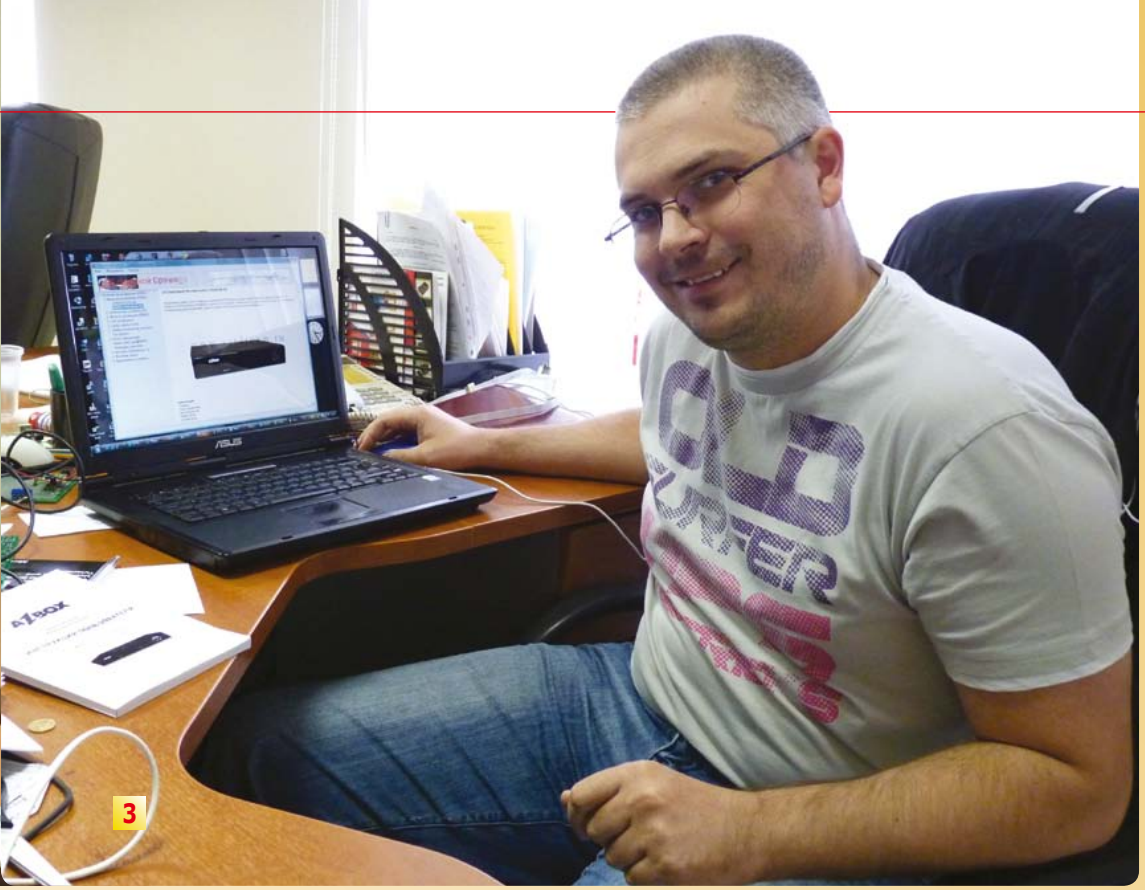


AZBOX Russia

1. Irina Vitrenko is the receptionist at AZBox Russia. She's the first to pick up all incoming calls and for this photo she has placed an AZBox on the counter.

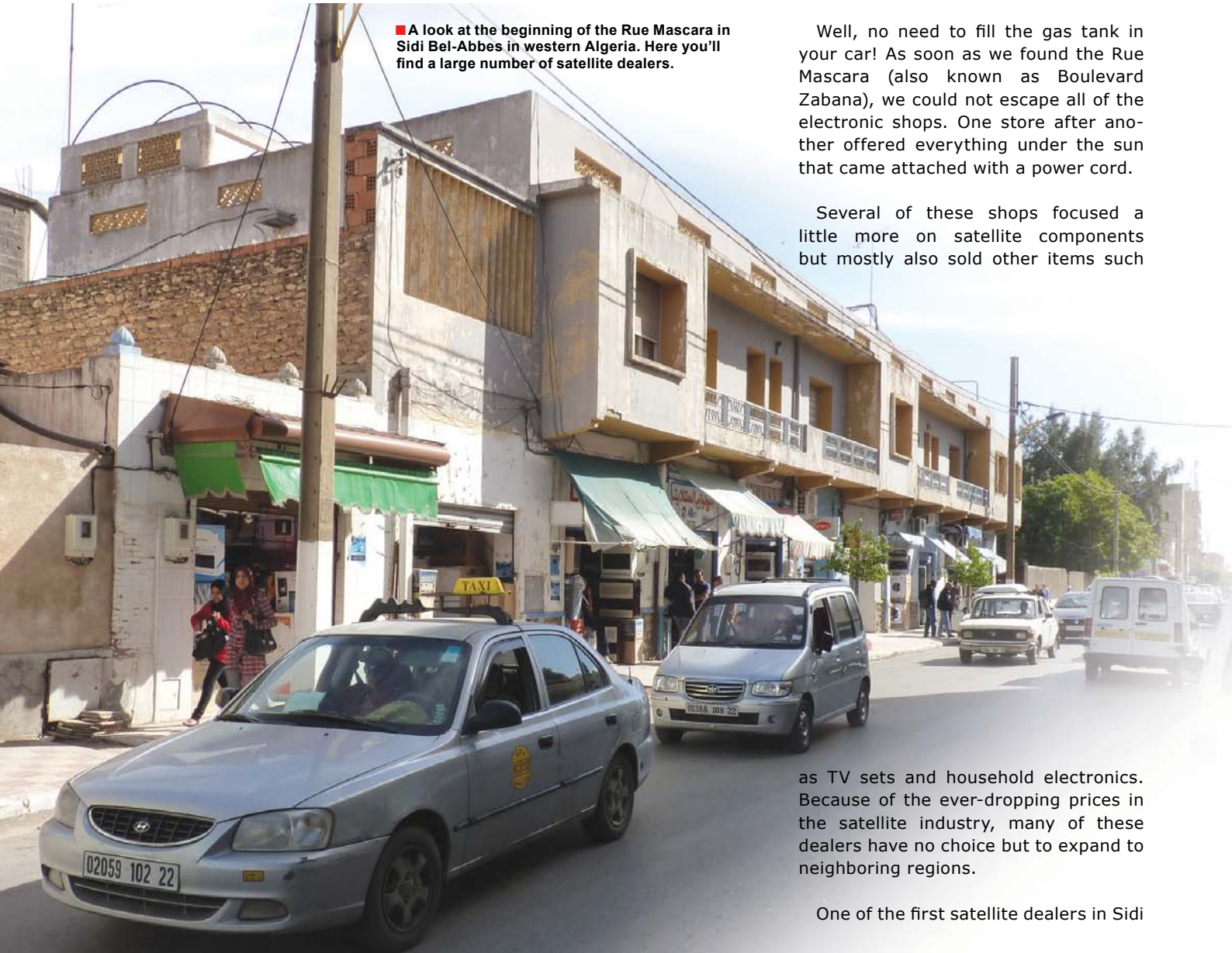
2. Always in touch: Sales Manager Andrej Dolgopolov is the co-founder of AZBox Russia and is in charge of sales to retail customers.

