TELE SATELLITE INTERNATIONAL

Amazing New Satellite Receiver with Built-in PVR and Direct USB Link to PC

eycos

STANDBY   SIGNAL   REMOTE   0002

DIGITAL SATELLITE RECEIVER WITH HARDDISK R...

PIP   ZAP REC   DVB   Stab-USALS

.12 PVR
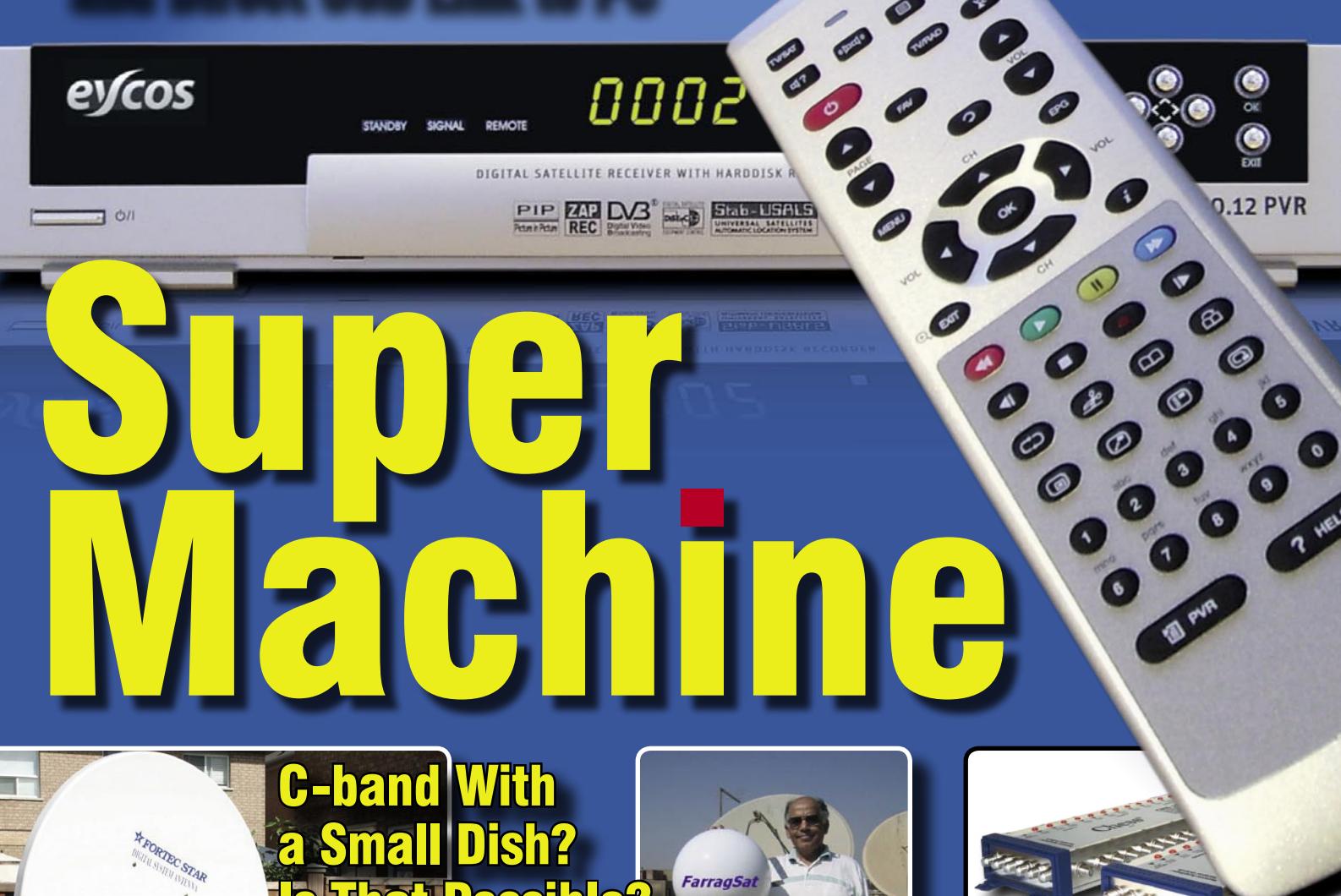
Super Machine

C-band With a Small Dish? Is That Possible?

FORTEC STAR

FarragSat

The New Spherical Antenna

How To Connect 12 Receiver to a Single Dish

Step by Step: Build Your Own 1.6m Dish

ENG

TOPFIELD

TF6000PVR
Digital W-LAN PVR

TF6000PVR
Digital W-LAN PVR

W-LAN
Twin tuners with Dual decoding (PIP)
2 Common Interfaces for CONAX, CRYPTOWORKS,
IRDETO, NAGRAVISION, SECA & VIACCESS
USB 2.0 and MP3 decoding
VFD Display and RTC(Real-Time-Clock)

Wireless Intelligence

Have you ever been bothered to move your PVR or PC to download your data?
Have you ever missed your favorite sports because of your night work?
Have you ever gone out without setting a timer recording for your favorite program?

Goes without Wire!

Whenever, Wherever you can reach and enjoy your PVR without worry of connection.
TOPFIELD Wireless Technology makes everything possible.

W-LAN

STANDBY   ▼ CHANNEL ▲   ◄ VOLUME ►

Exclusively for TELE-satellite Readers

SatcoDX's "World of Satellites" Software contains the technical data from every satellite transmission worldwide, and includes the license needed for unlimited data updates; valid for the next two months

Step by Step Guide to Get SatcoDX Software Running on Your Computer:

1. Download SatcoDX Software Version 3.10 from here:
   www.TELE-satellite.com/cd/0604/eng
   Note: if you have already installed Version 3.10, you do not need to do it again. Check your currently installed version by clicking the HELP button, then

ABOUT. The third line tells you the version installed on your computer

2. Enter the Activation Code by clicking LICENSE and then REGISTRATION. After entering Activation Code click VALIDATE KEY and EXIT. Now you are ready to download the newest satellite transponder data anytime you want, provided your computer is connected to
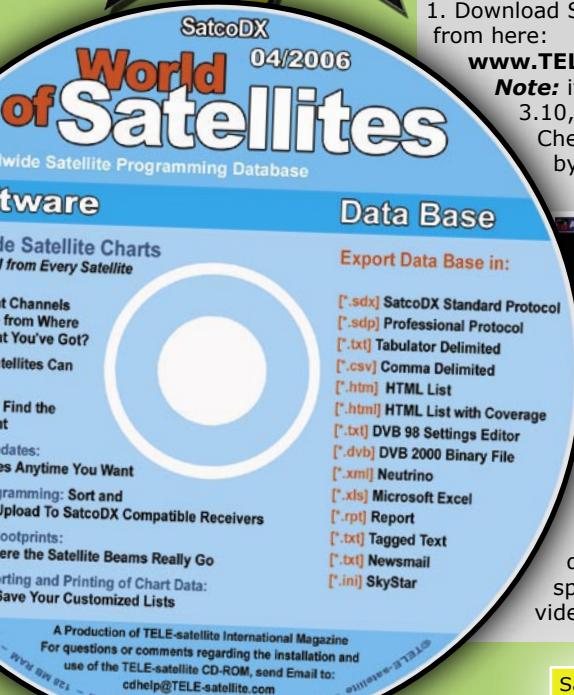
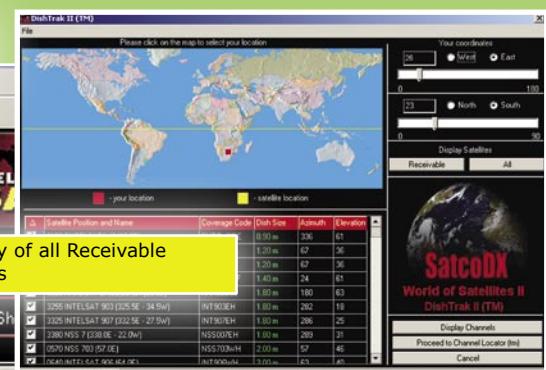the Internet and is allowed to access FTP. ***Note:*** SatcoDX Software also runs without Activation Code, or with an outdated Activiation Code. However, the satellite data on display will be either from last time you performed an update, or from the time when original software has been compiled. By default, each SatcoDX software contains the set of satellite data as current as when it was compiled and put together.

The SatcoDX software contains all the technical data from every satellite channel around the world, plus the ability to update the technical data via the Internet at any time (the update license is valid until the publication of the next issue of TELE-satellite).

The software contains many additional features to help you sort, find, print and export the data in form compatible with automatic receiver programming

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SatcoDX 04/2006

World of Satellites

Worldwide Satellite Programming Database

Software — Data Base

Satellite Charts from Every Satellite

Export Data Base in:

[*.sdx] SatcoDX Standard Protocol
[*.sdp] Professional Protocol
[*.txt] Tabulator Delimited
[*.csv] Comma Delimited
[*.htm] HTML List
[*.html] HTML List with Coverage
[*.txt] DVB 98 Settings Editor
[*.dvb] DVB 2000 Binary File
[*.xml] Neutrino
[*.xls] Microsoft Excel
[*.rpt] Report
[*.txt] Tagged Text
[*.txt] Newsmail
[*.ini] SkyStar

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For questions or comments regarding the installation and use of the TELE-satellite CD-ROM, send Email to:
cdhelp@TELE-satellite.com
ISSN 1861-5384

- Save Chart Data in many useful file formats
- Complete Channel Lists from Every Satellite With all Technical Data
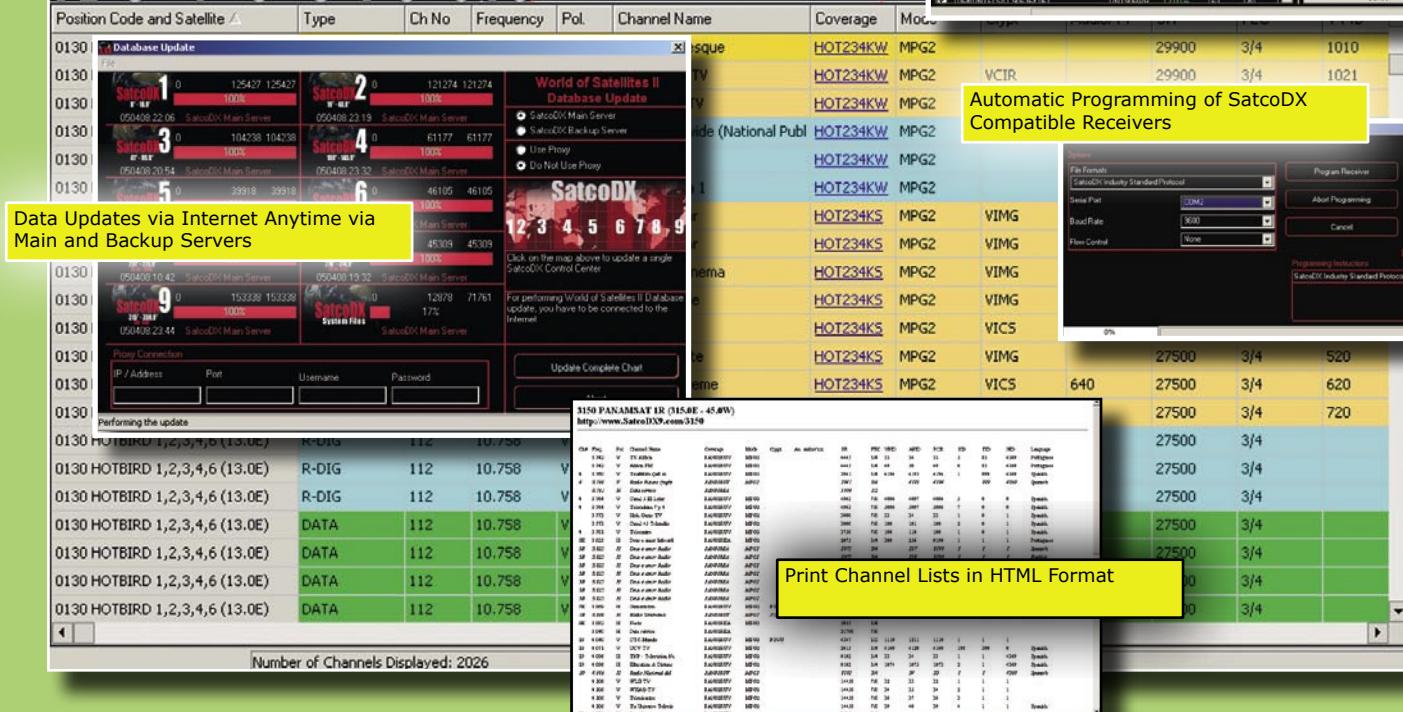- Automatic Display of all Receivable Satellite Channels
- Automatic Programming of SatcoDX Compatible Receivers
- Data Updates via Internet Anytime via Main and Backup Servers
- Print Channel Lists in HTML Format

CONTENT

Dear Readers

And just when you think that everything that could be discovered has been discovered, here comes even more new stuff. In this issue of TELE-satellite we will be reporting on more than one new idea. For example, a 4-way LNB with which four different satellites can be received. When you see this LNB, you might ask yourself, what took so long? This is a typical case of "I could have thought of this too", except that no one came up with such an idea.

It's somewhat different with the spherical antenna with external LNB's – the reaction here is more like "I never would have thought of that". The maker here went in an unfamiliar direction and stumbled on a solution that was unexpected.

And then there's the experimentation of satellite DXer's out of Canada who simply swapped out an LNB in the existing small antenna. The reaction here is "I would have also come up with this idea if only I had taken some time to think about it". But it didn't happen.

It would seem that there are still more possibilities just waiting to be found – trying to use something known in a different way. We have another example in this edition: a homemade parabolic dish. Financially it probably wouldn't make any sense to do this since production dishes are typically less expensive to get. But this has nothing to do with money at all. It is all about experimenting and possibly discovering something new.

And I can tell you now that the next issue of TELE-satellite will also introduce some new ideas that neither you nor we had yet thought about. The satellite industry is always good for surprises!

Sincerely,
Alexander Wiese

P.S.: My favorite radio station of the month: WRn'B (12.692 H, 27500/3/4/ 103 on HOTBIRD 13E), HipHop, Funk, Soul, interrupted only occasionally by station announcements and without all the commercials.

ADVERTISERS

The Spherical Antenna

Alexander Wiese

We have become quite used to the offset antenna. The parabolic antenna too. While the LNB is centrally mounted in the middle giving the entire system a look of symmetry, the LNB on an offset dish it located outside of the middle. In reality though, the LNB is actually in the center since an offset dish is nothing more than a section of a parabolic dish. But where would you find the LNB in a spherical antenna?

Dr. Farrag presents his spherical antenna on the roof of his apartment building in Cairo, Egypt

Is there even such a thing? Yes, they do exist if even just in small quantities. They were created by Dr. Abdelhamid Farrag out of Cairo, Egypt. A dentist by profession, Dr. Farrag decided to develop a slightly different kind of satellite antenna. Dr. Farrag, who originally wanted to be an engineer but decided on oral medicine instead, seems to have this in his blood. His older brother was one of the first Egyptian radio manufacturers. His actual goal was to develop a satellite antenna for mobile use. His spherical antenna measures only 30cm in diameter and yet still manages to be a multifeed antenna. The LNB's are found outside of the sphere and use the opposing half of the sphere as the reflector allowing multiple LNB's to be installed.

Of course, this only works with DTH satellites. DXer's would really not have any success here. This truly wasn't the goal. It is an entirely new concept that makes satellite reception possible with small dimensions and equally small space requirements. Dr. Farrag calculated that reception is possible starting at 47 dBW. In addition to the spherical antenna, Dr. Farrag also experimented with a small parabolic antenna with a diameter of only 20cm. However, this antenna required signals that were at least 51 dBW.

It is his dream to find a manufacturer that would take his creation and manufacture and market it professionally. He believes there is a market for his spherical antenna that he has christened with the name FarragSat.

Contact:
farragsat@yahoo.com
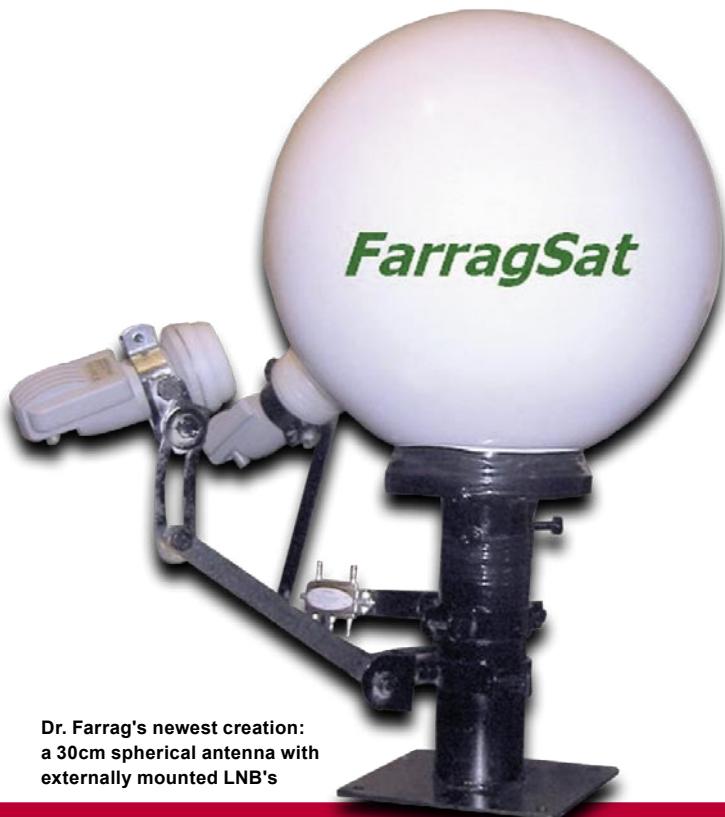
Dr. Farrag's newest creation: a 30cm spherical antenna with externally mounted LNB's

From Dr. Farrag's workshop: a 25cm half spherical mini antenna with external LNB presented by his son Kariem in their living room. Reception is possible starting with 50 dBW

Basic setup of satellite antennas

The digitalisation of satellite channels is progressing rapidly and soon there will be no more analog satellite channels in Europe. Once the conversion is completed old analog receivers are rendered useless and have to be replaced by digital set-top boxes.

In most cases it is sufficient to simply unplug the analog receiver and connect the antenna cable to the new digital box. As a general rule the antenna alignment should remain unchanged, unless the dish has not been aligned properly in the first place and needs fine tuning. All this should not pose a big problem.

If a new antenna has to be set up for the first time, however, the absence of any analog signal will create some difficulties. Since digital signals are much harder to find than analog signals, the search for the correct antenna angle and alignment will invariably take longer than before. In the analog days it was quite easy to simply move the antenna until a blurry image appeared on the TV screen. A little fine-tuning was all that was needed until the TV screen showed a clear picture. This is not possible any longer with digital satellite reception. Weak digital signals do not translate at all into a picture on the screen which remains black until the signal strength has passed a certain threshold (approximately 30%) and a crystal clear picture appears on your TV set.

If you don't know where exactly to search for your desired satellite your search will be in vain. As long as there are still some analog signals left, an old analog receiver for the antenna alignment will do a perfect job. But what to do after the switch-off of all analog signals? In this case a systematic approach is required.

If only a single satellite is to be received the antenna alignment can be fixed at the particular position. In order to align the dish correctly the elevation has to be adjusted properly using the scale on the antenna pole. However, the correct elevation depends on the local degree latitude. Below are the values for a satellite that is in a precise southern position (in a precise northern position when seen from the southern hemisphere):

Latitude	15	20	25	30	35	40	45	50	55	60	65
Elevation	72	67	61	55	49	44	38	33	27	22	17

For a satellite that is some degrees to the East or the West the elevation decreases. For a 10-degree deviation the elevation decreases by a maximum of one degree.

Next, the hunt for a signal can begin by moving the antenna towards the desired satellite's position. In order to check the success of the search on the TV screen the digital set-top box has to be tuned into a channel on that satellite. Of course new receivers have a pre-programmed channel list, so selecting a valid channel should not be a problem. However, since transponder data do change in the course of time it is advisable to check the pre-stored data against the current SatcoDX frequency chart.

Unfortunately there is no scale on the pole for turning the antenna to the East or the West. This makes finding the correct alignment as difficult as with a motorised antenna which allows receiving a great deal more channels without additional costs.

More TV Channels or Better Quality?

The benefits of MPEG-4 and DVB-S2

Peter Miller

We are living a in constantly changing environment. What was modern yesterday is a commonality today and will become outdated tomorrow. Digital TV is of course no exception from this rule.

One of the new techniques becoming more and more popular in satellite TV is the MPEG-4 coding. A professional would rather say MPEG-4 AVC, H.264 or MPEG-4.10. The terms are derived from the names (or numbers) of the published standards.

The well known MPEG-2 is over 10 years old and there is little doubt that MPEG-4 will be its successor. Its main advantage is, of course, the greater efficiency. While with MPEG-2 one can achieve a compression ratio of 50:1, the new technique offers something like 100:1. Such improvement means that using the same transponder, the number of the transmitted TV and radio channels can be doubled. So, network providers can significantly reduce their cost of owing or renting a transponder once they switch to MPEG-4 compression.

However, to do this, not only the transmitted signal has to be changed but also the decoders installed inside set-top-boxes must be of different type. Popular European receivers can decode MPEG-2 signals but not MPEG-4. The vast majority of them can handle only MPEG-2 with 4:2:0 chroma format. Few of them can additionally decode MPEG-2 with 4:2:2 chroma. This format ensures higher video quality and is used for some of the feed signals.

Unfortunately, the difference in video quality is not very noticeable. To get a significant improvement in video quality, we must switch from the Standard Definition TV (SDTV) to the High Definition TV (HDTV). The main difference between the standards is the video resolution. Most of the popular satellite channels transmitted as SDTV have the resolution of 720 x 576 pixels for PAL or 720 x 480 for NTSC. Some of the promotional channels may use worse resolution like 352 x 576 or even 352 x 288 pixels.

Such low resolution signals require small bit rate but their picture quality leaves much to be desired.

HDTV is a step in the opposite direction. It offers a resolution of 1920 x 1080 (or alternatively 1280 x 720 with the doubled number of full picture frames per second).

HDTV has nothing to do with the compression methods (MPEG-2 and MPEG-4). It requires roughly 4 times more bits per second than a good quality SDTV. The network provider can introduce one HDTV channel only if he switches off 4 SDTV channels. It would be a painful decision. No wonder that the introduction of MPEG-4 may significantly help making HDTV popular in Europe. With a simultaneous migration from MPEG-2 / SDTV to MPEG-4 / HDTV, one must trade only 2 SDTV channels per one HDTV channel.

And that's not all. Additional improvement in the maximum bit rate that a transponder relays can be achieved if the new kind of modulation is used. The modulation is named DVB-S2. This is an improved version of the commonly used DVB-S (QPSK modulation plus the error correction methods). DVB-S2 offers some 30% improvement in bit rate. In other words, if now we have 7 or 8 SDTV channels per transponder, DVB-S2 will allow us to have 10 such channels. Of course, the receiver's front end must be redesigned to deal with DVB-S2. The current receivers are useless here.

Now, imagine a simultaneous change from DVB-S + MPEG-2 to DVB-S2 + MPEG-4. This will give us 20 SDTV channels or 5 HDTV channels per transponder! Nothing prevents combining a number of HDTV and SDTV channels sent by a single transponder – for example 2 HDTV plus 12 SDTV channels (see figure). Exciting, isn't it?

The trials of MPEG-4 and DVB-S2 have been going on for some time now. Also several HDTV channels are now available in Europe (though not necessarily free-to-air). New MPEG-4 receivers are popping up. Probably, there will be an intermediate period during which MPEG-2, MPEG-4, DVB-S, DVB-S2, SDTV and HDTV signals will coexist in different combinations. We must be ready for significant changes in the satellite TV in the next few years.
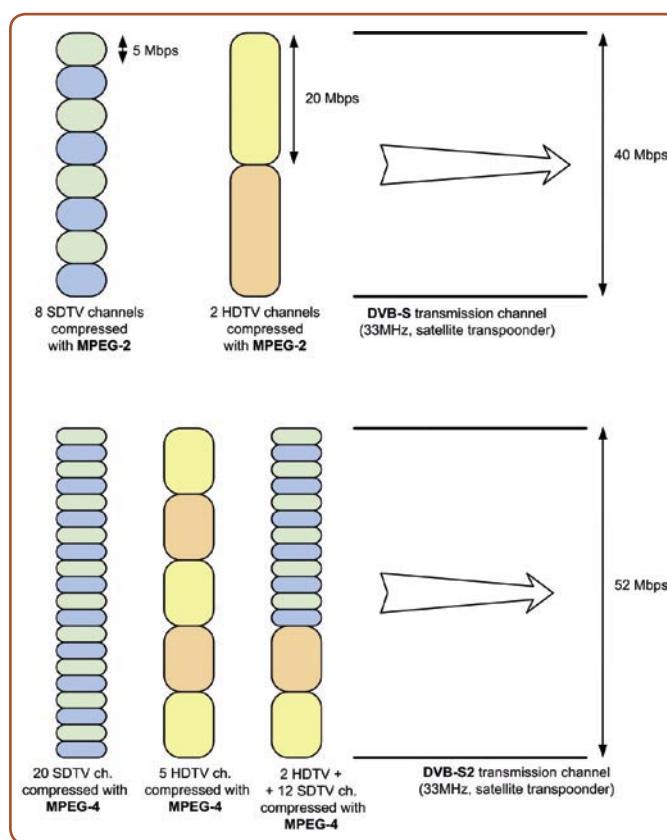
MPEG-4/DVB-S2 versus classic MPEG-2/DVB-S transmission.

Eycos S50.12 PVR
The Goose That Laid the Golden Egg?

We've been waiting a long time for the first PVR receiver from the very young company Eycos out of South Korea. On a dark and gray cold winter morning the delivery truck trudged through a thick layer of snow all the way to our doors. Finally, the long awaited test unit is sitting here in front of us.

We were very excited while opening the package and the initial impression from looking at the outside of the receiver did not disappoint us. Sleek but elegant is the best way to describe the S50.12 PVR. The front panel sports a four-digit display as well as eight buttons for complete operation of the receiver should the remote control go missing. Behind a centrally located flap are hidden a pair of CI slots that can be used with a variety of modules (Irdeto, Seca, Viaccess, Conax, Nagravision, etc.)

The nicely equipped rear panel also put a smile on our faces. In addition to the IF input and looped-through output for the two tuners, there are also a set of Scart connectors as well as an S-Video connection, three RCA jacks for video and stereo audio, a programmable 0/12-volt output, an RS-232 serial interface, a USB 2.0 port for connection to a PC, an RF modulator and also an optical digital audio output for perfect sound. Rounding out all of this is a main power switch.

The included remote control is ergonomically designed, clearly labeled and sits nicely in your hand. Eycos also provided a second remote control that is smaller and equipped with limited functions. This could be quite practical when you consider that your nosy little one could have otherwise easily messed up the entire programming of the receiver.

We also need to highlight the user manual written in English and German. It is clearly and concisely written, covers every aspect of the receiver and is properly illustrated where it needs to be. All in all, it should be able to answer almost any question you might have regarding the operation of the S50.12PVR.

Everyday Use

To our astonishment, this test receiver came to us preprogrammed with a very up-to-date channel list for Astra, Hotbird and Turksat. If you happen to have a somewhat standard antenna configuration, then it should take no time at all to get the first pictures on your TV set. Accessing the nicely designed and animated main menu reveals a number of additional setting possibilities. The Eycos is quite international: aside from German, English, French, Italian, Spanish, Polish, Hungarian and Dutch, you can also choose from Romanian, Russian, Swedish, Turkish and Farsi as an OSD language.

The Main Menu is divided into six sections. In the first section, "Channel Search", all of the settings for antenna configuration as well as satellite data are handled. The receiver supports the DiSEqC protocols 1.0, 1.1, 1.2 and 1.3 (USALS). Every user, regardless of whether they have a WaveFrontier antenna or a DiSEqC motor, should have no trouble adapting the receiver to their system. Contrary to receivers from other manufacturers, the Eycos was designed in such a way that the user need not worry about which tuner to select except for determining whether both tuners would be fed with the same satellite signal. We find this to be a very practical feature and once everything is correctly set up, the user will no longer need to think about which tuner to use. The receiver handles this all by itself.

It has become almost standard for most receivers to offer an automatic, a manual and an expanded PID scan. The Eycos is no exception here. Of course a network scan is also available. At a little over three minutes, the automatic scan of 80 transponders is quite good although the receiver needs quite a bit of time to actually store all of the channels it found. For the manual channel scan, Eycos came up with a rather interesting idea: if a single transponder needs to be scanned that is not yet in the receiver's transponder list, there is one transponder in the list with a frequency of 00000. Simply enter the desired new frequency and once the channel scan has been completed, this new frequency will be transferred to the transponder list. This can be done as many times as needed to complement the existing transponder list.

TEST RESULT	SATELLITE INTERNATIONAL TELE										
Features		✗	✗	✗	✗	✗	✗	✗	✗	✗	
Channel Memory		✗	✗	✗	✗	✗	✗	✗	✗		
Channel Scan Speed		✗	✗	✗	✗	✗	✗	✗	✗		
Channel Switching Speed		✗	✗	✗	✗	✗	✗	✗	✗		
Video Quality		✗	✗	✗	✗	✗	✗	✗	✗	✗	
Audio Quality		✗	✗	✗	✗	✗	✗	✗	✗	✗	
Tuner Sensitivity		✗	✗	✗	✗	✗	✗	✗	✗	✗	

If up until now you have been frustrated with the poor picture quality of CVBS signals, you can seek help in the "User Settings" menu. The receiver can provide the video signal in CVBS, RGB and S-Video. YUV for connection to flat screen TV's or projection systems is unfortunately not available. The reception of US feeds in NTSC format did not present any problems; the automatic switching between PAL and NTSC signals functioned perfectly.

The remaining three menus deal with CI modules, the hard drive and subsequent decryption: the receiver is capable of recording multiple encrypted programs on the hard drive for later decryption. As long as the CI module supports this function, the receiver can also record two decrypted programs at the same time. In our test using an Alphacrypt module, this also worked without any difficulties.

Features

After this excursion through all of the S50.12PVR's setting possibilities, we wanted to immerse ourselves in the features used on a daily basis. The capability to record four programs at the same time jumped right out at us. Since this receiver uses only two tuners, the four programs to be recorded would have to be on two transponders. Unfortunately, the receiver only shows the number of current recordings. If you want to know what and for how long/time remaining, the proud owner will only find out after pushing the large PVR button on the remote control and checking out the list of previously recorded programs. A little improvement here might not be a bad idea since with up to four simultaneous record-

ings, it won't be too difficult to lose sight of what is going on. Contrary to most other receivers, the list of recordings in the Eycos is in descending order – that is, the last recording is shown first. At first it may take some getting used to, but after a while you won't want it any other way.

After every channel change – if desired this can be set to a gradual fade out/fade it – an Info bar is displayed that shows information on the current and upcoming program.

The EPG is very logically designed, is very quickly loaded with data and displays all of the information correctly and legibly.

The Eycos manufactured tuner is very sensitive to incoming signals and was easily able to handle the weak signals on Arabsat 2D at 26° east. The receiver also mastered the SCPC test signal on Pas12; the signal with a symbolrate of only 1.325 Ms/sec. was no problem for the receiver.

Even though the movie industry and some PayTV providers might not be happy with this feature, nearly every manufacturer must equip their PVR receivers with a USB 2.0 interface in order to survive in the market. Eycos is no different. In fact they seem to have put a little extra effort in this in that they managed to find a chipset that can take full advantage of the capacity of USB 2.0. It took just about three minutes to transfer a 2GB

recording from the receiver to a PC and this without any supplemental software since Windows recognized the hard drive in the receiver. Eycos also offers a settings editor at no charge that can be used to edit the channel and favorites lists comfortably on the PC.

For dealers there's even a self-diagnostic menu. After entering a code known only to dealers, they can determine if the receiv-

er's basic settings are functioning correctly. This is a powerful tool for the service tech. The question now becomes, is this receiver really the goose that laid the golden egg? We believe that it is definitely headed in that direction. The manufacturer is willing to please and has promised to react to our small list of bugs that we stumbled on during our tests. Without a doubt, Eycos has developed a very solid receiver with the S50.12PVR.

Expert conclusion

+

The Eycos S50.12PVR is a solid and easy-to-use receiver that did not show any problems during our tests. Especially noteworthy is the extremely fast USB 2.0 interface as is the capability to record four programs simultaneously.

Thomas Haring
TELE-satellite
Test Center
Austria

–

Here and there we found some small bugs in the software of this receiver. The bug list as well as a wish list was forwarded to the manufacturer.

Main menu

Satellite scan

Satellite list

Info bar

Vantage VT-X111SCX
Elegant Design,
Conax Embedded and Much More…

The digital satellite receiver market is currently booming and so it should come as no surprise that one new receiver after the other is finding its way into our test labs. The VT-X111SCX is the newest entry into this market from the German manufacturer Vantage. Just taking the receiver out of the package gives you the immediate impression of a

sleek and elegant box that should have no trouble fitting in with any living room environment. The front panel is very nicely equipped: in addition to the obligatory buttons for operation of this box with a missing remote control, there is also a four-digit display as well as a card reader and a set of CI slots hidden behind a flap.

menus, although the receiver has no trouble handling PAL and NTSC signals. Before you can actually start to enjoy watching TV, you still need to configure the desired satellites in the Installation menu and then perform a channel scan. 113 European and Asian C-band and Ku-band satellites are preprogrammed in this box; eight additional satellites can be manually set up. This number of satellites

This receiver is available in three different versions: as a simple FTA receiver, as a CI box and also as one with embedded Conax. The

cally arranged and easy to read. Overall, the workmanship of the receiver and remote control left us with a very good impression.

Additional basic settings are handled in the System Configuration menu. The receiver can be set to acquire the current time auto-

rear panel is also very pleasing to the eye. You have the IF input with looped-through output, the two Scart connectors, three RCA jacks for video and stereo audio outputs, a coaxial digital audio output, an RS-232 serial interface to link this box to a PC, a UHF modulator and a main power switch. What more do you want? The included remote control sits nicely in your hand with buttons that are very logi-

Everyday Use

After turning on the receiver for the first time, the VT-X111SCX displays the main menu so that the proud owner can immediately take care of the initial settings such as language selection and satellite configuration. The user can select from German, English, French, Italian, Spanish, Hungarian, Arabic, Persian and Greek.

matically from the provider and can therefore offer the possibility to automatically switch between standard time and daylight savings time. The video signal can be supplied in CVBS and RGB and also in 4:3 and 16:9 formats. YUV or S-Video outputs for connection to projection TV's or flat-screen monitors were unfortunately not available.

The desired color system cannot be manually selected in the

makes the VT-X111SCX one of the top receivers in terms of preprogrammed satellites. If only the satellite and transponder list were more up-to-date, it could have been ranked #1.

In order to use as many satellites as possible, the Vantage supports the DiSEqC 1.0, 1.2 and 1.3 protocols. So, if it's a DiSEqC motor you want to control, you can do this very easily with the USALS protocol. Unfortunately, owners of

TEST RESULT											
Features	☀	☀	☀	☀	☀	☀	☀	☀		
Channel Memory	☀	☀	☀	☀	☀	☀				
Channel Scan Speed	☀	☀	☀	☀	☀	☀	☀	☀		
Channel Switching Speed	☀	☀	☀	☀	☀	☀	☀	☀		
Video Quality	☀	☀	☀	☀	☀	☀	☀	☀		
Audio Quality	☀	☀	☀	☀	☀	☀	☀	☀		
Tuner Sensitivity	☀	☀	☀	☀	☀	☀	☀	☀	☀	

SATELLITE INTERNATIONAL TELE

multifeed antennas with multiple LNB's might not have much luck since this box does not support DiSEqC 1.1 nor does it come with a programmable 0/12-volt output.

A sufficient array of prepro-grammed local oscillator frequencies (LOF) are available for the C-band and Ku-band and should you need an unusual value such as for the S-band, these can be entered manually. The channel scan of an 80-transponder satellite was competed very quickly; just about four minutes was needed for the VT-X111SCX to process every transponder. The manufacturer also plans to include the SatcoDX protocol at some point in the future so that up-to-date transponder and channel data can be comfortably downloaded from a PC. It can't get much easier and faster than this.