3. Technical Manager Ruslan Rozanov is one of the two founders of AZBox Russia. Here he shows us on his laptop PC part of the FAQ which he has compiled for the AZBox and which all AZBox customers receive on a CD together with their box.

4. View of the technicians' room. This is where malfunctioning boxes are repaired. Technican Igor Radvogin can be seen on the right.

The Satellite Dealer from Sidi Bel-Abbes

If you travel roughly 80km south of Oran you'd find the city of Sidi Bel-Abbes in western Algeria with its 500,000 inhabitants located about 150km from the Moroccan border. The city was named after its founder Sidi Bel-Abbes. We set out for this city in an effort to find out how easy it is to buy satellite components such as dishes, LNBs and receivers in a city like this. Is it possible to find these items here or do you have to travel to a big city in order to find what you need?



■ **A look at the beginning of the Rue Mascara in Sidi Bel-Abbes in western Algeria. Here you'll find a large number of satellite dealers.**

Well, no need to fill the gas tank in your car! As soon as we found the Rue Mascara (also known as Boulevard Zabana), we could not escape all of the electronic shops. One store after another offered everything under the sun that came attached with a power cord.

Several of these shops focused a little more on satellite components but mostly also sold other items such as TV sets and household electronics. Because of the ever-dropping prices in the satellite industry, many of these dealers have no choice but to expand to neighboring regions.

One of the first satellite dealers in Sidi

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Bel-Abbes was Morsli Hallam. He thinks back: "When I started in 1994, there were only two other satellite dealers."

His best year was 1997 when more than 1000 receivers crossed his shop's counter. In the meantime he gave up his business but still knows many of his old competitors. He introduced us to a few of them; for example, the team from 'Le Bleu'. In their electronic shop back in the corner you'll find a 90cm dish along with an assortment of satellite receivers. The manager is Benfreha Becheikh; he explains to us: "We sell about 50 HD receivers a month and still about 100 SD receivers." It's obvious that it won't be long before more HD receivers will be sold than SD boxes. Most of the customers want to use their new satellite equipment to receive NILESAT.

One of the only shops that deals exclusively with satellite reception is 'Maghreb Sat'. Chafi Abdelhamid is the owner and explains to us: "I started my business in 1993. But today I only deal with repairs and software updates." With two technicians and an assistant he repairs defective receivers and uploads new software to these boxes.

Larger manufacturers can also be found with a branch office along the Rue Mascara. One of these companies is Condor, an Algerian manufacturer that not only produces household goods but also offers all the necessary components for satellite reception.

One of the salesmen is B. Chaouchi and he shows us the new HD recei-

1. Morsli Hallam (left) in front of his shop that he now only uses as an office. His former colleague Boudera Kada (right) recently became self-employed and installs satellite systems.

2. Entrance to the 'Le Bleu' electronic shop with owner Benfreha Becheikh (left) and colleague Berrabah Bouzian (right).

3. In between the washing machines in 'Le Bleu' you'll find the satellite dishes.

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1. In a small shop salesman Benbadaismat shows us a 90cm dish. He explains: "An HD receiver with this dish and an LNB will run you about 200 Euros here. The same setup in SD would cost about 60 Euros."

2. Satellite shop 'Maghreb Sat's' company logo.

3. In the technicians room, Chafi Abdelhamid, Manager of ‚Maghreb Sat', points out used or defective receivers.

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ver from Condor: "This box costs only 11,500 DA (about 115 Euros)."

Just before we left, we met up with Boudera Kada. He learned his trade with Morsli Hallam and became self-employed a few years ago. He installs satellite systems. He explains to us: "I install about 500 systems a year." He charges about 8 Euros for a fixed antenna system and about 20 Euros for a motorized system. Of course this only pertains to the labor performed.

"Most of my customers use an 80cm dish but that just barely cuts it; for HD reception I always recommend using a 120cm antenna", explains Kada to us from his experience. "Most of the customers want to receive NILESAT at 7 west and ATLANTIC BIRD at 5 west so I install the antenna as close as possible to 6 west so that both satellites can be received!" Other popular satellites for this region include HOTBIRD at 13E, ASTRA at 19.2E, BADR at 26E and ARABSAT at 30E.

Kada also gave us an idea what the more popular channels are. In addition to French channels, there are Arabic channels such as Al Jazeera Sports, MBC 1 (with programming geared towards women) and MBC 3 (Children's TV), Teletoon Arabic, National Geographic from Abu Dhabi, Al Jazeera Documentary, Algeria 3 (Family TV) and 2M from Morocco. Also included in this list are the religious channels IQRA and MAJD as well as the pan-Maghrebish channel El Maghribia 1.