In addition to the automatic channel scan, it is also possible to perform a manual transponder scan. Transponders can also be added, deleted or edited. The experts will be especially happy with the manual PID entry feature.

Once all of the initial settings have been taken care of and a channel scan has been completed, the main menu can finally be closed and the Vantage VT-X111SCX will switch over to the first channel that it found. An Info bar appears showing data on the current channel (if teletext is available, language selection, etc.) and also displays the EPG information for the current and upcoming program.

The Info button can be used to access expanded programming information. With the EPG button all available EPG data of the channel can be viewed. The presentation of all the data is very clearly organized and optically pleasing to the eye. As long as it's made

available, expanded programming information is also displayed.

As with most other receivers, the channel list can be called up by pushing the OK button. This also provides access to a variety of sorting possibilities as well as the ability to restrict access to only specific satellites. The Favorites button in the lower right corner of the remote control gives you single-button access to all of your favorite programs. The time to switch between channels is fair; an average of one second is needed for picture and audio to be correctly presented.

If the TV in use doesn't have its own teletext decoder, the decoder in the VT-X111SCX can help save the day. And so that you won't miss any of your favorite TV series on those days when you might not be at home, the receiver also comes with an eight-event timer.

The model that we tested came with an integrated card reader for the Conax encryption system. While this system was previously used primarily in the Scandinavian countries, you can find it being used more and more now in central and western Europe. A test with a Conax card functioned perfectly – as soon as the card was inserted the channel became visible. The tuner from the manufacturer is very sensitive: even weak signals with high FEC's did not present any problems for this receiver. Our SCPC

test on NSS7 at 22° west with a 1028 Ks/s signal did not work out too well. Only signals starting at 2.0 Ms/s could be properly handled and this is what the manufacturer specifies anyway in their datasheets.

The RS-232 interface can be

used to upload new software and channel lists and will have the future ability to upload up-to-date SatcoDX data as well. The included user manual is written in Russian and German – the manufacturer should consider making the user manual somewhat more international.

EPG

Info bar

Expert conclusion

Thomas Haring
TELE-satellite
Test Center
Austria

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The VT-X111SCX is an easy-to-use family-friendly digital receiver. The menus are very nicely organized and legible. Through its CI slot and integrated card reader this receiver also has no problems handling PayTV signals.

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The receiver is missing the DiSEqC 1.1 protocol for multifeed antennas and the user manual could stand for some improvement.

Main menu

Channel edit

Kathrein UFS 821
Solid German Workmanship

Kathrein, a traditional manufacturer out of Germany, wants to offer the UFS 821 – a Sound & Vision Center – to its customers. It would be a center for audio and video. Is that a good idea? We think so. The entire system is packaged in an elegant cabinet that is available in either black or silver. On the front panel is a large multifunction control for volume, channel selection, etc. An easy-to-read VFD display was positioned in the middle by the manufacturer and shows the channel name as well as other information.

Behind a flap can be found two CI slots, four buttons for operation of the receiver without a remote control and also a USB interface. As expected from Kathrein, the rear panel is nicely equipped: in addition to the IF input and looped-through output and the two Scart connectors, you will also find three RCA jacks for video and stereo audio, an S-video output, an RS-232 interface, a USB interface for connec-

makes the buttons a little harder to reach.

Everyday Use

The UFS 821 is for the most part a plug & play receiver. Simply connect the two tuners to the LNB's or multiswitches, turn the box on and, thanks to the preprogrammed channel list for Astra and Hotbird, in most cases installation in central Europe will immediately produce a picture on the TV. If you are able to receive more than one satellite with your system (DiSEqC 1.0, 1.2 and 1.3 are supported), you simply access the installation assistant to help set of the receiver step-by-step.

Once the desired OSD language has been selected (English, German, French, Italian, Spanish, Dutch, Polish and Turkish are available), the next step would take you to the tuner settings.

From here you end up in the satellite list from which the desired satellites can be selected. The receiver comes preprogrammed with 21 European satellites. The box even offers the partitioning of the satellite list into four continents.

The last and most important step of the installation assistant is the automatic channel scan. Six minutes was needed to scan 80 transponders without the network search activated. Of course a manual scan (with or without PID entry) is also available as is the ability to edit individual transponders, create new entries or delete existing ones. As with other Kathrein receivers, new programming data can be directly loaded into the receiver via satellite.

SatcoDX Compatibility

Especially exciting is this receiver's SatcoDX compatibility. The Editor program made available from the manufacturer at no charge can import the up-to-date SatcoDX data in SDX format. This is great news for owners of motorized systems. It is unfortunate though that Kathrein only provided the UFS 821 with enough room for 4000 channels. It won't take long to fill this list up.

The built-in tuner is relatively sensitive and managed to handle narrowband SCPC signals starting at 2.0 Ms/sec. in our tests without

any problems. Additional basic settings can be handled in the nicely organized main menu. The receiver can provide the video signal in CVBS, RGB, S-Video or YUV formats for flat screen TV's or projection systems. PAL and NTSC are also supported.

The receiver comes from the

tion to a PC and an optical digital audio output.

The included user manual is of exceptional quality and describes even for the beginner all functions and settings of the UFS 821 in great detail. We were not as elated with the remote control. It sits nicely in your hand but the OK button as well as other operational buttons were located near the bottom of the remote. On the one hand we are not used to seeing this and on the other it

TEST RESULT	SATELLITE INTERNATIONAL TELE												
	Features	✗	✗	✗	✗	✗	✗	✗	☐	☐	☐	
	Channel Memory	✗	✗	✗	✗	✗	☐	☐	☐	☐	☐	
	Channel Scan Speed	✗	✗	✗	✗	✗	✗	☐	☐	☐	☐	
	Channel Switching Speed	✗	✗	✗	✗	✗	✗	☐	☐	☐		
	Video Quality	✗	✗	✗	✗	✗	✗	✗	✗	✗	☐	
	Audio Quality	✗	✗	✗	✗	✗	✗	✗	✗	✗	☐	
	Tuner Sensitivity	✗	✗	✗	✗	✗	✗	✗	✗	☐	☐	

DVR Manager

factory with a 160 GB hard drive. This is enough for up to 100 hours of TV and radio recordings. Operation of the hard drive is actually quite clever in the UFS 821. Should the available space on the hard drive not be enough for additional recordings, the receiver can be set to automatically delete older data. The timeshift buffer for time-delayed TV recordings is manually adjustable and can be set for several hours.

Should one or more encrypted recordings end up on the hard drive, the UFS 821 provides the ability to decrypt the signal after the fact. The recording would be marked in the replay list and as soon as the receiver is placed in standby mode, it begins to decrypt the recording.

Surprise!
EPG from tvtv

We were pleasantly surprised when we pressed the EPG button. So that the general overview of all the available programs would not be lost and so that the user was provided with very up-to-date EPG data for up to a week in advance, Kathrein has not only relied on a channel's own EPG data but has also entered into a

cooperation with the company tvtv.Services. This company with its Internet programming guide at www.tvtv.de or www.tvtv.co.uk is a household name in many European countries. The up-to-date tvtv data can be set to download into the receiver via satellite at a preset time thus making this up-to-date data available at any time.

Additional features such as "Now Playing" with the current program of all 60 TV channels listed by tvtv can be sorted by Genre, by daily tips plus the detailed information of all programs can be displayed. The Search function can be used to help keep an eye out for specific programming. Thankfully, with tvtv EPG you are no longer limited to a certain number of channels; instead, all content is available since the receiver stores the entire database on the hard drive.

Eventually, the available free space on the included 160GB hard drive will come to an end. At this point it would be a good time to transfer your favorite recordings to your PC and from there perhaps burn them to a DVD. Thanks to the integrated USB 2.0 interface, this is absolutely no problem. The necessary software for this (DVR Manager) is also provided free of charge by Kathrein on their web site. In just 16 minutes a 2GB file was transferred.

When the DVR Manager is started, you get the idea that the

Linux-based Kathrein receiver can still do more. It is possible to transfer jpeg pictures and mp3 music files to the box for playback. The USB 2.0 interface on the front panel can be used to connect a portable hard drive or even a digital camera through which, video, mp3 and image data can be transferred. In our tests this functioned perfectly using a standard digital camera.

Conclusion

Thanks to the large multifunction control and the VFD display, this box can easily be used as a simple radio receiver even without it connected to a TV. At least now we know what Kathrein means by the term Sound & Vision Center. It would be a great pity if it were only used for this purpose, but satellite radio fans could use the UFS 821 as an ideal radio receiver.

TECHNIC DATA

Manufacturer	KATHREIN-Werke KG, Rosenheim, Germany
Tel.	+49 (0) 8031 184-0
Fax	+49 (0) 8031 184-306
E-Mail	sat@kathrein.de
Model	UFS821
Function	Digital Satellite Receiver with PVR Function
Channel Memory	4000
Satellites	45
Symbol Rate	2-45 Ms/sec.
SCPC Compatible	Yes
USALS	Yes
DiSEqC	1.0 / 1.2 / 1.3
Scart Connectors	2
Audio/Video Outputs	3 x RCA
UHF Output	Yes
0/12 Volt Output	No
Digital Audio Output	Yes
EPG	Yes
C/Ku-Band Compatible	Yes
EPG	Yes
Power Supply	100-240 VAC, 50/60 Hz
SatcoDX Compatible	Yes

Expert conclusion

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The Kathrein UFS 821 is a very elegant and easy-to-use receiver that, thanks to the tvtv EPG, will make the user very happy. The USB transfer to the PC functioned without any problems. It would be an ideal receiver for the radio freak.

Thomas Haring
TELE-satellite
Test Center
Austria

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The preprogrammed satellite list could be bigger. If the receiver were to support the DiSEqC 1.1 protocol, it would also make an interesting box for the DXer. The data transfer rate of the USB connections could be faster.

Channel Manager (SatcoDX)

Info Bar

tvtv EPG

Tuner Setup

Star Sat SR-X2500CUCI
A Newborn Star With Numerous Pay-TV options and USALS

Like they often say, even a good chef can ruin his first pancake. The same might be also true with receiver manufacturers. It takes an enormous work to create a perfect receiver that everyone would be truly satisfied with. And we're not only talking about hardware engineers nowadays, in the digital world the software can be more impor-tant. But if the hardware is perfect, and something went wrong in the software kitchen, the overall impression for the product could be worse than it deserves. Luckily, when receivers like StarSat SR-X2500CUCI hit the market, both hardware and software are normally brought as close to sophis-tication as possible.

tion. To get to this submenu or other "branches" of the Instal-lation "tree", the usual "0000" PIN code should be entered each time, until you decide to change it to something your kids won't guess so quickly.

The Receiver

Looks like the days of huge and ugly black boxes are now gone. With it's compact and stylish silver case, the modern receiver like SR-X2500CUCI, can really become a "star" of your TV cabi-net. The buttons, available on the front panel (Standby on/off, "OK", "Menu", "Cancel", and last but not least the round button for moving the cursor left, right, down or up) allow the user to get access to the majority of receiver's functions. If in your area the FTA is not so popular, or you just would prefer to see one of the latest movies on your local Pay-TV channel, open the flap on the right side of the front panel. If the package you're interested in uses Viaccess, Irdeto, Cryptoworks, Nagravi-sion, Conax or Mediaguard (Seca) to encrypt its transmissions, go ahead and insert the smart card you have in the upper slot behind the flap. It's an universal smart card slot, and should properly handle the above-mentioned con-ditional access systems. Should the card you have belong to any other system, just get the needed CI module. With 2 CI slots of

SR-X2500CUCI, you are seconds away from watching the channels you've paid for.

But before we can go that far, let's first connect the LNBs, TV set, VCR and a HiFi system. The back panel of SR-X2500CUCI has one LNB input (with loop-through output), two scarts, three RCA outputs for video and audio, while the fourth is used for a 0/12V switch. Let's also not forget about the serial port for connecting your receiver to PC, as well as the terrestrial antenna input and a modulator output. Not bad, but nowadays it wouldn't hurt also to have the outputs for S-Video and digital audio.

The remote control can really be called ergonomic – it's lightweight and all buttons are located where you would intuitively expect them to be.

Installation

When you power on your new SR-X2500CUCI for the very first time, prepare to answer a lot of questions on the "User Setting" screen. But don't worry, they

are quite simple. Like what lan-guage would you like the menu to appear in (you can choose from English, German, French, Turkish and Arabic), what would be your preferred audio and subtitle lan-guage, and if you would like the satellites listed in other menus to be sorted by name or position.

If you don't like to spend your time endlessly reading the user manual (which is not that bad after all, but is available only in English), simply browse through the available menu items. One of them, called "Easy Installation", would surely attract your atten-

Channel Search

Pre-programmed satellites cover mainly Europe and Asia, from 55 West to 148 East . These satellites, as well as four blank positions, called "Addsat 1-4", can be renamed or otherwise reconfigured. There are mainly two channel search modes – the expected automatic and manual search, with various sub-options. Unfortunately, the blind scan is not available yet.

As far as our tests showed, it makes more sense to choose the Network search. It takes almost the same time as the regular

TEST RESULT										
Features	✗	✗	✗	✗	✗	✗	✗	✗		
Channel Memory	✗	✗	✗	✗	✗	✗				
Channel Scan Speed	✗	✗	✗	✗	✗	✗	✗			
Channel Switching Speed	✗	✗	✗	✗	✗	✗	✗			
Video Quality	✗	✗	✗	✗	✗	✗	✗			
Audio Quality	✗	✗	✗	✗	✗	✗	✗	✗		
Tuner Sensitivity	✗	✗	✗	✗	✗	✗	✗	✗		

one, but results in much more channels saved in your receiver's list. For example, on Astra 1 at 19.2 East the regular automatic search takes 4 minutes 18 seconds, saving 573 TV and 315 Radio channels, while Network search, taking just one minute longer, adds another 53 TV and 28 Radio channels. On less popular satellites, like Eutelsat W4 at 36 East, there is no visible difference between the two search modes. Both bring 74 TV and 3 Radio channels in 2 minutes 12 seconds. It is quite fast, but if you're looking for some particular channel, it might not be in the final list. Even though we upgraded the firmware shortly before performing the above described tests, some important transponders were missing on both satellites. And, traditionally, the only way out is to use the good old Manual Search, which can be easily done thanks to always-up-to-date SatcoDX chart.

SR-X2500CUCI locks to both SCPC and MCPC carriers flawlessly, and its tuner sensitivity also needs to be complimented – such linearly polarized channels, as Lider TV and 2M from Eutelsat Sesat were perfectly received, while for 36 East position we used an LNB set up to receive circular polarizations. Two other receivers in our lab were unable to receive them because of insufficient signal, while SR-X2500CUCI perfectly locked to both carriers.

Everyday Use

Zapping speed differs notably, from 0.3-0.5 seconds, if you are switching between the channels of the same transponder, 0.7-1 second, if you are selecting the next FTA channel from a different

transponder, and it takes up to 1.5-2 seconds for the next PayTV channel.

Once the channel is selected, an information bar would appear in the bottom of the screen. Selecting encrypted channels, conditional access system of which is understood by the universal smart card slot of SR-X2500CUCI would also display the used encryption systems' names. However, if something more exotic, like Z-crypt is used, the receiver will just say "Scrambled Channel", unless you have the needed CI-module and a smartcard for it.

Actual versions of SR-X2500CUCI firmware have a lot of nice features, which both DXers and regular users would appreciate. For example, the fastest way to find the channel you're interested in is no longer browsing through your endless channel list. Simply click the "FN" button on the remote control and enter the first letters of that channel's name. Two more clicks and voila – you are already watching it.

Electronic Program Guide (EPG) is fast, however, you have to get used to the way it's presented in SR-X2500CUCI. Once the EPG button on the remote control is pressed, the same channel list would appear, as after pressing "OK", but with different options. The main disadvantage of such

EPG presentation is – it's not possible to see at the same time what is being broadcasted by other channels as well – the classic grid presentation would still be more preferable.

Even though the menu of the receiver can be only displayed in 5 languages at the moment, special characters (like Russian) are

correctly displayed both in the Channel List and in EPG. However, with channel names transmitted in a font different from Latin, it would not be possible to use the "FN" function to quickly locate channels in a long list. Renaming them in the "Edit" mode is also unfortunately impossible, while in the Channel List mode only Latin letters can be used.

TECHNIC DATA		
Manufacturer		STAR SAT,PO Box 42291, Dubai,United Arab Emirates
Website		http://www.star-sat.com
E-mail		starsat @emirates.net.ae
Fax		+971-4-2287765
Model		SR-X2500CUCI
Function		Digital Satellite Receiver with 2 CI slots and an universal integrated module
Channel Memory		4000
Symbol rate		2 – 42 Ms/s
DiSEqC		1.0/1.2/1.3/USALS
0/12V Output		Yes
Scart Connectors		2
Video/Audio Output		Yes, RCA
Digital Audio Output		No
Color System		PAL/NTSC
S-VHS Output		No
Modulator		Yes
C/Ku-band Compatible		Yes
SCPC Compatible		Yes
EPG		Yes
Teletext		Yes
USB 2.0 Connection		No
Power Supply		90-250 V, 50/60 Hz
Power Consumption		Max. 30 W

Channel list

Automatic channel search

Channel searching

Teletext

Expert conclusion

Nickolas Ovsyadovsky
TELE-satellite
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SR-X2500CUCI is a good choice both for regular users and DXers. Presence of 2 CI slots plus an universal smart card slot means great flexibility for the fans of PayTV reception. DiSEqC, USALS support and 0/12V output make multi-satellite reception easy. Nice features, like the "FN" function, make the operation of this receiver even more pleasant.

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It would be nice to have digital audio and S-Video outputs. Majority of users would still prefer to have the EPG presented as a grid. Although letters other than Latin are supported, in some menus they are still not displayed correctly. And unfortunately, the recording timer is also missing in current firmware. Hopefully, such slight software minuses will be shortly fixed in frequently appearing firmware updates.