According to Kada, "Algerian Arabic is closely related to the Arabic spoken in Morroco and Tunesia and is therefore easy for us to understand."

It becomes a little more difficult with channels from places like Egypt that

3

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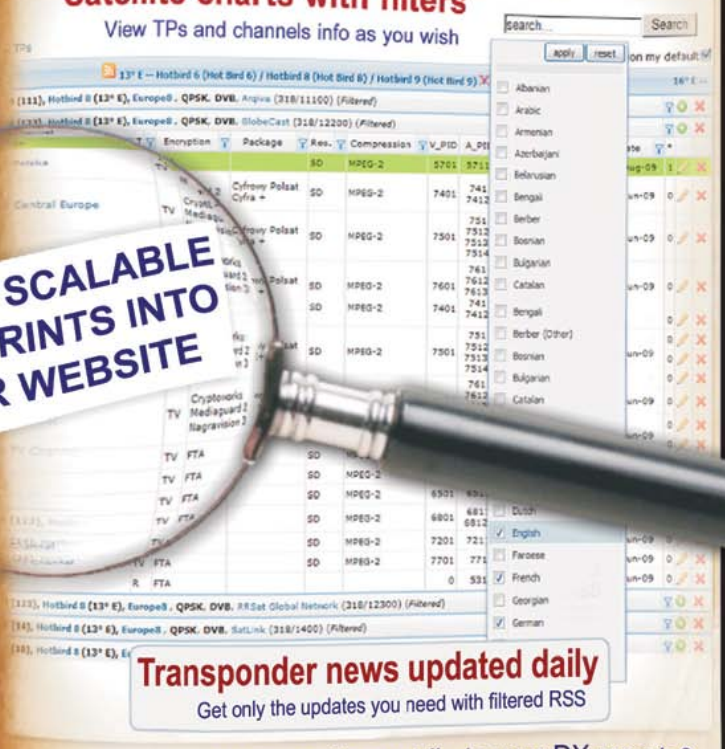

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3

speak in an Arabic variant that isn't so easy to understand. "Only the information channels are transmitted in high-Arabic", says Kada.

Our tour through all of the electronic shops along the Rue Mascara in Sidi Bel-Abbes shows that even in smaller cities in a country like Algeria you can still find a large selection of satellite shops where you can get whatever you need for your satellite reception pleasure.

4

5

1. HD receivers are among the items in Condor's display window.

2. Condor's salesman shows us an HD receiver. Condor also sells LNBs and HD TVs.

3. Belarbi Adel is the owner of this well-stocked shop along the Rue Mascara in Sidi Bel-Abbes.

4. One of the few shops that use 'satellite' in their name: Kamel Mancer is one of the salesmen and can offer anything that a satellite friend would need.

5. Satellite installer Boudra Kada at work: here he can be seen installing a satellite dish on the roof of one of his customers.

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

References

CANAL DIGITAAL SATELLIET

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Satellite TV in Tokyo

Aluo

• Japan's most prominent satellite enthusiasts are Keito Takahashi and Takao Kameda, both of whom live in Tokyo. We paid a visit to them and found out about their tricks of the trade.

Takao Kameda is already 61 years of age and has been a very busy satellite enthusiast for some 17 years now. He's a well-known figure in the Japanese satellite world and has written numerous articles about satellite reception. Most of them were published in ‚Radio Life' magazine which sheds light on all aspects of radio and TV reception. „Young people in Japan these days don't watch a whole lot of live TV," he explains. „Most use PVRs to record particular events and watch them whenever their busy schedule allows

Three of Eastern Asia's most influential satellite enthusiasts: Keito Takahashi (left) from Tokyo, TELE-satellite author Aluo (centre) from Shenzhen/ China and Takao Kameda (right), also from Tokyo. The trio stands in front of Keito Takahashi's house.

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■ Keito Takahashi has mounted his rotatable C band mesh antenna on a professional pole with a height of 7 metres.

some time to be spent in front of the TV.“ Unfortunately, the entire magic of receiving foreign satellite channels from far-away corners of the world is lost in the process. „When ASIASAT 1 started we all got very excited, as channels from that position were transmitted in NTSC,“ Takao Kameda remembers. NTSC was the analog colour system used in Japan, so DXers were able to watch channels from ASIASAT 1 with their existing TV. Over the course of so many years Takao Kameda has steadily enlarged his collection of satellite receivers using all sorts of CA systems. Right now he is having an in-depth look at the iCool G2 DVB-S2 receiver.

Keito Takahashi is a similarly committed satellite enthusiast. He even speaks Chinese and is a regular viewer of the Chinese satellite channels by CCTV. He joined the satellite community more than ten years ago when he bought his first satellite antenna: It was a 3-metre KTI mesh antenna imported from the USA. Today he operates a 2.4m mesh antenna for the C band and a smaller 1.2m dish for the Ku band. Keito Takahashi is a true celebrity and a popular interview partner for Japanese TV stations and newspapers when it comes to experience and expertise in the satellite field. He also loves China and even sent his son over to China to learn the language. „I watch Chinese TV and learn the language from watching and listening.“ Another worthwhile reason for becoming a satellite enthusiast!

■ Hardly noticeable from outside: Keito Takahashi’s two antennas in Tokyo (C band in front, Ku band in the back).

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Edited by
Branislav Pekic

EUROPE

FRANCE

MARC DORCEL LAUNCHES 3D ADULT TV SERVICE

Marc Dorcel Television has launched the first 3D adult entertainment subscription VoD service in Europe. The company is initially making the channel available via French IPTV platform Free, but plans to roll it out with other partners in the country and elsewhere in Europe. The programming has been produced together with French firm 3DLized.