5.0 East — SIRIUS 2,3

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.721	H	CASTOR BROADCASTI	MPG2	17140	3	33	34	33	
T	11.823	V	TV1000 Ru Kino	MPG2	27500	3	7081	7082	7081	Russian
T	11.862	V	Nelonen	MPG2	27500	3	3471	3472	3471	Finnish
T	11.938	V	Quiz Nation	MPG2	27500	3	3621	3622	3621	Original
T	11.958	H	TVCI	MPG2	27500	3	50	51	50	Russian
T	11.958	H	TV Center	MPG2	27500	3	80	81	80	Russian
T	11.977	V	TV4 Fakta	MPG2	27500	3	2181	2182	2181	Original
T	11.996	H	SvSp	MPG2	27500	3	4031	4032		Swedish
T	11.996	H	SportN	MPG2	27500	3	4061	4062	4061	Norwegi
T	12.054	V	Cartoon/TCM	MPG2	27500	3	1171	1172	1171	Finnish
T	12.054	V	Cartoon/TCM	MPG2	27500	3	1171	1173	1171	Danish
T	12.054	V	Cartoon/TCM	MPG2	27500	3	1171	1174	1171	Swedish
T	12.054	V	Cartoon/TCM	MPG2	27500	3	1171	1175	1171	Norwegi
T	12.265	H	ORT 1	MPG2	27500	3	167	108	160	Russian
T	12.265	H	ORT 1	MPG2	27500	3	611	612	616	Russian
T	12.303	H	Quiz Nation	MPG2	25547	7	1460	1420	1460	English
T	12.338	H	Cinemax	MPG2	27500	3	2101	2102	2101	Romanian
T	12.338	H	HBO	MPG2	27500	3	6101	6102	6101	Romanian
T	12.418	H	Betfred	MPG2	27500	3	110	100	110	
T	12.465	H	bTV	MPG2	10787	7	308	256	50	Bulgari
T	12.465	H	TTVI	MPG2	10787	7	410	420	70	Bulgari
T	12.465	H	VTK	MPG2	10787	7	440	450	4440	Bulgari
T	12.634	H	TV1000 Balkan FSS	MPG2	14463	3	6421	6422	6421	Original

7.0 East — EUTELSAT W3A

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.150	H	T-SYSTEMS D4/D118	MPG2	11264	1	2100	2200	2100	
T	11.302	H	TELESUR	MPG2	27500	3	145	146	145	Spanish
T	11.302	H	Tiziana Sat	MPG2	27500	3	147	148	147	Italian
T	11.302	H	Canale 50	MPG2	27500	3	151	152	151	Italian
T	11.302	H	Jolly sat	MPG2	27500	3	154	155	154	Italian
T	11.302	H	TV SRI	MPG2	27500	3	263	519	263	
T	11.342	H	RTS 1	MPG2	27500	2	6102	6103	6103	
T	11.513	H	TV5	MPG2	27500	3	3522	3642	3522	French
T	11.678	H	Sky Turk	MPG2	30000	3	2140	2240	2140	Turkish

10.0 East — EUTELSAT W1

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.152	H	RTS SAT	MPG2	2170	3	308	256	8190	
T	11.175	H	Al Forat	MPG2	2532	3	308	256	8190	Arabic
T	11.178	H	Beladi Satellite	MPG2	2532	3	308	256	8190	Arabic
T	11.189	V	Eurotic TV	MPG2	6185	5	255	256	255	
T	11.189	V	InXtc TV	MPG2	6185	5	511	512	511	
T	11.189	V	Xplus TV	MPG2	6185	5	767	768	767	
T	11.189	V	Eurotic 2	MPG2	6185	5	1023	1024	1023	
T	12.718	H	MGM International	MPG2	7036	3	4194	4195	2312	English

13.0 East — HOTBIRD 1,2,3,4,6

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	10.719	V	Canal+ Sport 2	MPG2	27500	3	172	128	172	
T	10.758	V	TPS Cinecomedy	MPG2	27500	3	820	830	820	French
T	10.758	V	TPS Cineclub	MPG2	27500	3	920	930	920	French
T	10.758	V	BBC PRIME	MPG2	27500	3	1020	1030	1020	English
T	10.775	H	Barvaria	MPG2	28000	3	1060	1020	1060	
T	10.775	H	AFN Kaiserslauter	MPG2	28000	3	1860	1820	1860	English
T	10.775	H	AFN Bavaria Z-FM	MPG2	28000	3	2360	1022	2360	English
T	10.775	H	AFN Hessen Z-FM	MPG2	28000	3	2360	1722	2360	English
T	10.775	H	AFN Hessen PowerN	MPG2	28000	3	2360	1730	2360	English
T	10.775	H	AFN Bavaria P.Net	MPG2	28000	3	2360	2330	2360	English
T	10.775	H	AFN Heidelberg Z-	MPG2	28000	3	2360	1922	2360	English
T	10.775	H	AFN Kaiserslauter	MPG2	28000	3	2360	1822	2360	English
T	10.775	H	AFN Kaiserslauter	MPG2	28000	3	2360	1830	2360	English
T	10.775	H	AFN Heidelberg Po	MPG2	28000	3	2360	1930	2360	English

13.0 East — HOTBIRD (continued)

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	10.796	V	Paris Premiere	MPG2	27500	3	720	730	720	French
T	10.796	V	Paris Premiere	MPG2	27500	3	720	731	720	English
T	10.796	V	SIC International	MPG2	27500	3	1220	1230	1220	Portugu
T	10.796	V	M6	MPG2	27500	3	1320	1330	1320	French
T	10.834	V	I TELE	MPG2	27500	3	1020	1030	1020	French
T	10.853	H	Tele A	MPG2	27500	3	34	32	33	Italian
T	10.853	H	Melli TV	MPG2	27500	3	1280	1281	1280	
T	10.853	H	Eurotic TV 2	MPG2	27500	3	2988	2989	2990	
T	10.873	V	France 5	MPG2	27500	3	820	830	820	French
T	10.911	V	LCI	MPG2	27500	3	820	830	820	French
T	10.931	H	MTV Europe	MPG2	27500	3	514	670	8190	English
T	10.949	V	Sun KTV	MPG2	27500	3	5901	5911	5901	Tamil
T	10.949	V	Al Forat	MPG2	27500	3	7201	7211	2310	Arabic
T	10.971	V	GR Sat	MPG2	27500	3	262	518	262	Greek
T	10.971	V	MRTV-3	MPG2	27500	3	264	520	264	
T	10.971	V	Tre Venezie Chann	MPG2	27500	3	273	529	273	Italian
T	10.971	V	Telenova	MPG2	27500	3	274	530	274	
T	10.971	V	Russia Today	MPG2	27500	3	276	532	276	English
T	11.013	H	Studio TV Company	MPG2	27500	3	258	514	258	Croatian
T	11.013	H	Conto TV	MPG2	27500	3	273	529	273	Italian
T	11.013	H	Calabria Channel	MPG2	27500	3	274	530	274	Italian
T	11.013	H	RTVi	MPG2	27500	3	275	531	275	Russian
T	11.013	H	RTVi Nashe Kino	MPG2	27500	3	278	534	278	Russian
T	11.013	H	RTVi Detsky Mir/T	MPG2	27500	3	280	536	280	Russian
T	11.013	H	TVP Erotyka	MPG2	27500	3	290	546	290	Polish
T	11.013	H	ARKADAS TV	MPG2	27500	3	291	547	291	
T	11.054	H	TSBS-MB-sl	MPG2	27500	5	410	301	410	
T	11.054	H	TSBS-MB-s	MPG2	27500	5	410	300	410	
T	11.075	V	VH1 Polska	MPG2	27500	3	163	92	163	Polish
T	11.075	V	Viva Polska	MPG2	27500	3	164	96	164	Polish
T	11.095	H	Sigonella	MPG2	28000	3	410	400	410	Italian
T	11.137	H	Motors TV	MPG2	27500	3	521	681	521	German
T	11.137	H	Motors TV	MPG2	27500	3	521	701	521	Greek
T	11.159	V	TV4	MPG2	27500	3	289	294	289	Polish
T	11.159	V	Polsat Sport	MPG2	27500	3	305	306	305	Polish
T	11.159	V	Polsat Sport Extra	MPG2	27500	3	321	322	321	Polish
T	11.159	V	Zdrowie i Uroda	MPG2	27500	3	337	338	337	Polish
T	11.159	V	CNN International	MPG2	27500	3	369	370	369	English
T	11.178	V	Sisal TV	MPG2	27500	3	4422	4403	4422	
T	11.200	V	All Sex	MPG2	27500	5	386	387	386	Italian
T	11.200	V	People TV - Rete 7	MPG2	27500	5	400	401	400	Italian
T	11.200	V	Magic TV	MPG2	27500	5	408	409	408	Italian
T	11.200	V	Varese Sat	MPG2	27500	5	907	908	907	Italian
T	11.200	V	D'Anna Sat	MPG2	27500	5	913	914	913	Italian
T	11.220	V	Fox Crime	MPG2	27500	3	2560	2561	2560	Italian
T	11.220	V	Fox Crime	MPG2	27500	2	2560	2594	2560	English
T	11.283	V	VH1	MPG2	27500	3	165	100	165	Original
T	11.283	V	ESPN Classic Sport	MPG2	27500	3	169	116	169	Italian
T	11.283	V	ESPN Classic Sport	MPG2	27500	3	169	117	169	German
T	11.304	V	Telemarket 2	MPG2	27500	3	310	256	310	Italian
T	11.304	V	Ten Sport ME	MPG2	27500	3	324	325	136	Italian
T	11.304	V	Radio Italia TV	MPG2	27500	3	639	640	639	Italian
T	11.304	V	Hoy Publishing	MPG2	27500	3	1057	1058	1057	English
T	11.304	V	Videonaples	MPG2	27500	3	4387	4129	4387	Italian
T	11.344	V	Mediaset Premium 5	MPG2	27500	2	306	460	303	Italian
T	11.363	V	Euronews	WEGE						Italian
T	11.363	V	Euronews	WEGE						French
T	11.408	V	TVN	MPG2	27500	3	512	650	128	Polish
T	11.408	V	TVN Turbo	MPG2	27500	3	520	730	135	Polish
T	11.408	V	TV Gra	MPG2	27500	3	522	750	146	Polish
T	11.408	V	TVN	MPG2	27500	3	523	760	138	Polish
T	11.531	V	Jolly Sat	MPG2	27500	3	230	231	230	Italian
T	11.531	V	Canale 50	MPG2	27500	3	523	524	523	Italian
T	11.531	V	Telesur	MPG2	27500	3	525	526	525	Spanish
T	11.585	V	RTS Sat	MPG2	27500	3	1311	1312	8190	Serbian
T	11.585	V	Holidays in Greec	MPG2	27500	3	1403	1494	2316	Greek
T	11.585	V	Holidays in Greec	MPG2	27500	3	1403	1495	2316	English
T	11.585	V	Holidays in Greec	MPG2	27500	3	1403	1496	2316	German
T	11.585	V	Holidays in Greec	MPG2	27500	3	1403	1497	2316	French
T	11.585	V	BFM TV	MPG2	27500	3	1420	1421	1420	French
T	11.585	V	NRJ 12 HQ	MPG2	27500	3	1491	1492	1491	French
T	11.604	V	Tamasha	MPG2	27500	5	1056	1057	1056	
T	11.604	V	Tele A	MPG2	27500	3	1060	1061	1060	Italian
T	11.642	V	Hellas HDTV	MPG2	27500	3	2201	2211	2201	Greek
T	11.727	V	Iran TV	MPG2	27500	3	2801	2802	2800	Farsi
T	11.727	V	Nepali TV	MPG2	27500	3	2851	2852	2850	
T	11.785	H	PEN TV	MPG2	27500	3	1361	1362	1361	Farsi
T	11.785	H	Iran TV	MPG2	27500	3	1431	1432	1431	Farsi
T	11.785	H	Didar TV	MPG2	27500	3	1451	1452	1451	Farsi
T	11.938	H	Big Brother	MPG2	27500	3	519	720	519	Greek
T	11.938	H	Chasse & Peche	MPG2	27500	3	520	730	136	Greek
T	11.977	H	Fox Crime	MPG2	27500	3	2461	2462	2461	Italian
T	11.977	H	Fox Crime	MPG2	27500	3	2461	2463	2461	English
T	11.996	V	AXN	MPG2	27500	3	160	400	8189	Italian
T	11.996	V	SKY On Air	MPG2	27500	3	161	404	161	Italian
T	11.996	V	SKY On Air	MPG2	27500	3	161	404	161	Italian
T	11.996	V	SKY On Air	MPG2	27500	3	161	404	161	Italian
T	11.996	V	SKY On Air	MPG2	27500	3	161	404	161	Italian
T	11.996	V	SKY On Air	MPG2	27500	3	161	404	161	Italian
T	11.996	V	SKY On Air	MPG2	27500	3	161	404	161	Italian
T	11.996	V	Classica	MPG2	27500	3	167	428	167	Italian
T	11.996	V	Animal Planet	MPG2	27500	3	168	432	168	Italian
T	11.996	V	Animal Planet	MPG2	27500	3	168	433	168	English
T	11.996	V	CNN International	MPG2	27500	3	169	436	169	English
T	11.996	V	La7	MPG2	27500	3	170	440	170	Italian
T	11.996	V	SKY Play IT	MPG2	27500	3	173	452	173	Italian
T	11.996	V	SKY Play IT	MPG2	27500	3	173	452	173	Italian
T	12.034	V	SKY Net	MPG2	27500	3	169	436	169	Italian
T	12.111	V	Radio Radio TV	MPG2	27500	3	310	311	310	Italian
T	12.111	V	Sensuality	MPG2	27500	3	410	411	410	Italian
T	12.111	V	Puglia Channel	MPG2	27500	3	412	413	412	Italian
T	12.149	V	Caspio Net	MPG2	27500	3	160	161	160	Kazakh
T	12.149	V	Nessuno TV	MPG2	27500	3	208	209	208	Italian
T	12.149	V	Sri Lanka TV	MPG2	27500	3	224	225	224	
T	12.149	V	Cinquestelle	MPG2	27500	3	240	241	240	Italian
T	12.188	V	TV Puls	MPG2	27500	3	273	274	273	Polish
T	12.188	V	Polsat Sport Extra	MPG2	27500	3	289	290	289	Polish
T	12.188	V	Jetix Play	MPG2	27500	3	305	306	305	Polish
T	12.188	V	Extreme Sports	MPG2	27500	3	321	322	321	Polish
T	12.188	V	Jetix	MPG2	27500	3	337	338	337	Polish
T	12.188	V	Discovery	MPG2	27500	3	341	342	341	Polish
T	12.188	V	Animal Planet	MPG2	27500	3	344	345	344	Polish
T	12.188	V	AXN	MPG2	27500	3	353	356	353	Polish
T	12.188	V	ESPN	MPG2	27500	3	545	546	545	Polish
T	12.188	V	TVP1	MPG2	27500	3	801	802	801	Polish
T	12.188	V	Cinemax	MPG2	27500	3	806	807	806	Polish
T	12.188	V	TVP2	MPG2	27500	3	817	818	817	Polish

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 12.188 V	Boomerang	MPG2	27500	3	848	849	848	Polish
T 12.188 V	Kino Polska	MPG2	27500	3	2307	2305	2307	Polish
T 12.245 H	Gulli	MPG2	27500	3	121	131	121	French
T 12.245 H	Coming Soon TV	MPG2	27500	3	123	133	123	Italian
T 12.245 H	TTN - Tamil TV Ne	MPG2	27500	3	124	134	124	Tamil
T 12.245 H	Europe 2 TV	MPG2	27500	3	200	210	200	Original
T 12.285 H	Cartoon Net./TCM	MPG2	27500	3	257	258	257	Polish
T 12.285 H	Europa Europa	MPG2	27500	3	353	354	353	Polish
T 12.285 H	Club	MPG2	27500	3	369	370	369	Polish
T 12.285 H	Zdrowie i Uroda	MPG2	27500	3	401	402	401	Polish
T 12.285 H	Polsat Sport	MPG2	27500	3	532	533	532	Polish
T 12.285 H	Reality TV	MPG2	27500	3	535	536	535	Polish
T 12.285 H	Science	MPG2	27500	3	544	545	544	Polish
T 12.285 H	Civilisation	MPG2	27500	3	561	562	561	Polish
T 12.285 H	Travel Channel	MPG2	27500	3	566	567	566	Polish
T 12.285 H	Playboy	MPG2	27500	3	868	869	868	Polish
T 12.285 H	Cinemax2	MPG2	27500	3	1281	1282	1281	Polish
T 12.303 V	Blu Line TV	MPG2	27500	3	242	243	242	Italian
T 12.322 H	Polsat Sport Extra	MPG2	27500	3	289	290	289	Polish
T 12.322 H	Jetix Play	MPG2	27500	3	305	306	305	
T 12.322 H	Extreme Sports Ch	MPG2	27500	3	321	322	321	Polish
T 12.322 H	ESPN Classic Sport	MPG2	27500	3	545	546	545	Polish
T 12.322 H	Boomerang	MPG2	27500	3	848	849	848	Polish
T 12.360 H	Cinemax 2	MPG2	27500	3	1280	1281	1280	Polish
T 12.418 V	Raisat Extra	MPG2	27500	3	160	400	8190	Italian
T 12.418 V	Raisat Premium	MPG2	27500	3	161	404	8190	Italian
T 12.418 V	Raisat Cineworld	MPG2	27500	3	162	408	8190	Italian
T 12.418 V	Raisat Cineworld	MPG2	27500	3	162	409	8190	English
T 12.418 V	Raisat Ragazzi	MPG2	27500	3	163	412	8190	Italian
T 12.418 V	Raisat Gambero	MPG2	27500	3	164	416	8190	Italian
T 12.418 V	SKY Cinema 2	MPG2	27500	3	166	424	166	Italian
T 12.418 V	SKY Cinema 2	MPG2	27500	3	166	425	166	English
T 12.418 V	SKY Classics	MPG2	27500	3	167	428	8190	Italian
T 12.418 V	SKY Classics	MPG2	27500	3	167	429	8190	English
T 12.418 V	SKY 16:9	MPG2	27500	3	168	432	168	Italian
T 12.418 V	SKY 16:9	MPG2	27500	3	168	433	168	English
T 12.437 H	IRIB Quran	MPG2	27500	3	167	100	167	Farsi
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	202	101	English
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	203	101	French
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	204	101	German
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	205	101	Italian
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	206	101	Spanish
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	207	101	Greek
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	208	101	Portugu
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	209	101	Dutch
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	210	101	Danish
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	211	101	Finnish
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	212	101	Swedish
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	213	101	Czech
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	214	101	Estonian
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	215	101	Latvian
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	216	101	Lithuan
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	217	101	Hungari
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	218	101	Maltese
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	219	101	Slovak
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	220	101	Sloveni
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	221	101	Original
T 12.476 H	EbS - Europe by S	MPG2	27500	3	101	222	101	Original
T 12.476 H	Xstream	MPG2	27500	3	551	552	551	
T 12.476 H	ARY Digital	MPG2	27500	3	650	651	650	Georgian
T 12.476 H	B4U Movies	MPG2	27500	3	656	657	656	Hindi
T 12.476 H	Alpha ETC Punjabi	MPG2	27500	3	801	802	801	Punjabi
T 12.476 H	Zee TV (UK)	MPG2	27500	3	910	911	910	Hindi
T 12.476 H	Zee Cinema (UK)	MPG2	27500	3	915	916	915	Hindi
T 12.520 V	Hustler TV	MPG2	27500	3	4000	4116	4000	English
T 12.520 V	Croatian Music Ch	MPG2	27500	3	4130	4131	4130	Croatian
T 12.540 H	Canal Algerie	MPG2	27500	3	4437	4438	4437	Arabic
T 12.540 H	A3	MPG2	27500	3	4443	4444	4443	Arabic
T 12.558 V	CNES TV Sat	MPG2	27500	3	6143	6142	6143	
T 12.558 V	Administra.it	MPG2	27500	3	6660	6661	6660	Italian
T 12.577 H	Hope Channel	MPG2	27500	3	1207	1317	1207	English
T 12.577 H	Sexy Sat 1	MPG2	27500	3	1218	1313	33	
T 12.597 V	JSTV 2	MPG2	27500	3	2011	2013	2011	Japanese
T 12.597 V	JSTV 2	MPG2	27500	3	2011	2014	2011	Japanese
T 12.654 V	PSC - Palestinian	MPG2	27500	3	1020	1060	1020	Arabic
T 12.654 V	Al Mustakillah TV	MPG2	27500	3	4160	4120	4160	Arabic
T 12.673 V	RTM1	MPG2	27500	3	35	36	34	Arabic
T 12.673 V	TVM	MPG2	27500	3	40	42	39	Arabic
T 12.673 V	Arrabiaa	MPG2	27500	3	47	48	46	Arabic
T 12.673 V	Al Maghribia	MPG2	27500	3	308	309	307	Arabic
T 12.673 V	RTM1	MPG2	27500	3	1026	1027	1025	Arabic
T 12.673 V	RTM1	MPG2	27500	3	1041	1042	1041	Arabic
T 12.713 V	SKY Meteo24 active	MPG2	27500	3	2563	2564	2560	Italian
T 12.713 V	SKY TG24 active (	MPG2	27500	3	2566	2562	2560	Italian
T 12.713 V	SKY TG24 active (	MPG2	27500	3	2569	2570	2560	Italian
T 12.713 V	SKY TG24 active (	MPG2	27500	3	2572	2573	2560	Italian
T 12.713 V	SKY TG24 active (	MPG2	27500	3	2575	2576	2560	Italian
T 12.713 V	Sky Focus	MPG2	27500	3	2578	2586	2560	Italian

16.0 East — EUTELSAT W2

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 10.962 H	Elefante TV Telem	MPG2	3146	3	210	211	210	Italian
T 11.043 H	Kanal 5	MPG2	5606	3	43	39	45	Macedon
T 11.043 H	Play TV	MPG2	5606	3	38	46	41	Macedon
T 11.045 H	National 24	MPG2	10555	3	513	514	513	Romanian
T 11.045 H	Favorit TV	MPG2	10555	3	772	770	772	Romanian
T 11.060 V	Antena 1	MPG2	6666	3	1110	1211	1110	Romanian
T 11.060 V	Antena 3	MPG2	6666	3	3110	3211	3110	Romanian
T 11.513 V	Ring Sport	MPG2	28800	7	232	233	155	Bulgari
T 11.513 V	Hustler TV	MPG2	28800	7	513	660	144	Original
T 11.513 V	M2	MPG2	28800	7	517	700	148	Bulgari
T 11.513 V	Premium Digital	MPG2	28800	7	522	751	153	Bulgari
T 11.513 V	GTV	MPG2	28800	7	524	5634	155	Bulgari
T 11.513 V	GTV PP	MPG2	28800	7	524	5634	155	Bulgari
T 11.552 V	TV7	MPG2	28797	7	521	740	137	Bulgari
T 11.606 V	Hallmark	MPG2	12100	7	32	33	32	Original
T 11.606 V	History Channel	MPG2	12100	7	34	35	34	Original
T 11.606 V	Eurosport Bulgaria	MPG2	12100	7	36	37	36	Original
T 11.606 V	Cinemax	MPG2	12100	7	38	39	38	Bulgari
T 11.606 V	Discovery	MPG2	12100	7	40	41	40	Original
T 11.606 V	AXN	MPG2	12100	7	42	43	42	Original
T 11.618 V	Star AC 5	MPG2	29950	3	2002	2003	2002	
T 12.608 V	CH 5 - Cinquestel	MPG2	27500	3	1560	1520	1560	Italian
T 12.608 V	CH 7 - Conto TV	MPG2	27500	3	1760	1720	1760	Italian
T 12.725 V	Armenia TV	MPG2	3416	3	3585	3601	3585	Armenian

19.2 East — ASTRA 1C,1E,1F,1G,1H,2C

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 10.832 V	24.CZ	MPG2	22000	5	41	40	41	Czech
T 10.832 V	SportsWin TV	MPG2	22000	5	308	256	308	German
T 10.862 H	TVP1	MPG2	22000	5	512	650	8190	Polish
T 10.862 H	TVP2	MPG2	22000	5	513	660	8190	Polish
T 10.862 H	TVP3	MPG2	22000	5	515	680	8190	Polish
T 10.921 H	Budapest TV	MPG2	22000	5	451	460	451	Hungari
T 10.921 H	TV Deko	MPG2	22000	5	651	660	651	Hungari
T 10.979 V	Eurosport	MPG2	22000	5	168	112	168	Spanish
T 10.979 V	Mezzo	MPG2	22000	5	171	124	171	Spanish
T 10.979 V	Cuatro	MPG2	22000	5	173	132	173	Spanish
T 11.097 V	Canal Estrellas	MPG2	22000	5	165	100	165	Spanish
T 11.597 V	Eurosport	MPG2	22000	5	2577	2585	2577	Spanish
T 11.973 V	PE Mobile	MPG2	27500	3	4011	4012	8190	
T 11.973 V	MTV Europe	MPG2	27500	3	4021	4022	8190	
T 11.973 V	MTV Pulse	MPG2	27500	3	4041	4042	8190	
T 11.973 V	MTV Idol	MPG2	27500	3	4051	4052	8190	
T 11.973 V	Viva	MPG2	27500	3	4061	4062	8190	German
T 11.973 V	Viva Plus	MPG2	27500	3	4071	4072	8190	German
T 11.973 V	Viva TV	MPG2	27500	3	4081	4082	8190	
T 11.973 V	MTV NL	MPG2	27500	3	4091	4092	8190	Dutch
T 12.032 H	Premiere Direkt P	MPG2	27500	3	2815	2816	2815	German
T 12.109 H	NDR Fernsehen (Me	MPG2	27500	3	2401	2402	2401	German
T 12.109 H	NDR Fernsehen (Ha	MPG2	27500	3	2401	2402	2401	German
T 12.109 H	NDR Fernsehen (Ni	MPG2	27500	3	2401	2402	2401	German
T 12.109 H	NDR Fernsehen (Sc	MPG2	27500	3	2401	2402	2401	German
T 12.149 H	Munchen TV / Regi	MPG2	27500	3	495	496	495	German
H 12.168 V	Euro1080 HD-1	MPG2	27500	5	308	256	308	English
T 12.227 H	Eurosport	MPG2	27500	3	101	103	8190	German
T 12.246 H	Premiere Win	MPG2	27500	3	255	256	255	German
T 12.304 H	Hustler TV	MPG2	27500	3	501	512	501	
T 12.383 H	Blue Hustler	MPG2	27500	3	401	413	401	
T 12.422 H	NDR Fernsehen (Ha	MPG2	27500	3	2701	2702	2701	German
T 12.422 H	NDR Fernsehen (Me	MPG2	27500	3	2701	2702	2701	German
T 12.422 H	NDR Fernsehen (Sc	MPG2	27500	3	2701	2702	2701	German
T 12.460 H	Ringtone TV	MPG2	27500	3	2559	2560	2559	German
T 12.460 H	Amore TV	MPG2	27500	3	3583	3584	3583	German
T 12.460 H	JobTV24	MPG2	27500	3	255	256	255	German
T 12.460 H	AAA1	MPG2	27500	3	751	752	751	
T 12.460 H	APS.TV 4	MPG2	27500	3	495	496	495	
T 12.460 H	APS.TV 5	MPG2	27500	3	1007	1008	1007	
T 12.515 V	een	MPG2	22000	5	523	116	8190	Dutch
T 12.633 H	Entertainment Fac	MPG2	22000	5	232	332	232	German
T 12.633 H	Bietbox	MPG2	22000	5	1053	1054	1053	German
T 12.633 H	SexySat 1	MPG2	22000	5	221	321	621	
T 12.640 H	Gulli	MPG2	22000	5	162	88	162	French
T 12.670 V	Giga TV	MPG2	22000	5	4300	4301	4300	German
T 10.978 V	Al Narain TV	MPG2	2170	3	33	36	33	Arabic
T 11.489 V	Salah Eldin	MPG2	2170	3	308	256	8190	

23.5 East — ASTRA 3A

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 11.472 V	Hollywood TV	MPG2	27500	3	1618	2618	1618	English
T 11.634 H	Gute Laune TV	MPG2	27500	3	1261	1262	1261	German
T 12.688 H	APS.TV 1	MPG2	27500	3	2559	2560	2559	
T 12.688 V	GIGA-DIGITAL	MPG2	3617	3	4194	4195	4194	
T 12.740 V	Sports Win TV	MPG2	2170	3	308	256	308	English

26.0 East — ARABSAT 2A,2C,2D,3A

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 3.800 V	Blank screen	MPG2	27500	3	513	514	513	Arabic
T 3.876 H	Marhaba	PAL_						Arabic
T 4.116 H	ASN	PAL_						Arabic
T 11.053 H	Rotana TV	MPG2	11843	3	100	110	100	Arabic
T 11.053 H	Rotana Clip	MPG2	11843	3	200	210	200	Arabic
T 11.053 H	Rotana Tarab	MPG2	11843	3	300	310	300	Arabic
T 11.053 H	Rotana Khalijiah	MPG2	11843	3	400	410	400	Arabic
T 11.100 V	Al Iraqiyah	MPG2	3000	3	33	36	8190	Arabic
T 11.174 V	Fashion TV	MPG2	27500	3	1280	1281	1280	
T 11.182 V	Al Mirbad TV	MPG2	2893	3	33		33	Arabic
T 11.661 V	Mersal	MPG2	27500	3	2060	2020	8190	Arabic
T 11.678 V	Zee Arabiya	MPG2	27500	3	4101	4102	4101	Arabic
T 11.938 V	RTM 1	MPG2	27500	3	3160	3120	34	Arabic
T 11.996 V	Orbit ESPN	MPG2	27500	3	560	562	560	English
T 11.996 V	Fashion TV	MPG2	27500	3	640	641	640	
T 11.996 V	Marhaba	MPG2	27500	3	688	690	688	Arabic
T 12.072 V	Pinoy Prime	MPG2	27500	3	960	961	960	Filipino
T 12.072 V	Super Movies +1	MPG2	27500	3	992	993	992	Arabic
T 12.072 V	Super Movies +1	MPG2	27500	3	994	992	994	Arabic
T 12.072 V	Super Movies	MPG2	27500	3	976	977	976	Arabic
T 12.072 V	Super Movies	MPG2	27500	3	976	978	976	English
T 12.072 V	Cinema City	MPG2	27500	3	1008	1009	1008	English

28.2 East — ASTRA 2A,2B,2D

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 10.714 V	ITV1 Anglia (West)	MPG2	22000	5	2307	2309	2307	English
T 10.714 V	ITV1 Anglia	MPG2	22000	5	2307	2309	2307	English
T 10.714 V	ITV1 Tyne Tees (N	MPG2	22000	5	2335	2336	2335	English
T 10.714 V	ITV1 Tyne Tees (N	MPG2	22000	5	2335	2336	2335	English
T 10.714 V	ITV1 Tyne Tees (S	MPG2	22000	5	2351	2352	2351	English
T 10.714 V	ITV1 Anglia (Sout	MPG2	22000	5	2354	2355	2354	English
T 10.729 V	E4+1	MPG2	22000	5	2339	2340	2305	English
T 10.729 V	Film Four	MPG2	22000	5	2312	2313	2308	English
T 10.729 V	Film Four	MPG2	22000	5	2312	2313	2308	English
T 10.729 V	Film Four	MPG2	22000	5	2312	2313	2308	English
T 10.729 V	E4	MPG2	22000	5	2315	2316	2306	English
T 10.729 V	E4	MPG2	22000	5	2315	2316	2306	English
T 10.729 V	E4	MPG2	22000	5	2315	2316	2306	English
T 10.729 V	E4	MPG2	22000	5	2315	2316	2306	
T 10.729 V	Film Four +1	MPG2	22000	5	2331	2332	2309	English
T 10.729 V	Film Four Weekly	MPG2	22000	5	2334	2335	2310	English
T 10.729 V	More 4 +1	MPG2	22000	5	2348	2349	2307	English
T 10.729 V	More 4	MPG2	22000	5	2362	2363	2360	English
T 10.759 V	ITV4	MPG2	22000	5	2305	2306	2305	English
T 10.759 V	ITV Central (West)	MPG2	22000	5	2307	2308	2307	English
T 10.759 V	ITV1 London	MPG2	22000	5	2310	2311	2310	English
T 10.759 V	ITV2	MPG2	22000	5	2314	2315	2314	English
T 10.759 V	ITV1 Granada	MPG2	22000	5	2318	2319	2318	English
T 10.759 V	ITV1 Anglia (East)	MPG2	22000	5	2354	2355	2354	English
T 10.832 H	ITV Central (East)	MPG2	22000	5	2305	2306	2305	English
T 10.832 H	ITV1 Border (Engl	MPG2	22000	5	2311	2308	2311	English
T 10.832 H	ITV1 Central (Sou	MPG2	22000	5	2327	2328	2327	English
T 10.832 H	ITV1 Wales	MPG2	22000	5	2334	2335	2334	English
T 10.832 H	ITV1 West	MPG2	22000	5	2341	2342	2341	English
T 10.832 H	ITV1 Westcountry	MPG2	22000	5	2348	2349	2348	English
T 10.862 H	The Disney Channel	MPG2	22000	5	2306	2307	2305	English
T 10.862 H	The Disney Channe	MPG2	22000	5	2311	2312	2305	English
T 10.862 H	Toon Disney	MPG2	22000	5	2315	2316	2305	English
T 10.862 H	Playhouse Disney	MPG2	22000	5	2318	2319	2305	English
T 10.862 H	ABC1	MPG2	22000	5	2321	2322	2305	English
T 10.891 V	ITV1 Meridian (So	MPG2	22000	5	2305	2306	2305	English
T 10.891 V	ITV1 Border (Scot	MPG2	22000	5	2335	2336	2335	English
T 10.891 V	ITV1 Border (Scot	MPG2	22000	5	2335	2336	2335	English
T 10.891 V	ITV1 Meridian (So	MPG2	22000	5	2342	2343	2342	English
T 10.891 V	ITV1 Meridian (So	MPG2	22000	5	2342	2343	2342	English
T 10.891 V	ITV1 Meridian (Ea	MPG2	22000	5	2349	2350	2349	English
T 10.891 V	ITV1 Yorkshire (W	MPG2	22000	5	2352	2353	2352	English
T 10.891 V	ITV1 Yorkshire (E	MPG2	22000	5	2364	2365	2364	English
T 10.891 V	ITV1 Meridian (No	MPG2	22000	5	2313	2314	2313	English
T 10.906 V	ITV1 Channel	MPG2	22000	5	2326	2328	2326	English
T 10.906 V	ITV1 Grampian	MPG2	22000	5	2333	2334	2333	English
T 10.906 V	ITV1 Scottish TV	MPG2	22000	5	2340	2341	2340	English
T 10.906 V	ITV1 Ulster	MPG2	22000	5	2347	2348	2347	English
T 10.906 V	ITV1 London	MPG2	22000	5	2357	2358	2357	English
T 10.906 V	ITV1 Scottish TV	MPG2	22000	5	2305	2306	2305	English
T 10.921 H	Sky Box Office	MPG2	22000	5	516	644	8190	English
T 10.921 H	NDTV 24x7	MPG2	22000	5	513	641	8190	English
T 11.836 H	National Geograph	MPG2	27500	2	512	640	8190	English
T 11.876 H	Discovery Channel	MPG2	27500	2	2308	2310	2308	English
T 11.876 H	Discovery Channel	MPG2	27500	2	2308	2310	2308	English
T 11.876 H	Animal Planet	MPG2	27500	2	2314	2316	2314	English
T 11.876 H	Discovery Channel	MPG2	27500	2	2325	2327	2325	English
T 11.876 H	Discovery Travel	MPG2	27500	2	2331	2333	2331	English
T 11.876 H	Discovery Science	MPG2	27500	2	2338	2336	2338	English
T 11.876 H	Discovery Civilis	MPG2	27500	2	2341	2343	2341	English
T 11.876 H	Discovery Kids	MPG2	27500	2	2350	2352	2350	English
T 11.876 H	Discovery Wings	MPG2	27500	2	2350	2352	2350	English
T 11.876 H	Discovery Home an	MPG2	27500	2	2346	2347	2346	English
T 11.876 H	Discovery Home an	MPG2	27500	2	2359	2361	2359	English
T 11.895 V	VH1	MPG2	27500	2	2324	2326	2304	English
T 11.895 V	MTV 2	MPG2	27500	2	2329	2330	2304	English
T 11.895 V	MTV Hits	MPG2	27500	2	2332	2334	2304	English
T 11.895 V	MTV Dance	MPG2	27500	2	2336	2338	2304	English
T 11.895 V	MTV Base	MPG2	27500	2	2340	2342	2304	English
T 11.895 V	VH1 Classic	MPG2	27500	2	2344	2346	2304	English
T 11.895 V	TMF (UK)	MPG2	27500	2	2348	2350	2304	English
T 11.895 V	VH2	MPG2	27500	2	2352	2353	2304	English
T 11.895 V	MTV (UK)	MPG2	27500	2	2356	2358	2304	English
T 11.895 V	Nickelodeon (Irel	MPG2	27500	2	2360	2362	2304	English
T 11.992 V	UKTV Bright Ideas	MPG2	27500	2	2347	2348	2347	English
T 12.051 V	Travel Channel	MPG2	27500	2	2311	2317	2311	English
T 12.051 V	Thomson TV	MPG2	27500	2	2318	2320	2318	English
T 12.051 V	Boomerang	MPG2	27500	2	2331	2338	2331	English
T 12.070 H	Smash Hits!	MPG2	27500	2	2312	2313	2305	English
T 12.070 H	Animal Planet +1	MPG2	27500	2	2315	2316	2307	English
T 12.070 H	At the Races	MPG2	27500	2	2317	2318	2308	English
T 12.070 H	Fox News Channel	MPG2	27500	2	2320	2321	2310	English
T 12.070 H	Kerrang!	MPG2	27500	2	2326	2327	2309	English
T 12.070 H	Magic	MPG2	27500	2	2329	2330	2306	English
T 12.070 H	Bloomberg (UK)	MPG2	27500	2	2322	2323	2311	English
T 12.070 H	Bloomberg (UK)	MPG2	27500	2	2322	2323	2311	
T 12.109 H	FX	MPG2	27500	2	512	640	8190	English
T 12.109 H	Sky Sports 3	MPG2	27500	2	513	641	8190	English
T 12.109 H	Sky Sports 1	MPG2	27500	2	515	643	8190	English
T 12.109 H	Sky Sports 2	MPG2	27500	2	516	644	8190	English
T 12.109 H	Cartoon Network +	MPG2	27500	2	518	646	8190	English
T 12.188 H	TCM	MPG2	27500	2	516	664	8190	English
T 12.188 H	Paramount	MPG2	27500	2	2313	2326	2304	English
T 12.188 H	Adventure One	MPG2	27500	2	2322	2323	8190	English
T 12.207 V	Sky News	MPG2	27500	2	512	650	8190	English
T 12.207 V	Sky News (Cable)	MPG2	27500	2	512	650	8190	English
T 12.207 V	Sky News Ireland	MPG2	27500	2	513	651	8190	English
T 12.207 V	Sky News Ireland	MPG2	27500	2	513	651	8190	English
T 12.207 V	Sky News Active M	MPG2	27500	2	514	652	8190	English
T 12.207 V	Sky News Active H	MPG2	27500	2	515	654		English
T 12.207 V	Sky News Active T	MPG2	27500	2	516	655		English
T 12.207 V	Sky News Active S	MPG2	27500	2	517	656		English
T 12.226 V	Sky Two	MPG2	27500	2	514	642	8190	English
T 12.226 V	Sky Two	MPG2	27500	2	514	642	8190	English
T 12.226 V	Sky Two	MPG2	27500	2	514	642	8190	English
T 12.226 V	Sky Three	MPG2	27500	2	512	640	8190	English
T 12.226 V	The Box	MPG2	27500	2	513	641	8190	English
T 12.266 V	Sky Venue	MPG2	27500	2	514	662	8190	English
T 12.284 V	Sky Box Office Ev	MPG2	27500	2	514	642	8190	
T 12.304 V	Artsworld	MPG2	27500	2	516	664	8190	English
T 12.304 V	Sky Movies 3	MPG2	27500	2	518	666	8190	English
T 12.402 V	Life TV	MPG2	27500	2	2310	2311	2310	English
T 12.402 V	TV Warehouse Sele	MPG2	27500	2	2321	2322	2321	English
T 12.402 V	Reality TV	MPG2	27500	2	2312	2313	2312	English
T 12.402 V	Reality TV	MPG2	27500	2	2312	2313	2312	English
T 12.402 V	TV Shop	MPG2	27500	2	2314	2315	2314	English
T 12.402 V	Myphone.TV	MPG2	27500	2	2316	2317	2316	English
T 12.402 V	Gems.tv	MPG2	27500	2	2319	2320	2319	English
T 12.402 V	Record TV	MPG2	27500	2	2344	2345	2344	Portugu
T 12.402 V	TV Warehouse	MPG2	27500	2	2323	2324	2323	English
T 12.402 V	eeZee TV	MPG2	27500	2	2325	2326	2325	English
T 12.402 V	YES	MPG2	27500	2	2327	2328	2327	English
T 12.402 V	Game Network	MPG2	27500	2	2341	2342	2341	English
T 12.402 V	Vector 24/7	MPG2	27500	2	2352	2353	2352	English
T 12.422 H	Teletext Holidays	MPG2	27500	2	2338	2339	2338	English
T 12.422 H	Men & Motors	MPG2	27500	2	2345	2347	2345	English
T 12.422 H	ITV News Channel	MPG2	27500	2	2348	2349	2348	English