FASHION TV BOOSTS 3D CONTENT

The Fashion TV channel has announced that it is ramping up its 3D content. The broadcaster, which has just finished filming the fashion weeks in Milan and Paris in high-definition 3D, plans to make more than 40 hours a year of 3D content for its FTV HD channel and its video-on-demand service. A full 3D HD service is slated for launch next autumn.

GERMANY

NINE HD CHANNELS AVAILABLE ON HD+ PLATFORM

sixx HD and RTL II HD launched in high-definition (HD) quality on the HD+ platform in December. sixx HD is the fourth channel of the ProSiebenSat.1 group to join the technical platform. Other channels to launch on HD+ include RTL group's RTL HD, VOX HD, RTL II HD, as well as SPORT1 HD, a channel owned by Constantin Medien. Since its launch a year ago, 1.5 million HD+ smart cards have been delivered to manufacturers and 400,000 HD+ set-top boxes have been sold. TV viewers can chose between 38 different kinds of set-top boxes that have been brought to market by 22 manufacturers.

IRELAND

IRELAND GETS FIRST HD CHANNEL

UTV became the first broadcaster in Ireland to launch a high-definition (HD) TV service. Public broadcaster RTE has proposed a HD channel to be carried by free-to-air DTT platform Saorview that is pending a review by the Broadcasting Authority of Ireland. The plan is to show "HD light" coverage of live sporting events such as GAA matches, Six Nations rugby and international football. However, RTE has no plans to launch a national service, as upgrading RTE's infrastructure to support HD channels would cost over €25 million, money that is simply not available to the broadcaster.

ITALY

PIEDMONT FIRST IN ITALY FOR BACKWARD COMPATIBLE 3D

Italy's Piedmont Region has initiated the first free-to-air terrestrial 3D HDTV broadcasts, with a system for backwards compatibility with 2D TV sets. The initiative is the result of a partnership between public and private bodies operating in the area, including Sisvel, Quartarete TV and CSP Innovazione nelle ICT. The broadcasts rely on an innovative technique for formatting stereoscopic images, known as 3D Tile Format, which makes it possible to integrate two 720p frames within a single 1080p frame. The reconstructed right and left images maintain their original resolution, preventing an unbalancing of the vertical or horizontal resolution.

PORTUGAL

PORTUGUESE BROADCASTERS INVEST €17 MILLION IN HDTV

The Portuguese national TV channels have started investing in HD as part of preparations for the analogue switch-off (ASO) due to take place on 26 April 2012. SIC has announced it will invest up to €12 million in HD, in both equipment and content. Rival TVI estimates investments at €3-5 million, mainly for the acquisition of transmission equipment. Public broadcaster RTP is already commissioning all Portuguese and foreign TV series in HD.

SERBIA

TELEKOM SRBIJA LAUNCHES HDTV OFFER

Telekom Srbija has launched a HDTV package for subscribers of its IPTV service Open ITV. The package, costing RSD 400 a month, offers a total of seven channels: Discovery Showcase HD, National Geographic HD, FoodNetwork Channel as well as four Arena Sport channels in HD. The installation of a set-top box required for watching HDTV channels costs RSD 2034 and the monthly subscription costs RSD 338.98.

SPAIN

LA SEXTA LAUNCHES HD CHANNEL

La Sexta has launched a pair of new channels and overhauled the programming line-up at its existing second channel La Sexta 2. The first is La Sexta 3, a classic scripted series and movies channel, while La Sexta HD is a high-definition version of its main channel.

SWITZERLAND

SWISSCOM TO EXPAND HD OFFERING

Swisscom has added two free new HD channels for all subscribers - Arte D HD and France 2 HD - bringing the total number of free HD channels available to ten. Swisscom is also introducing two new HD packages for customers - 'HD Deutsche+' and 'HD Français+', each offering nine HD channels, and each costing CHF 9 (US$ 9.26) per month. Games from the Swiss Axpo Super League, Italian Serie A, Spanish La Liga and Portuguese Liga Zon Sagres will be broadcast in HD quality, costing CHF 2.50 per month. Swisscom TV subscribers with a Teleclub Sport subscription will also benefit from eight additional HD sports channels at no extra cost.

UNITED KINGDOM

BBC LAUNCHES BBC ONE HD

The BBC has launched the BBC One HD channel which is available on Freesat, Freeview, Virgin Media and Sky. The One Show, Holby City, Film 2010, Eastenders and Children in Need are some of the other programs that will be aired on the channel.

UK WORLD LEADER IN HD TV OWNERSHIP

The UK leads the world in HD TV set ownership, but lags far behind in take-up of HD digital TV services, a new report by Ofcom has revealed. The UK and Spain have the highest digital TV takeup, at 91% of their respective populations, while 59% of UK households now have a HD set, just ahead of the US with 57%. In the US, 44% of households receive up to 404 HD channels, followed by Japan with 43% accessing up to 103 channels, France with 42% enjoying up to 55 channels and the UK with just 13% accessing up to 50 channels.

NORTH AMERICA

UNITED STATES

SONY MOVIE CHANNEL LAUNCHES HD SERVICE

The Sony Movie Channel is dedicated to showing Sony movies in HD and in uncut and uninterrupted states. Programming will be selected from over 3,500 Sony films which have won 184 Academy Awards. The channel is available the Dish, DirecTV and U-verse platforms.

VERIZON BROADCASTS LIVE COLLEGE FOOTBALL IN 3D

Verizon has started broadcasting college American football games live in 3D on its pay-TV platform FiOS TV, making it available to all subscribers across the country. The 3D transmissions are available to all FiOS TV subscribers who have a 3D television set, 3D glasses and a HD set-top box. The games are also being made available in HD and SD. Verizon is also offering access to 3D feature films on-demand on its pay-TV platform.

LATIN AMERICA

BRAZIL

SKY BRASIL TO REDUCE COST OF HD PACKAGES

The president of DTH operator Sky Brasil, Luis Eduardo Baptista, has said there must be a price reduction for HD packages in Brazil. According to him, when the threshold of 250,000 subscribers is reached, programming costs have significant discounts. His expectation is that in 2-3 years there will be no more differences in costs between HD and SD packages. Sky Brasil in September had 302,000 HD subscribers, with the base growing at a rate of about 30,000 per month.