28.5 East — EUROBIRD 1

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 11.222 H	52031	MPG2	27500	2	2308	2309	2308	
T 11.222 H	Setanta Sports 1	MPG2	27500	2	2308	2309	2308	English
T 11.222 H	Rangers TV	MPG2	27500	2	2308	2309	2308	English
T 11.222 H	Celtic TV	MPG2	27500	2	2331	2332	2331	English
T 11.222 H	Setanta Sports 2	MPG2	27500	2	2331	2332	2331	English
T 11.224 V	Vectone Bangla	MPG2	27500	2	2318	2319	2305	Bangla
T 11.224 V	Vectone Punjab	MPG2	27500	2	2327	2330	2305	
T 11.224 V	Vectone Tamil	MPG2	27500	2	2320	2334	2307	Tamil
T 11.224 V	Vectone Chnl-I	MPG2	27500	2	2335	2336	2305	English
T 11.224 V	Vectone Sinhala	MPG2	27500	2	2311	2312	2310	Sinhala
T 11.224 V	Vectone MH1	MPG2	27500	2	2332	2333	2322	Bangla
T 11.260 V	Star Bazaar	MPG2	27500	2	2315	2316	2315	
T 11.260 V	Quiz TV	MPG2	27500	2	2317	2318	2317	English
T 11.260 V	Open Access	MPG2	27500	2	2320	2321	2335	
T 11.260 V	Audi Channel	MPG2	27500	2	2326	2327	2325	English
T 11.264 H	Life2	MPG2	22000	2	2318	2319	2318	English
T 11.264 H	CNBC Europe	MPG2	22000	2	2329	2330	2329	English
T 11.307 H	Propeller	MPG2	27500	2	2324	2325	2324	English
T 11.307 H	Quiz Nation	MPG2	27500	2	2350	2351	2308	English
T 11.307 H	The Baby Channel	MPG2	27500	2	2314	2315	2305	English
T 11.307 H	Xplicit XXX	MPG2	27500	2				
T 11.307 H	ARY Digital	MPG2	27500	2	2383	2384	2382	
T 11.343 H	Chart Show TV	MPG2	27500	2	2333	2334	2305	English
T 11.343 H	Simply Shopping	MPG2	27500	2	2335	2336	2305	English
T 11.389 H	Bonanza	MPG2	27500	2	2305	2306	2305	English
T 11.389 H	Travel Channel +1	MPG2	27500	2	2319	2320	2319	English
T 11.389 H	Sport Nation	MPG2	27500	2	2321	2322	2321	English
T 11.389 H	You TV 2 Extra	MPG2	27500	2	2336	2337	2336	English
T 11.389 H	PokerZone	MPG2	27500	2	2329	2330	2329	English
T 11.389 H	Majestic TV	MPG2	27500	2	2334	2335	2334	English
T 11.389 H	Playboy One	MPG2	27500	2	2307	2308	2305	English
T 11.389 H	Adult Channel	MPG2	27500	2	2355	2356	2305	English
T 11.389 H	Adult Channel	MPG2	27500	2	2355	2356	2305	English
T 11.389 H	Playboy TV	MPG2	27500	2	2359	2360	2305	English
T 11.426 V	Cee-I TV South Fo	MPG2	27500	2	2308	2309	2305	
T 11.426 V	OBE TV	MPG2	27500	2	2306	2307	2305	English
T 11.426 V	TTV	MPG2	27500	2	2310	2311	2305	English
T 11.426 V	Chart Show TV	MPG2	27500	2	2312	2313	2305	English
T 11.426 V	Venus	MPG2	27500	2	2314	2315	2305	English
T 11.426 V	POP	MPG2	27500	2	2316	2317	2305	English
T 11.426 V	Tiny Pop	MPG2	27500	2	2318	2319	2305	English
T 11.426 V	Channel S	MPG2	27500	2	2320	2321	2305	English
T 11.426 V	The Vault	MPG2	27500	2	2322	2323	2305	English
T 11.508 V	The Pub Channel	MPG2	27500	2	2337	2338	2304	English
T 11.508 V	Fashion TV	MPG2	27500	2	2341	2342	2304	English
T 11.565 V	E4	MPG2	27500	2	2363	2364	2306	English
T 11.585 V	Jackpot TV	MPG2	27500	2	2318	2319	2318	English
T 11.623 V	DoveVision TV	MPG2	27500	2	2328	2329	2309	English
T 11.662 V	Vegas 24/7	MPG2	27500	2	2320	2321	2310	English

30.5 East — ARABSAT 2B

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 4.056 L	Al Manar	MPG2	3125	3	33	34	8190	Arabic
T 12.662 V	Al Majd mosaic	MPG2	27500	3	66	67	66	
T 12.662 V	Al Majd Kids	MPG2	27500	3	216	217	216	
T 12.662 V	Al Majd Documenta	MPG2	27500	3	221	222	221	
H 11.470 V	Eutelsat_Demo_HD	MPG2	27500	3	300	301	308	
T 11.470 V	Eutelsat_Demo_SD	MPG2	27500	3	140	145	140	

36.0 East — EUTELSAT SESAT,W4

Typ Freq Pol [GHz]	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T 11.476 H	Cine C	MPG2	29000	3	258	259	257	French
T 11.476 H	France 2	MPG2	29000	3	274	275	273	French
T 11.476 H	Arte	MPG2	29000	3	290	291	289	French
T 11.476 H	13eme Rue	MPG2	29000	3	306	307	305	French
T 11.476 H	Planete	MPG2	29000	3	322	323	321	French
T 11.476 H	RTL 9	MPG2	29000	3	338	339	337	French
T 11.476 H	Sport+	MPG2	29000	3	354	355	353	French
T 11.476 H	Can+C	MPG2	29000	3	370	371	369	French

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.476	H	Trace TV	MPG2	29000	3	386	387	385	French
T	11.476	H	Tiji TV	MPG2	29000	3	418	419	417	French
T	11.476	H	France 5	MPG2	29000	3	290	291	289	French
T	11.559	H	RTPA	MPG2	29000	3	258	259	257	Portugu
T	11.559	H	Record TV	MPG2	29000	3	274	275	273	Portugu
T	11.559	H	Lusamundo Premium	MPG2	29000	3	290	291	289	Portugu
T	11.559	H	Lusamundo Gallery	MPG2	29000	3	306	307	305	Portugu
T	11.559	H	TV Mozambique	MPG2	29000	3	322	323	321	Portugu
T	11.559	H	MTV Portugal	MPG2	29000	3	338	339	337	Portugu
T	11.559	H	National Geograph	MPG2	29000	3	354	355	353	Portugu
T	11.559	H	TV Uganda	MPG2	29000	3	370	371	369	
T	11.559	H	MGM International	MPG2	29000	3				
T	11.559	H	Disney Channel	MPG2	29000	3	466	467	465	Portugu
T	11.559	H	SIC Noticias	MPG2	29000	3				Portugu
T	11.559	H	SIC Internacional	MPG2	29000	3				Portugu

39.0 East — HELLAS SAT 2

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.038	V	MKTV Sat	MPG2	3125	3	308	256	8190	Macedon
T	11.043	V	Cyprus Sat	MPG2	2570	7	308	256	8190	Greek
T	11.541	H	PTV	MPG2	8680	3	257	258	257	Arabic
T	12.524	H	TV7	MPG2	29000	3	400	401	400	Bulgari
T	12.524	V	902	MPG2	27500	3	513	660	2311	Greek
T	12.524	V	CNBC Europe	MPG2	27500	3	2336	2337	2305	English
T	12.524	V	TV Magic	MPG2	27500	3	2360	2361	2314	Greek
T	12.524	V	Teleasty	MPG2	27500	3	2364	2365	2315	Greek
T	12.524	V	Kanali 10	MPG2	27500	3	2370	2371	2308	Greek
T	12.524	V	Kanali Voulis	MPG2	27500	3	2384	2385	2306	Greek
T	12.524	V	Holidays in Greec	MPG2	27500	3	4097	4098	2316	English
T	12.524	V	Holidays in Greec	MPG2	27500	3	4097	4099	2316	English
T	12.524	V	Holidays in Greec	MPG2	27500	3	4097	4100	2316	German
T	12.524	V	Holidays in Greec	MPG2	27500	3	4097	4101	2316	French
T	12.524	V	Extra 3 Channel	MPG2	27500	3	4114	4115	2318	Greek

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	12.648	V	ARKADAS TV	MPG2	4444	5				
T	12.648	V	Satmedia tv	MPG2	4444	5				
T	12.680	V	Cine5	MPG2	8888	3	516	690	132	Turkish
T	12.680	V	Gala	MPG2	8888	3	515	680	131	Turkish
T	12.680	V	Viva	MPG2	8888	3	514	670	130	Turkish
T	12.680	V	Supersport	MPG2	8888	3	518	710	134	Turkish
T	12.702	V	Ulusal Kanal	MPG2	2285	7	308	256	8190	Turkish
T	11.498	V	Reality Asia	MPG2	2480	7	4097	4096		
T	11.548	V	Eelam Sat	MPG2	2480	7	4162	4167	4162	

49.0 East — YAMAL 202

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.706	L	RTR Planeta	MPG2	15550	3	6101	6102	6101	Russian
T	3.782	L	Dan Music	MPG2	8890	3	33	34	33	
T	3.782	L	Dan Tamil Ozhi	MPG2	8890	3	1057	1058	1057	
T	3.782	L	Dan Cinema	MPG2	8890	3	2081	2082	2081	
T	3.782	L	Blessing TV	MPG2	8890	3	3105	3106	3105	
T	3.953	L	TV Lanka 2	MPG2	4500	7	1360	1320	1360	
T	3.961	L	Tyumen Ren TV	MPG2	8570	3	308	256	8190	Russian
T	3.961	L	RTR Tyumen	MPG2	8570	3	309	263	8187	Russian
T	4.115	L	Euronews	MPG2	27500	3	186	246	186	English
T	4.115	L	Euronews	MPG2	27500	3	186	245	185	French
T	4.115	L	Euronews	MPG2	27500	3	186	247	185	German
T	4.115	L	Euronews	MPG2	27500	3	186	248	185	Italian
T	4.115	L	Euronews	MPG2	27500	3	186	250	185	Portugu
T	4.115	L	Euronews	MPG2	27500	3	186	251	185	Russian
T	4.115	L	Euronews	MPG2	27500	3	186	249	185	Spanish
T	4.115	L	Trace TV	MPG2	27500	3	187	252	500	

57.0 East — NSS 703

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	4.055	R	WorldNet /C-Span	MPG2	25994	1	1160	1120	1160	English
T	4.055	R	Alhurra	MPG2	25994	1	1760	1720	1760	Arabic
T	11.506	V	NDTV 24x7	MPG2	2917	2	308	256	8190	English
T	4.180	V	UNIV TV	MPG2	31530	2	514	670	130	
T	11.522	V	Default Service	MPG2	3100	1	512	412	8190	

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	4.174	V	DD Ranchi	MPG2	4250	3	512	650	128	Hindi
T	10.953	H	Edusat-KARNET 2-	MPG2	1700	3	4194	4195	4194	Kannada
T	10.957	H	Visvesvaraya Tech	MPG2	1808	3	776	598	776	Kannada
T	12.549	V	TV Center Interna	MPG2	12297	3	50	51	50	Russian
T	12.549	V	TV Center	MPG2	12297	3	80	81	80	Russian

76.5 East — TELSTAR 10/APSTAR IIR

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.680	H	ERT SAT	EXPRESS	27500	4	4050	4060	4050	Greek
T	3.720	H	Celestial (A3A4)	MPG2	29265	5	1110	1122	1110	English
T	3.736	V	PBO	MPG2	5076	3	512	651	351	Multili
T	3.736	V	Pinoy Prime	MPG2	5076	3	513	650	352	Multili
T	3.760	V	MKTV	MPG2	28066	2	512	640	512	Macedon
T	3.760	H	K15	MPG2	28066	2	513	641	513	Macedon
T	3.760	H	BOM	MPG2	28066	2	514	642	514	Macedon
T	3.760	H	NVAR	MPG2	28066	2	515	643	515	Arabic
T	3.760	H	NDM	MPG2	28066	2	516	644	516	Arabic
T	3.760	H	HEYA	MPG2	28066	2	517	645	517	Arabic
T	3.760	H	JTV	MPG2	28066	2	518	646	518	Arabic
T	3.760	H	DUBAI TV	MPG2	28066	2	519	647	519	Arabic
T	3.760	H	ROTM	MPG2	28066	2	520	648	520	Arabic
T	3.760	H	ROTK	MPG2	28066	2	521	649	521	Arabic
T	3.760	H	ROTC	MPG2	28066	2	522	650	522	Arabic
T	3.760	H	ROTT	MPG2	28066	2	523	651	523	Arabic
T	3.760	H	CH26	MPG2	28066	2	524	652	524	Arabic
T	4.174	V	RTV	MPG2	7400	3	308	256	8190	Bangla
T	4.174	V	nTV	MPG2	7400	3	309	258	8189	Bangla
T	12.435	V	K2	MPG2	15000	3	1552	1553	1552	Chinese
T	12.435	V	TV service	MPG2	15000	3	1568	1569	1568	Chinese
T	12.435	V	TV service	MPG2	15000	3	1584	1585	1584	Chinese
T	12.435	V	TV service	MPG2	15000	3	1600	1601	1600	Chinese
T	12.435	V	TV service	MPG2	15000	3	1616	1617	1616	Chinese
T	12.435	V	TV service	MPG2	15000	3	1632	1633	1632	Chinese
T	12.435	V	TV service	MPG2	15000	3	1648	1649	1648	Chinese