TVA LAUNCHES HD DECODER

TVA has launched a new digital decoder, the TVA HD+, developed in partnership with Unicoba/Topfield and Nagravision. It has two tuners and universal remote control and also lets users to schedule recordings and automatically records the content being viewed. At the launch, new customers who take the TVA HD packages will be able to test the TVA HD+ for a year without charge.

ASIA & PACIFIC

SKY NEWS HD DISTRIBUTED VIA MEASAT 3

RRsat Global Communications Network and BT Wholesale's Media and Broadcast team have worked together to support the launch of Sky News HD on the Measat 3A satellite BT and RRsat are providing an end-to-end managed fibre and satellite service. A fibre network from the BT Global Media Network carries Sky News HD from the Sky News

Centre in Osterley, UK, to RRsat's Global Network and teleport facility, where it is uplinked onto the Measat 3A satellite and distributed to customers throughout the Middle East and Asia.

CHINA

HDTV SUBSCRIBERS IN CHINA TOP 2 MILLION

Total HDTV subscribers in China passed 2 million subscribers in the fourth quarter of 2010, up from 2 million in July 2010. Several factors are expecting to accelerate the HDTV take-up in 2011. First, an increasing number of cable operators are expected to roll-out HDTV over the next year. Second, the government will expand the number of HDTV channels from the current 12 to 42 by the end of 2011. Finally, cable operators in China are utilizing "mass market" upgrade pricing packages for migration to HDTV services.

INDIA

DOORDARSHAN FAILS TO DELIVER HD CHANNEL

Prasar Bharati's promise to deliver a channel on HD has fallen flat, with Doordarshan's sports channel now back on standard definition, according to a report in The Hindustan Times. The broadcaster had spent over R300 crore to ensure that the Commonwealth Games were shown on HD. The entire production was outsourced to UK-company SISLive, which has now been accused of tax evasion and outsourcing over 70% of the work to Zoom Communications.

JAPAN

NHK PRESENTS ULTRA HIGH-DEF TV PLANS

NHK is planning public previews of its developing Ultra High Definition (UHDTV) television system, which promises images that contain roughly 16 times more picture information that that which is found in today's HDTV systems. NHK plans to expose the public to its system in 2012, by shooting some of the London Olympics in Ultra High Definition, which is also referred to as Super Hi-Vision. The footage would be transmitted to public viewing sites in the U.K., U.S. and Japan. Plans call for trials of UHDTV broadcasting to begin in Japan in 2020.

SKYPERFECTV BROADCASTS FIRST 3D DRAMA

Sky PerfecTV started broadcasting Japan's first 3D drama series on its 3D specialty channel starting in January. "Tokyo Control" airs every Wednesday from 23:00 to 00:00 for 10 weeks, preceded by a 2D version in the hour earlier. Produced by Fuji TV with technical assistance from Sony and Sony PCL, the show is set in an air traffic control tower. Satellite station BS Fuji and Sony partnered to launch "3D*3D" on January 1. The 30-minute show airs weekly and includes sports and live music.

MIDDLE EAST

OSN FIRST IN MIDDLE EAST FOR 3D

OSN made history in December by becoming the first TV network in the Middle East to bring its viewers 3D movies. The launch follows on from the huge success of its HD service which now has an estimated 5 million viewers.

OMAN

OMAN SIGNS HD CONTRACT WITH SONY MIDDLE EAST

Oman's information ministry has signed an OR 26.55 million contract with Sony Middle East to prepare for the Sultanate's TV shift to HD transmission in 2011 by setting up a new complex to replace the present studios, Times of Oman has reported. When completed in November 2011, the Salalah complex is to be equipped with HD digital technologies and will include four digital studios for drama production, a news department and three other digital studios for news-related programmes, among other facilities.

Edited by
Branislav Pekic

EUROPE

GERMANY

T-HOME ADDS HDTV CHANNELS TO IPTV OFFERING

Deutsche Telekom launched a new HD package for its IPTV service T-Home Entertain in December. The new package initially offers six channels: TNT Film HD, TNT HD Series, Syfy HD, HD SPORT1, Classica HD and Planet HD. A seventh channel, AXN HD, will be added to the package in February 2011. The channel will be available to all customers with a VDSL connection for €9.95 per month. At the end of 3Q, the IPTV service had 1.04 million subscribers.

PORTUGAL

ZON LAUNCHES NEW ZON FIBRE 360 MBPS SERVICE

Zon has launched its new service Zon Fibra 360, which includes download speeds of 360 Mbps and upload speeds of 24 Mbps. These speeds are being sold only in packages that also include the TV package with more than 120 channels and fixed telephony with unlimited calls. According to the operator, this is first global launch of a commercial service supported by the EuroDOCSIS 3.0 standard.

SCANDINAVIA

VIASAT CONTENT TO BE AVAILABLE ON LG TV SETS

Modern Times Group (MTG) has signed an agreement with LG Electronics in the Nordic region for its Viasat OnDemand pay-TV services to be available directly on all LG TV sets enabled with NetCast functionality. The online on-demand pay-TV service features live sports content, hundreds of episodes of hit shows—with programming from TV3, TV6 and TV8 in Sweden; TV3 and Viasat4 in Norway; and TV3 and TV3+ in Denmark—and some 200 feature films.

TURKEY

TTNET ROLLS OUT IPTV SERVICE NATIONWIDE

TTNET has started the rollout of a new IPTV service called IPtivibu nationwide across 81 cities, using HD set-top boxes and wireless ADSL gateways from AirTies. The ISP has opted for AirTies Air 7120 set-top boxes and WAV-275, an all-in-one ADSL2 modem and VoIP residential gateway solution capable of streaming personal media including photos, music and video wirelessly to devices on the home network. The Air 7120 set-top box also comes with NAND flash storage and offers pause-live TV functionality as standard.

UNITED KINGDOM

VIRGIN MEDIA PRESENTS TIVO STB

Virgin Media has unveiled details of its new TiVo-powered set-top box, featuring access to an app store and 1TB hard drive, capable of holding some 500 hours of SD programming. It uses TiVo's recommendation engine to analyse and learn user preferences, to record things it thinks the user will like. The box can also access BBC iPlayer, YouTube, eBay, Twitter and Facebook, with more sites set to follow. Its arrival in the UK comes ahead of BBC-backed IPTV initiative YouView and Google TV, both of which are due to debut in the market in 2011.

NORTH AMERICA

CANADA

BELL FIBE TV ADDS 7 START CHANNELS

Bell Fibe TV has added 4 South Asian Star channels and three Star Mandarin-language channels to its IPTV line-up. The channels launched include Star One, Star India Gold, Star India News, Star Vijay, Star Chinese Channel, Star Chinese Movies 2 and Channel V Taiwan.

UNITED STATES

DISH NETWORK EXPANDS DISH WORLD IPTV

The Dish World IPTV service now offers access to the largest Arabic-speaking channel line-up in the U.S. The service distributes select Dish Network international programming via broadband to the television without the need for a satellite dish. Its line-up of popular Arabic channels includes Al Jazeera, MBC, ART America, Dream 2, Murr TV, with packages start at just $29.99.

LATIN AMERICA

ARGENTINA

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Telefonica de Argentina (TdA) has launched a VOD service over its Speedy ADSL broadband network. On Demand subscribers have unlimited access to a library of content, including a wide variety of TV programmes and movies. The service is priced at ARS 39.90 (USD 10.20) per month, with no activation fee; subscribers must have a minimum broadband connection speed of 1Mbps to access the VOD offering.

BRAZIL

GVT TEAMS UP WITH ERICSSON FOR IPTV

GVT has signed a contract with Ericsson to deploy the platform for its pay-TV service to be launched in 2011. The operator's plan is to launch a program grid including linear channels, interactive services such as remote recording of programs, watching programs up to 30 days, on-demand video along with access to internet content like YouTube, Twitter and Facebook. GVT has yet to select the supplier of set-top boxes.

ASIA & PACIFIC

CHINA

CHINA BUILDS NATIONAL IPTV NETWORK

China has built a national platform network for online TV broadcasts. The IPTV platform is divided into two tiers, namely the central level, which will provide programmes catering to all audiences throughout the country, and the local level, which will provide more programmes designed for audiences in specific regions. It has capacity for 100 SD channels, 15 HD channels and 20,000 hours of VOD services. It is already available in five pilot regions in Sichuan, Hubei, Beijing, Shenzhen and Shandong.

INDIA

BHARTI AIRTEL LAUNCHES IPTV IN BANGALORE

Bharti Airtel has launched IPTV services in Bangalore, following a successful run in the Delhi NCR region. The operator currently offers 42 linear channels on its IPTV service, as well as time-shift capabilities and interactive services.

SAUDI ARABIA

SAUDI TELECOM SELECTS ALCATEL-LUCENT

Saudi Telecom Company (STC) has selected Alcatel-Lucent as a technology partner in its plans for a major expansion of its broadband access network. The operator has deployed Alcatel-Lucent's Intelligence Services Access Manager (ISAM) platform, which enables the delivery of high-speed broadband multimedia services including data, IPTV, VoIP and video-on-demand. The large-scale project will leverage Alcatel-Lucent's VDSL2 and GPON technologies.

SOUTH KOREA

IPTV OPERATORS REACH 3 MILLION SUBSCRIBERS

IPTV has grown to take up about 30% of the pay-TV market with subscribers surpassing 3 million in December 2010. KT, which has the largest number of subscribers (over 1.64 million), provides 119 different channels, 90,000 episodes of VOD as well as 3D content. SK Broadband, which comes in second with 691,025 subscribers, features 89 channels and 60,000 VOD episodes on its B tv, but differentiates itself by providing real-time broadcast on IPTV. LG Uplus has 597,905 subscribes for its U+ TV Smart 7 service which offers 91 different channels and allows subscribers to browse the Internet and TV application store.