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	12.606	H	African United TV	MPG2	28800	5	4353	4354	4353	French
T	12.606	H	African United TV	MPG2	28800	5	4609	4610	4609	French
T	12.647	V	Tele Reunion	MPG2	27500	3	257	513	257	French
T	12.647	V	KTN (left audio)	MPG2	27500	3	258	514	258	
T	12.688	H	TV1000	MPG2	28800	7	144	145	144	Bulgari
T	12.688	H	GTV	MPG2	28800	7	1040	1041	1040	Bulgari
T	12.688	H	7 dni TV	MPG2	28800	7	1104	1105	1104	Bulgari

40.0 East — EXPRESS AM1

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.871	R	Tchecnya TV	MPG2	4340	3	288	272	288	Russian
T	4.124	R	Telekanal Domashn	MPG2	3214	3	308	256	8190	Russian
T	11.163	V	Al Hurra	MPG2	2892	3	4194	4195	4194	Arabic

42.1 East — EURASIASAT 1

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.717	V	Hilal TV	MPG2	2222	3	100	110	100	Turkish
T	11.765	V	Karadeniz TV	MPG2	2222	3	100	110	100	Turkish
T	11.852	V	Smart	MPG2	4444	5	4194	4195	4194	Turkish
T	11.852	V	Smart 2	MPG2	4444	5	37	38	37	Turkish
T	11.912	V	Ayna TV	MPG2	3332	5	4131	4129	4387	Turkish
T	11.963	V	Dogu TV	MPG2	2300	5	33	36	33	Turkish
T	11.973	V	Kon TV	MPG2	2239	5	308	256	8190	Turkish
T	11.977	H	NTV	MPG2	27500	5	361	362	361	Turkish
T	11.977	H	CNN Turk	MPG2	27500	5	461	462	461	Turkish
T	11.977	H	BJK TV	MPG2	27500	5	481	482	481	Turkish
T	12.008	H	Kanal 1	MPG2	4400	5	308	256	8190	Turkish
T	12.008	H	Turk C	MPG2	4400	5	308	256	8190	Turkish
T	12.614	V	Europe	MPG2	3003	5	257	513	257	Turkish
T	12.614	V	Red	MPG2	3003	5	258	514	258	Turkish
T	12.614	V	She	MPG2	3003	5	259	515	259	Turkish
T	12.648	V	Turkshow	MPG2	4444	5	868	869	868	Turkish
T	12.648	V	Dugun TV	MPG2	4444	5	968	969	968	Turkish
T	12.648	V	GOD UK	MPG2	4444	5				
T	12.648	V	CEP MELODI-SMS TV	MPG2	4444	5				

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.003	V	STS (+0h)	MPG2	5002	3	50	51	50	Russian
T	11.164	V	Tajik TV	MPG2	4400	3	1160	1120	1160	Tajik

68.5 East — PANAMSAT 7,10

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.810	H	CNBC Pakistan	MPG2	3305	3	308	256	8190	
T	3.863	H	Fashion TV Pakist	MPG2	19850	3	517	700	8190	English
T	4.033	V	DD Sports	MPG2	19565	3	513	660	8190	Multili
T	4.059	V	CTS	MPG2	3530	3	308	256	8190	Chinese
T	4.064	V	B4U Music India	MPG2	19850	7	1460	1420	1460	
T	4.064	V	B4U Music India	MPG2	19850	7	1460	1420	1460	
T	4.105	V	South Asia World	MPG2	5720	3	512	650	512	English
T	4.105	V	South Asia World	MPG2	5720	3	513	660	513	English
T	4.114	V	GEO 1	MPG2	3300	2	33	36	33	
T	4.125	V	GEO	MPG2	19845	3	66	63	66	
T	4.125	V	GEO USA	MPG2	19845	3	33	36	33	
T	4.125	V	Geo News	MPG2	19845	3	53	56	53	
T	4.125	V	GEO UK	MPG2	19845	3	43	46	43	
T	4.193	V	24X7 NDTV	MPG2	8680	3	32	33	32	English
T	12.684	H	Day Star	MPG2	26652	1	308	256	308	
T	12.684	H	Love World	MPG2	26652	1	310	258	8189	
T	12.684	H	Novacom	MPG2	26652	1	309	257	8190	
T	12.722	H	Fashion TV	MPG2	26656	1	1297	1298	1302	
T	12.722	H	Hope Channel	MPG2	26656	1	62	63	62	English

72.0 East — PANAMSAT 4

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.709	V	ZTV	MPG2	2083	5	33	36	33	English
T	3.712	V	ZNBC	MPG2	2083	5	33	36	33	English
T	3.729	V	RTNC Congo	MPG2	10500	3	512	768	512	French
T	3.729	V	Digital Congo	MPG2	10500	3	513	769	513	French
T	3.729	V	RTG@	MPG2	10500	3	514	770	514	French
T	3.729	V	Canal Congo TV	MPG2	10500	3	515	771	515	French
T	11.557	V	BKTV Sat	MPG2	3003	2	4194	4195	4194	Serbian
T	4.148	V	DD Sports	MPG2	6250	3	308	256	8190	Multili

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	12.435	V	TV service	MPG2	15000	3			49	Chinese
T	12.680	V	CSN	MPG2	15000	3	151	152	151	Chinese
T	12.680	V	Hwazan	MPG2	15000	3	910	911	910	Chinese
T	12.680	V	ERA	MPG2	15000	3	970	971	970	Chinese
T	12.680	V	AD HOC-2	MPG2	15000	3	980	981	980	Chinese

78.5 East — THAICOM 2,3

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.490	V	Channel NEPAL	MPG2	3333	2	308	256	308	Nepali
T	3.545	V	Star News INT	MPG2	26667	3	290	291	289	Hindi
T	3.551	V	Dove Vision	MPG2	13333	5	5001	5002	5001	English
T	3.551	V	Dandana TV	MPG2	13333	5	4002	4003	4001	Arabic
T	3.585	V	MVTV2	MPG2	26667	3	513	641	513	Thai
T	3.585	V	TV5	MPG2	26667	3	514	642	514	Thai
T	3.585	V	UNI TV	MPG2	26667	3	515	643	515	Urdu
T	3.585	V	Balle Balle	MPG2	26667	3	616	644	616	Punjabi
T	3.585	V	Sur Sangeet	MPG2	26667	3	517	645	517	Hindi
T	3.585	V	ETC PANJABI	MPG2	26667	3	518	646	518	Punjabi
T	3.585	V	ETC	MPG2	26667	3	519	647	519	Punjabi
T	3.585	V	KashishTV	MPG2	26667	3	520	648	520	Urdu
T	3.585	V	Dhoom TV	MPG2	26667	3	649	521	649	Arabic
T	3.585	V	Shin11	MPG2	26667	3	522	650	522	
T	3.585	V	Shin12	MPG2	26667	3	523	651	523	
T	3.585	V	Shin13	MPG2	26667	3	524	652	524	
T	3.600	H	Roshini TV	MPG2	26667	3	524	5634	140	
T	3.625	V	DD TV	MPG2	30000	5	517	700	133	Thai
T	3.640	V	The Prophetic Word	MPG2	28062	3	1057	1058	1057	English
T	3.640	V	Russia Today	MPG2	28062	3	4866	4867	4866	Multili
T	3.920	V	Islamic Television	MPG2	30000	5	518	710	134	Multili

80.0 East — EXPRESS 6A,AM2

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.625	R	OTV Sakhalin	MPG2	3000	1	33	36	133	Russian
T	3.664	L	KCTV	MPG2	3367	3	308	256	8190	Korean
T	4.147	R	TVC	MPG2	27500	3	160	80	160	Russian

The Full Chart with the most up-to-date channel data is available exclusively for TELE-satellite readers from SatcoDX's "World of Satellites".
See Page 3 in this issue of TELE-satellite for instructions on how to download this software from the Internet.

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NEW Satellite TV Channels 02/2006

Column headers: **Typ Freq Pol [GHz]** | **Channel Name** | **Mode** | **SR** | **FEC** | **Video PID** | **Audio PID** | **PCR PID** | **Language**

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	4.147	R	TVC Siberia	MPG2	27500	3	161	84	161	Russian
T	4.147	R	Center TV Plus	MPG2	27500	3	162	88	162	Russian
T	4.147	R	TV XXI	MPG2	27500	3	163	92	163	Russian
T	4.147	R	7 TV	MPG2	27500	3	164	96	164	Russian
T	4.147	R	TVC Ural	MPG2	27500	3	165	100	165	Russian

83.0 East — INSAT 2E,3B

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.438	V	Jain TV	MPG2	2950	2	4130	4131	4130	Hindi
T	3.551	V	TV9	MPG2	3253	3	308	256	8190	Telugu
T	3.573	V	Headlines Today	MPG2	4340	3	512	650	128	Hindi
T	3.959	V	Channel 7	MPG2	3300	3	6100	6200	8190	Hindi
T	4.041	V	Dove Visison	MPG2	8000	3	33	34	33	Multili

87.5 East — CHINASTAR 1

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.734	H	Myawady TV	MPG2	5925	3	4194	4195	4194	Burmese
T	3.900	V	China Movie	MPG2	7234	3	257	258	257	Chinese
T	3.900	V	XingDongMan	MPG2	7234	3	769	770	769	Chinese
T	4.060	V	Law & Life	MPG2	27500	3	5317	5320	5317	Chinese
T	4.060	V	City Play	MPG2	27500	3	5600	5603	5600	Chinese
T	4.060	V	Channel Max	MPG2	27500	3	5607	5610	5607	Chinese
T	4.060	V	Channel Elan	MPG2	27500	3	5637	5640	5637	Chinese
T	4.060	V	Channel Young	MPG2	27500	3	6021	6024	6021	Chinese
T	4.060	V	Channel Joy	MPG2	27500	3	5574	5577	5574	Chinese
T	4.060	V	Golden Life	MPG2	27500	3	5925	5928	5925	Chinese
T	4.100	V	Great Sports Chan	MPG2	27500	3	103	5611	103	Chinese
T	4.100	V	Channel Health	MPG2	27500	3	5285	5288	5285	Chinese
T	4.100	V	CBN	MPG2	27500	3	5909	5912	5909	Chinese
T	4.100	V	Channel Documenta	MPG2	27500	3	5477	5480	5477	Chinese
T	4.100	V	Game Channel	MPG2	27500	3	5605	5608	5605	Chinese
T	4.100	V	Channel Cartoon	MPG2	27500	3	5733	5736	5733	Chinese

90.0 East — YAMAL 102,201

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.906	L	ORTRK	MPG2	4292	3	308	256	8190	Russian
T	3.917	R	GTRK EL-Altai	MPG2	4273	3	307	256	8190	Russian
T	3.944	L	TV3 (+7h)	MPG2	15550	3	5301	5302	5301	Russian
T	11.057	V	CTC (+7h)	MPG2	26470	3	514	515	514	Russian
T	11.057	V	TNT (+4h)	MPG2	26470	3	770	771	769	Russian
T	11.057	V	TNT (+2h)	MPG2	26470	3	801	802	769	Russian
T	11.057	V	TB Club	MPG2	26470	3	990	991	990	Russian
T	11.057	V	NTV 3	MPG2	26470	3	4907	4908	4906	Russian
T	11.057	V	NTV 4	MPG2	26470	3	4911	4912	4906	Russian
T	11.057	V	Audio31 F-Way Dra	MPG2	26470	3		4922	4921	Russian
T	11.057	V	Audio 41 Novosibi	MPG2	26470	3		4932	4931	Russian
T	11.057	V	Shkolnik	MPG2	26470	3	5702	5703	5701	Russian

93.5 East — INSAT 3A

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.740	V	DD Punjabi	MPG2	6250	3	4480	4680	4480	Punjabi
T	3.750	V	DD Gujarati	MPG2	6250	3	4450	4650	4450	Gujarati
T	3.750	V	Ahmedabadnews	MPG2	6250	3	4451	4651	4451	Gujarati
T	3.759	V	DD Chandana	MPG2	6250	3	4410	4610	4410	Kannada
T	3.782	V	DD-Kashir	MPG2	6250	3	4510	4710	4510	Kashmiri
T	3.820	V	DD Sapthagiri	MPG2	6250	3	4440	4640	4440	Telugu
T	3.889	V	Lottery TV Nagala	MPG2	2000	3	4194	4195	4194	Multili
T	3.891	V	Lottery TV NE	MPG2	2000	3	4194	4195	4194	Multili
T	4.092	V	DD Shillong	MPG2	6250	3	257	258	257	Multili
T	4.140	V	Ariana TV	MPG2	3255	3	256	257	80	Multili

95.0 East — NSS 6

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.132	H	TV Lanka	MPG2	4500	3	1360	1320	1360	Sinhala
T	11.132	H	TV Lanka 2	MPG2	4500	3	1460	1420	1460	Sinhala
T	12.597	H	Movie On Demand 1	MPG2	40687	3	101	102	101	
T	12.597	H	Movie On Demand 2	MPG2	40687	3	501	502	501	
T	12.597	H	Movie On Demand 3	MPG2	40687	3	901	902	901	
T	12.597	H	Movie On Demand 4	MPG2	40687	3	1301	1302	1301	
T	12.597	H	Zee Arabia	MPG2	40687	3	5305	5302	5301	
T	12.597	H	DD Sports	MPG2	40687	3				
T	12.597	H	GEO TV	MPG2	40687	3	5732	5731	5732	Urdu
T	12.597	V	DAN Cinema	MPG2	40700	3	4907	4908	4907	Tamil
T	12.597	V	DAN Music	MPG2	40700	3	4904	4905	4904	Tamil
T	12.597	V	Reality TV	MPG2	40700	3	3302	3303	3301	English
T	12.597	V	Cartoon Network	MPG2	40700	3	3702	3703	3701	English
T	12.597	V	CNBC TV 18	MPG2	40700	3	5715	5713	5715	English
T	12.597	V	CNN	MPG2	40700	3	5719	5718	5719	English
T	12.597	V	TCM	MPG2	40700	3	5724	5722	5724	English
T	12.597	V	ZEE Cinema	MPG2	40700	3	902	903	901	Hindi
T	12.597	V	AAJ TAK	MPG2	40700	3	5704	5705	5704	Hindi
T	12.597	V	B4U Music	MPG2	40700	3	102	101	101	Hindi
T	12.597	V	ABC Asia Pacific	MPG2	40700	3	1302	1303	1301	English
T	12.597	V	TRACE TV	MPG2	40700	3	1702	1703	1701	Multili
T	12.597	V	AASTHA	MPG2	40700	3	2102	2103	2101	Hindi
T	12.597	V	AKASH Bangla	MPG2	40700	3	2502	2503	2501	Bangla
T	12.597	V	NDTV INDIA	MPG2	40700	3	2902	2903	2901	Hindi
T	12.597	V	ZEE Telugu	MPG2	40700	3	4102	4103	4101	Telugu
T	12.597	V	ZEE Business	MPG2	40700	3	5735	5734	5735	Hindi
T	12.597	V	HBO	MPG2	40700	3	502	503	501	English
T	12.597	V	ZEE Sports	MPG2	40700	3	4502	4503	4501	English

96.5 East — EXPRESS AM11

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.608	R	BGTRK	MPG2	4275	3	308	256	8190	Russian
T	3.626	R	Magadan	MPG2	4285	3	308	256	8190	Russian
T	3.675	R	Orbita-2 Unost	MPG2	33483	7	512	650	128	Russian
T	3.675	R	Duble-2_RV	MPG2	33483	7	513	660	129	Russian
T	3.675	R	Orbita-3	MPG2	33483	7	514	670	130	Russian
T	3.675	R	Orbita-1_Mayak	MPG2	33483	7	515	680	131	Russian
T	3.675	R	Duble-1_RV	MPG2	33483	7	516	690	132	Russian
T	3.675	R	Duble-3_RV	MPG2	33483	7	517	700	133	Russian
T	3.675	R	Kultura-1_RV	MPG2	33483	7	518	710	134	Russian
T	3.675	R	Kultura-2_RV	MPG2	33483	7	519	720	135	Russian
T	3.875	R	Orbita-2 Unost	MPG2	29650	3	512	650	128	Russian
T	3.875	R	Duble-2 RV	MPG2	29650	3	513	660	129	Russian
T	3.875	R	Orbita-3	MPG2	29650	3	514	670	130	Russian
T	3.875	R	Orbita-1 Mayak	MPG2	29650	3	515	680	131	Russian
T	3.875	R	Duble-1 RV	MPG2	29650	3	516	690	132	Russian
T	3.875	R	Duble-3 RV	MPG2	29650	3	517	700	133	Russian
T	11.044	V	FNS	MPG2	29800	3	525	780	525	Russian

105.5 East — ASIASAT 3S

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.700	V	Zee Malay	MPG2	27500	3	170	120	170	English
T	3.700	V	ABC India	MPG2	27500	3	2001	2002	2001	English
T	3.700	V	RA ELP	MPG2	27500	3	2012	2011	2012	English
T	3.706	H	Channel NewsAsia	MPG2	6000	3	1160	1120	1120	English
T	3.715	H	Azio TV	MPG2	7000	3	3010	3011	3010	Chinese
T	3.715	H	AD HOC	MPG2	7000	3	3020	3021	3020	Chinese
T	3.745	V	Fashion TV	MPG2	2626	3	123	133	123	English
T	3.760	H	NOW	MPG2	26000	7	1010	1011	1010	English
T	3.760	H	Bloomberg	MPG2	26000	7	1020	1021	1020	English
T	3.760	H	Indus Music	MPG2	26000	7	1030	1031	1030	Urdu
T	3.760	H	Channel G	MPG2	26000	7	1040	1041	1040	Urdu
T	3.760	H	Indus Vision	MPG2	26000	7	1050	1051	1050	Urdu
T	3.760	H	World Fashion	MPG2	26000	7	1060	1061	1060	Urdu
T	3.760	H	Muslim TV1	MPG2	26000	7	1070	1071	8190	Urdu
T	3.760	H	Muslim TV2	MPG2	26000	7	1070	1080	8190	Urdu
T	3.760	H	Filmazia	MPG2	26000	7	1100	1101	1100	Urdu
T	3.760	H	Indus Plus News	MPG2	26000	7	1110	1111	1110	Urdu
T	3.760	H	TV5	MPG2	26000	7	1120	1121	1120	French
T	3.760	H	DW TV	MPG2	26000	7	1300	1301	1300	German
T	4.109	H	Indus News	MPG2	13333	3	513	640	131	Urdu
T	4.109	V	Ptv National	MPG2	13333	3	510	610	128	
T	12.377	H	Henan TV	MPG2	5632	3	308	256	308	Chinese