AFRICA

EGYPT

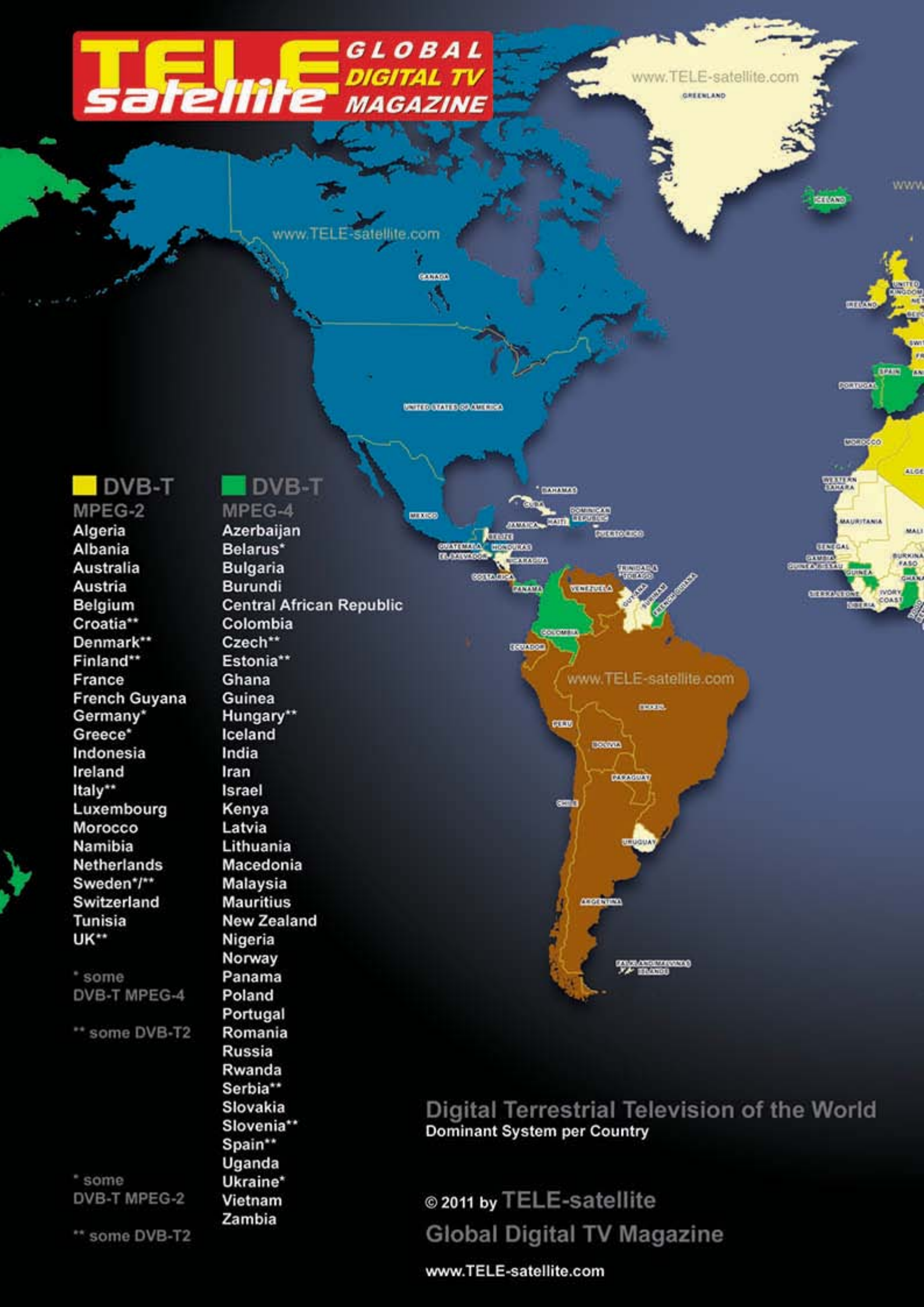
ERTU TO LAUNCH VOD SERVICE

ERTU is preparing to launch its first internet TV and VOD service. The broadcaster operates a bouquet of channels in the region, will make its content available through internet-connected TVs, computers and mobile devices. The service will be accessed by a home hub set-top box, which will also allow viewers to surf the web and buy entertainment applications.

WORLD

GLOBAL IPTV SUBSCRIBERS TOP 40 MILLION

At the end of September 2010 IPTV subscribers globally stood at 40.5 million, having increased by almost 8% from the previous quarter and by 37% over the last four quarters. TeleGeography's database now counts IPTV subscribers at 160 service providers in 74 countries, with at least 15 more operators about to join the list, which will boost the country count to 78. The lead country for subscribers remains France, accounting for no fewer than 24% of global subscribers. It is followed by the US (16%), China (16%), South Korea (8%), Japan (4%), Germany (3%) and Hong Kong (3%). China has by far the highest growth rate and China Telecom is already the service provider with the highest number of IPTV subscribers. Second is Iliad (France), followed by Verizon (US), France Telecom, AT&T (US), SFR (France), Korea Telecom and NTT (Japan).



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Digital Terrestrial Television of the World

Dominant System per Country

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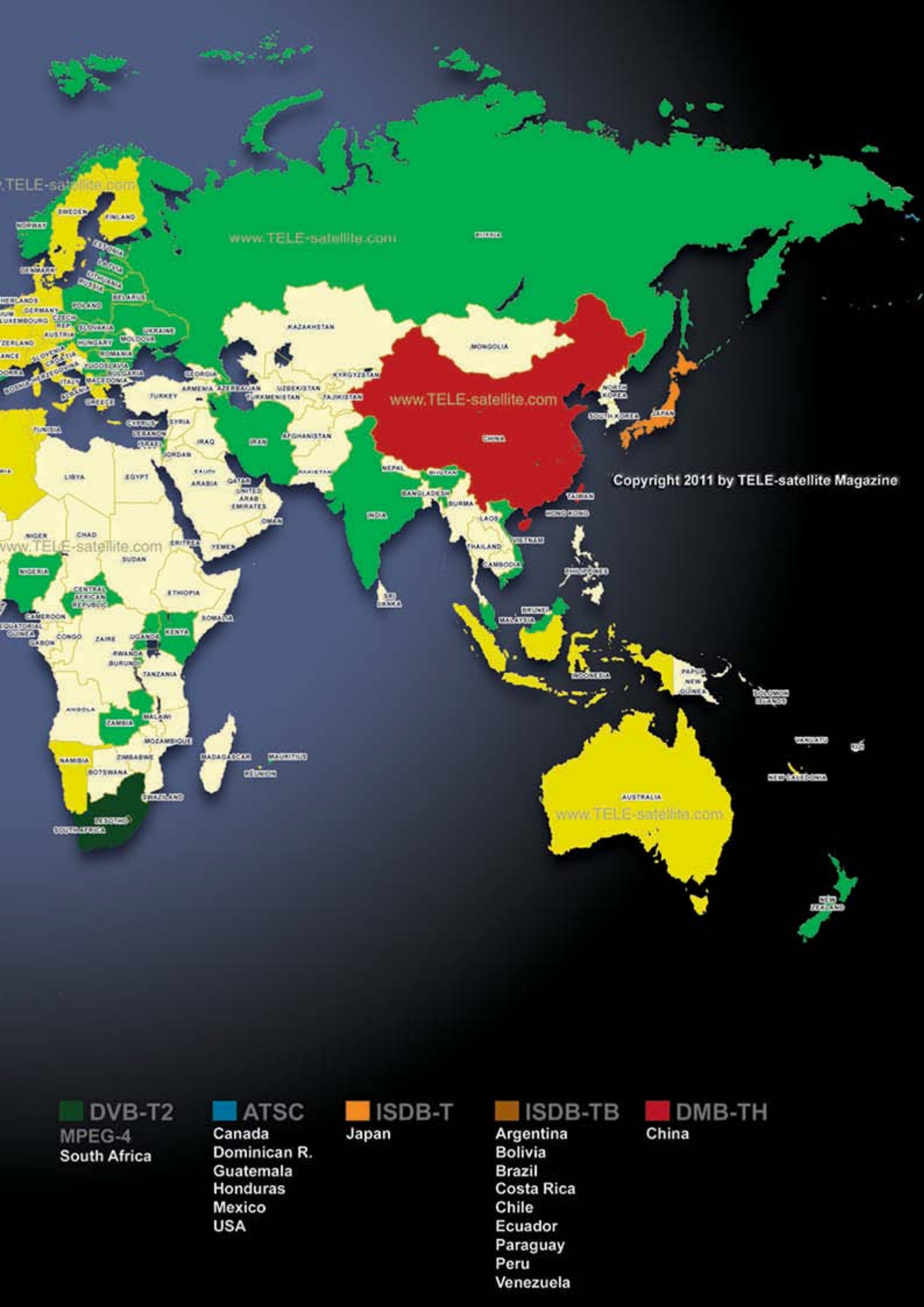
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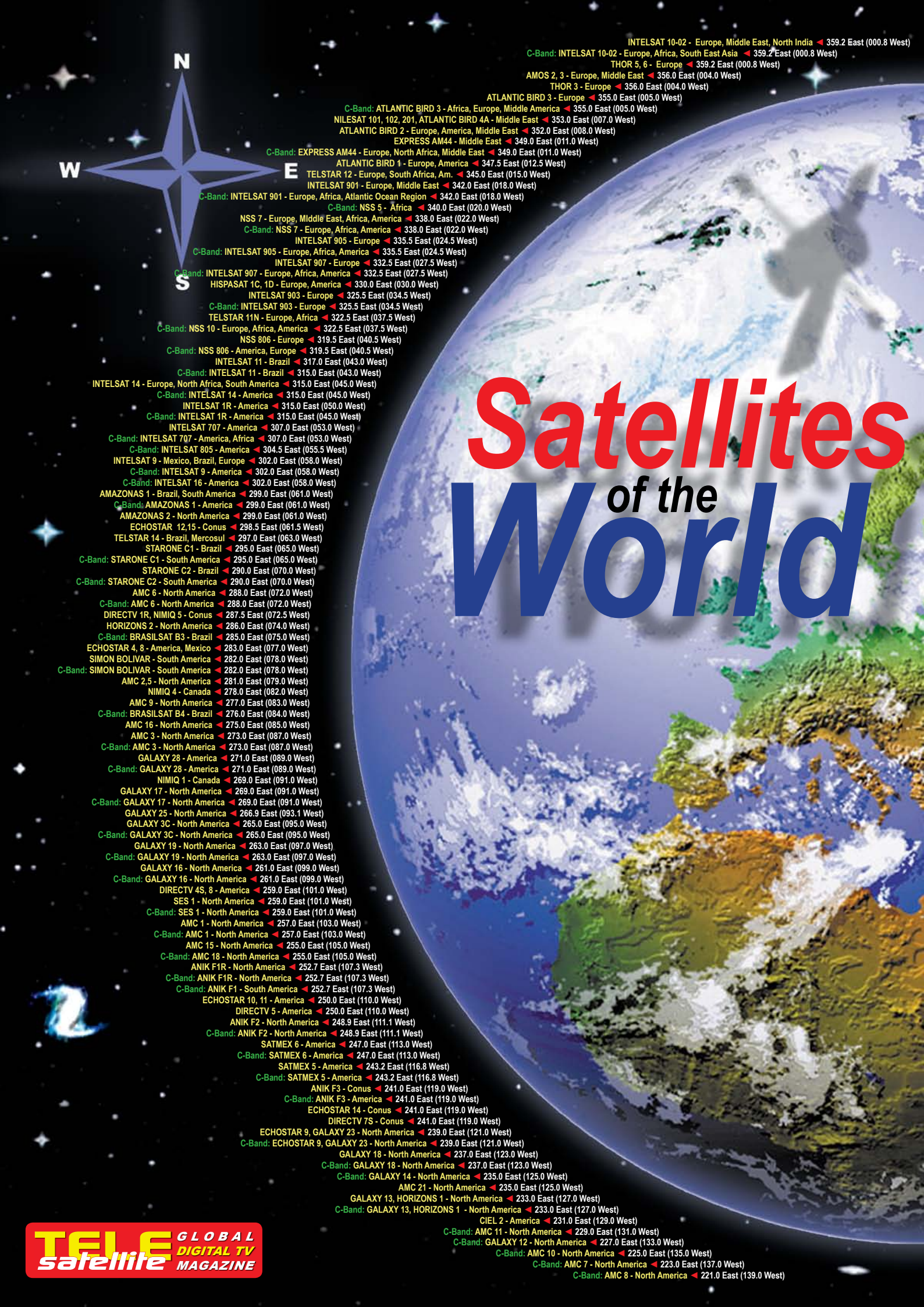

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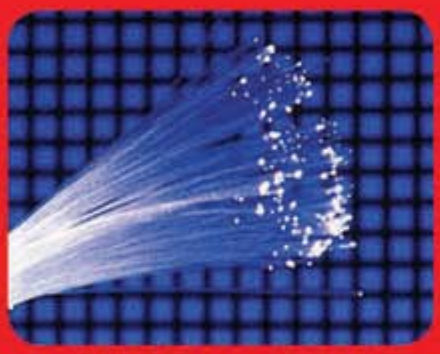

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Number	Issue	Deadline	Hardcopies	Available Online
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TELE-satellite Magazine 02-03/2011 will be displayed at these exhibitions:

8 - 10 February 2011

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