113.0 East — PALAPA C2

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.472	H	Global TV	MPG2	28125	3	33	34	33	Indones
T	11.472	H	Metro TV	MPG2	28125	3	1057	1058	1057	Indones
T	11.472	H	MQTV	MPG2	28125	3	2081	2082	2081	Indones

113.1 East — KOREASAT 2

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	12.370	H	CTN	MPG2	26850	3	1560	1520	1560	Korean
T	12.370	H	Channel 9	MPG2	26850	3	1960	1920	1960	Korean
T	12.457	H	SBS	MPG2	3074	3	4130	4131	4130	Korean
T	12.603	H	EEC SAT HUB1	MPG2	8242	3	1739	1740	1739	Korean
T	12.603	H	EEC SAT HUB2	MPG2	8242	3	7531	7532	7531	Korean
T	12.619	H	LGCC	MPG2	12297	3	3956	3957	3956	Korean
T	12.619	H	BCN	MPG2	12297	3	1592	1593	1592	Korean
T	12.619	H	CRTV	MPG2	12297	3	4973	4974	4973	Korean
T	12.619	H	HWTV	MPG2	12297	3	4826	4827	4826	Korean
T	12.619	H	CTN	MPG2	12297	3	4381	4382	4381	Korean
T	12.660	H	MBC	MPG2	3300	3	4194	4195	4194	Korean
T	12.706	H	MGM Bu	MPG2	3164	3	4194	4195	4194	Chinese

122.0 East — ASIASAT 4

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.940	V	Europe Football C	MPG2	27500	3	512	650	2305	Chinese
T	3.940	V	Early Education C	MPG2	27500	3	514	680	513	Chinese
T	3.940	V	Eastern Circulati	MPG2	27500	3	515	680	515	Chinese
T	3.940	V	Lottery Fun On Li	MPG2	27500	3	516	690	516	Chinese
T	3.940	V	Aged Channel	MPG2	27500	3	517	700	517	Chinese
T	3.940	V	English Tutorship	MPG2	27500	3	519	720	2306	Chinese
T	3.940	V	Vision Life	MPG2	27500	3	520	730	520	Chinese
T	4.020	V	TV Guide	MPG2	27500	3	512	650	8190	Chinese

128.0 East — JCSAT 3

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	4.000	V	ETTV Asia	MPG2	14220	5	1030	1031	1030	Chinese
T	4.000	V	Super TV	MPG2	14220	5	1070	1071	1070	Chinese
T	4.000	V	AD HOC3	MPG2	14220	5	1888	1889	1888	
T	4.120	V	ETTV Asia	MPG2	27740	7	1030	1031	1030	Chinese
T	4.120	V	JET TV	MPG2	27740	7	1040	1041	1040	Chinese
T	4.120	V	USTV	MPG2	27740	7	1050	1051	1050	Japanese
T	4.120	V	STV	MPG2	27740	7	1070	1071	1070	Chinese
T	4.120	V	Z Channel	MPG2	27740	7	1090	1091	1090	Chinese
T	4.120	V	UBN	MPG2	27740	7	1100	1101	1100	Chinese
T	4.120	V	ETTV Movie	MPG2	27740	7	1120	1121	1120	Chinese
T	4.120	V	ETTV News	MPG2	27740	7	1130	1131	1130	Chinese
T	4.120	V	UBN News	MPG2	27740	7	1140	1141	1140	Chinese
T	4.120	V	SUN TV	MPG2	27740	7	1170	1171	1170	

134.0 East — APSTAR 6

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.840	H	CCTV-1	MPG2	27500	3	512	650	8190	
T	3.868	V	Qinghai TV	MPG2	8680	3	4113	4114	4113	Chinese
T	3.907	V	Yunnan TV 1	MPG2	6980	1	32	33	32	Chinese
T	12.302	V	ZH1 stero	MPG2	5992	1	80	80		
T	12.302	V	ZH2 stero	MPG2	5992	1	84	84		
T	12.302	V	ZH3 stero	MPG2	5992	1	88	88		
T	12.302	V	ZH7 stero	MPG2	5992	1	92	92		
T	12.302	V	SW1 stero	MPG2	5992	1	96	96		
T	12.302	V	SW2 stero	MPG2	5992	1	100	100		
T	12.302	V	K15 stero	MPG2	5992	1	104	104		
T	12.302	V	NO AUDIO	MPG2	5992	1	108	108		
T	12.302	V	Lzh5 Rzh6	MPG2	5992	1	112	112		
T	12.302	V	Lzh8 Rdjy	MPG2	5992	1	116	116		
T	12.302	V	LGW11RDW1	MPG2	5992	1	120	120		
T	12.302	V	GW L13R14	MPG2	5992	1	124	124		
T	12.302	V	GW L15R16	MPG2	5992	1	128	128		
T	12.302	V	GW L17R18	MPG2	5992	1	132	132		
T	12.302	V	GW L19R20	MPG2	5992	1	136	136		
T	12.302	V	GW L21R22	MPG2	5992	1	140	140		
T	12.302	V	GW L23R24	MPG2	5992	1	144	144		
T	12.302	V	GW L25R26	MPG2	5992	1	148	148		
T	12.302	V	GW L27R28	MPG2	5992	1	152	152		
T	12.302	V	GW L29R30	MPG2	5992	1	156	156		
T	12.328	V	Hebei TV	MPG2	6930	1	160	80	160	Chinese

138.0 East — APSTAR V/TELSTAR 18

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	12.302	V	TVBS News	MPG2	30000	5	102	103	102	Chinese
T	12.302	V	CTI News	MPG2	30000	5	53	54	53	Chinese
T	12.302	V	EF	MPG2	30000	5	901	902	901	Chinese
T	12.302	V	ET Variety	MPG2	30000	5	1301	1302	1301	Chinese
T	12.302	V	CTI	MPG2	30000	5	51	50	51	Chinese
T	12.302	V	CTI Entertainment	MPG2	30000	5	2101	2102	2101	Chinese
T	12.302	V	ET Drama	MPG2	30000	5	2501	2502	2501	Chinese
T	12.302	V	Super TV	MPG2	30000	5	2901	2902	2901	Chinese
T	12.302	V	Goldsun TV	MPG2	30000	5	3301	3302	3301	Chinese
T	12.302	V	Yoyo TV	MPG2	30000	5	3701	3702	3701	Chinese
T	12.302	V	Mega Movie	MPG2	30000	5	4101	4102	4101	Chinese
T	12.302	V	ET Movie	MPG2	30000	5	4501	4502	4501	Chinese
T	12.355	V	CCTV 4	MPG2	30000	5	257	40	257	Chinese
T	12.355	V	Phoenix Infonews	MPG2	43000	3	45	44	45	Chinese
T	12.355	V	Phoenix Channel	MPG2	43000	3	42	41	42	Chinese
T	12.355	V	Fashion TV	MPG2	43000	3	39	38	39	Chinese
T	12.355	V	Sun TV	MPG2	43000	3	36	35	36	Chinese
T	12.355	V	MASTV	MPG2	43000	3	51	52	51	Chinese
T	12.355	V	ATV	MPG2	43000	3	49	50	49	Chinese
T	12.355	V	ATV	MPG2	43000	3	43	55	43	Chinese
T	12.355	V	TVB8	MPG2	43000	3	95	96	95	Chinese
T	12.355	V	TVB Xinghe	MPG2	43000	3				Chinese
T	12.355	V	TVBS	MPG2	43000	3	89	90	89	Chinese
T	12.355	V	TVBS Golden	MPG2	43000	3				Chinese
T	12.355	V	TVBS News	MPG2	43000	3				Chinese
T	12.355	V	Mega Movie	MPG2	43000	3				Chinese
T	12.355	V	Harllmark Channel	MPG2	43000	3				Chinese
T	12.355	V	Celestial	MPG2	43000	3				Chinese
T	12.355	V	GOAL TV1	MPG2	43000	3				Chinese
T	12.355	V	GOAL TV2	MPG2	43000	3				Chinese
T	12.355	V	5X Channel	MPG2	43000	3				Chinese
T	12.355	V	Billboard	MPG2	43000	3				Chinese
T	12.490	V	21 National Geogr	MPG2	21593	3	61	62	61	Chinese
T	12.490	V	22 A1	MPG2	21593	3	49	52	49	Chinese
T	12.490	V	23 Zhujiang TV	MPG2	21593	3	48	47	48	Chinese
T	12.490	V	24CETV	MPG2	21593	3	51	50	51	Chinese
T	12.490	V	25 CCTV-10	MPG2	21593	3	54	53	54	Chinese
T	12.490	V	26 CCTV-News	MPG2	21593	3	57	56	57	Chinese
T	12.490	V	29 Channel9	MPG2	21593	3	36	35	36	Chinese
T	12.490	V	28 Channel8	MPG2	21593	3	39	38	39	Chinese
T	12.490	V	27 Channel7	MPG2	21593	3	42	41	42	Chinese
T	12.490	V	30 Channel13	MPG2	21593	3	60	33	60	Chinese

144.0 East — SUPERBIRD C

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	12.553	H	Star Channel	MPG2	21096	3	1160	1120	1160	
T	12.553	H	Star Channel Plus	MPG2	21096	3	1260	1220	1260	
T	12.553	H	Star Channel Clas	MPG2	21096	3	1360	1320	1360	
T	12.553	H	Tabi Channel	MPG2	21096	3	1460	1420	1460	
T	12.553	H	M21	MPG2	21096	3	1520	1560	1520	
T	12.553	H	Karaoke Channel	MPG2	21096	3	1660	1620	1660	
T	12.553	H	FOD	MPG2	21096	3	1720	1760	1720	
T	12.553	H	Fishing Vision	MPG2	21096	3	1860	1820	1860	
T	12.553	H	National Geograph	MPG2	21096	3	1960	1920	1960	
T	12.583	H	RTV	MPG2	21096	3	2960	2920	2960	
T	12.583	H	PTV	MPG2	21096	3	2060	2020	2060	

164.0 East — OPTUS A3

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	12.501	H	TRT International	MPG2	30790	3	257	258	257	Turkish
T	12.501	H	Thai TV Global Ne	MPG2	30790	3	512	690	512	Thai
T	12.501	H	The God Channel	MPG2	30790	3	769	770	769	English
T	12.501	H	SET Asia	MPG2	30790	3	1260	1220	1260	Hindi
T	12.501	H	3ABN	MPG2	30790	3	2049	2050	2049	English
T	12.501	H	Daystar	MPG2	30790	3	5153	5154	5153	Dutch
T	12.501	H	BVN	MPG2	30790	3	5158	5159	5158	Dutch

166.0 East — PANAMSAT 8

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.836	V	Azio	MPG2	28000	5	167	108	167	Chinese
T	3.860	V	Mac TV	MPG2	28000	5	168	1112	168	Chinese
T	3.880	V	Hero Channel	MPG2	28700	5	1360	1320	1360	
T	3.880	V	MYX (cable)	MPG2	28700	5	1960	1920	1960	
T	3.949	V	MBC 2	MPG2	4613	3	308	256	8190	Korean
T	4.080	V	Videoland Japan	MPG2	30000	3	1010	1011	1010	Japanese
T	4.080	V	Videoland TV	MPG2	30000	3	1020	1021	1020	Chinese
T	4.080	V	Videoland Movie	MPG2	30000	3	1030	1031	1030	Chinese
T	4.080	V	Videoland Foreign	MPG2	30000	3	1040	1041	1040	English
T	4.080	V	Videoland Play	MPG2	30000	3	1050	1051	1050	Chinese
T	4.080	V	GTV 2	MPG2	30000	3	1070	1071	1070	Chinese
T	4.080	V	GTV	MPG2	30000	3	1080	1081	1080	Chinese
T	4.080	V	GTV Plat	MPG2	30000	3	1090	1091	1090	Chinese
T	4.080	V	SET Taiwan	MPG2	30000	3	1100	1101	1100	Chinese
T	4.080	V	SET City	MPG2	30000	3	1110	1111	1110	Chinese
T	4.080	V	SET News	MPG2	30000	3	1120	1121	1120	Chinese
T	4.080	V	Z Channel	MPG2	30000	3	1060	1061	1060	Chinese
T	4.140	V	TV service	MPG2	28125	3	1860	1820	1860	

263.0 East (97.0 West) — INTELSAT AMERICAS 5

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.787	V	Alkarma TV	MPG2	25000	3	1296	1297	1296	Arabic
T	11.898	V	DAN Tamil Ozhi	MPG2	22000	3	773	774	773	
T	11.898	V	A1 Plus	MPG2	22000	3	789	790	789	English

268.0 East (92.0 West) — BRASILSAT 4

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.656	H	TV Antena 10	MPG2	3150	3	1110	1211	8190	
T	3.656	H	TV Antena 10	MPG2	3150	3	1110	1213	8190	
T	3.665	H	CB Leiloes	MPG2	3214	3	1110	1211	1110	
T	3.665	H	CB Leiloes	MPG2	3214	3	1110	1213	1110	
T	3.844	V	TV Rio Negro	MPG2	3255	3	337	340	33	Portugu
T	3.925	V	TV Aparecida	MPG2	2967	3	33	34	33	Portugu
T	3.928	V	TVBV	MPG2	2700	5	308	256	8190	Portugu
T	3.956	V	TV Gazeta AL	MPG2	4285	5	33	34	33	
T	11.780	V	KEJR-TV	MPG2	29000	3	821	822	821	Spanish
T	11.780	V	Travertine	MPG2	29000	3	2320	2321	2320	English

302.0 East (58.0 West) — PANAMSAT 9

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.760	V	Prueba	MPG2	27684	7	710	902	710	
T	3.800	V	Temp-Synd-Pal	MPG2	26470	7	1860	1820	1860	
T	4.137	H	FCN	MPG2	2941	3	33	36	33	
T	4.137	H	FCN	MPG2	3675	3	33	36	33	

304.5 East (55.5 West) — INTELSAT 805

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.431	V	XHTVL Canal 9	MPG2	3500	3	100	110	100	Spanish
T	3.447	V	Educonto	MPG2	3300	2	33	36	33	
T	3.682	V	Sports Max	MPG2	3255	3	768	258	768	English
T	3.727	V	Canal 1 Ecuador I	MPG2	3000	3	4096	4097	4096	
T	3.940	V	TV Canção Nova In	MPG2	2815	2	53	54	56	
T	4.028	V	Péru Magico	MPG2	4230	3	3601	3604	3601	
T	4.104	H	Repretel Canal 6	MPG2	5062	3	768	769	768	Spanish
T	4.111	V	Telesistema	MPG2	3333	3	100	769	768	Spanish
T	4.128	V	Convergent Media	MPG2	2000	3	337		8190	

317.0 East (43.0 West) — PANAMSAT 3R,6,6B

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.856	V	Boomerang (Brazil)	MPG2	30800	3	1024	1020	1024	
T	3.856	V	TCM (Latin Americ	MPG2	30800	3	1124	1100	1124	
T	3.856	V	TCM (Latin Americ	MPG2	30800	3	1124	1102	1124	
T	3.856	V	TNT (Chile)	MPG2	30800	3	1160	1120	1160	
T	3.856	V	TNT (Chile)	MPG2	30800	3	1160	1122	1160	
T	3.856	V	TNT (Latin Americ	MPG2	30800	3	1160	1120	1160	
T	3.856	V	Toon-Tina (Latin	MPG2	30800	3	1260	1220	1260	
T	3.856	V	Toon-Tina (Latin	MPG2	30800	3	1260	1222	1260	
T	3.856	V	Toon-Tina (Brazil)	MPG2	30800	3	1360	1320	1360	
T	3.856	V	Toon-Tina (Mexico)	MPG2	30800	3	1460	1420	1460	
T	3.856	V	Toon-Tina (Mexico)	MPG2	30800	3	1460	1422	1460	
T	3.856	V	TNT (Latin Americ	MPG2	30800	3	1524	1500	1524	
T	3.856	V	TNT (Latin Americ	MPG2	30800	3	1524	1500	1524	
T	3.856	V	TNT (Brazil)	MPG2	30800	3	1560	1520	1560	
T	3.856	V	Toon-Tina	MPG2	30800	3	1660	1620	1660	
T	3.856	V	Toon-Tina	MPG2	30800	3	1760	1720	1760	
T	3.856	V	Toon-Tina	MPG2	30800	3	1760	1720	1760	
T	3.856	V	TNT (Mexico)	MPG2	30800	3	1860	1820	1860	
T	3.856	V	Boomerang (Latin	MPG2	30800	3	1920	1920	1960	
T	3.856	V	Boomerang (Latin	MPG2	30800	3	1922		1960	
T	12.651	V	The Golf Channel	MPG2	30800	7	2360	2320	2360	English

319.5 East (40.5 West) — NSS 806

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	3.680	V	Capital	MPG2	3000	3	512	768	512	
T	3.695	L	Canal 6	MPG2	2964	3	33	34	33	
T	3.718	L	Fox Life LA	MPG2	6670	3	1160	1320	1160	Spanish
T	3.718	L	Fox Life Brasil	MPG2	6670	3	1260	1220	1260	Spanish
T	3.740	L	Universal Channel	MPG2	6670	3	1160	1320	1160	
T	3.803	L	HRT Plus	MPG2	27500	3	1317	1327	1317	Croatian
T	3.803	V	Inspiration TV (i	MPG2	26855	7	8011	8111	8011	English
T	3.965	R	Cosmovision	MPG2	2170	7	33		33	Spanish
T	4.050	R	Zona Latina	MPG2	5900	3	100	101	100	
T	4.050	R	Via X	MPG2	5900	3	200	201	200	
T	4.060	R	Hipódromo Maroñas	MPG2	8500	5	200	201	200	Spanish

330.0 East (30.0 West) — HISPASAT 1B,1C,1D

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.508	V	SGTV	MPG2	9547	3	2260	2220	2260	
T	11.508	V	Agencia EFE (Netw	MPG2	9547	3	2160	2120	2160	
T	11.535	V	Canal Cocina	MPG2	24500	5	4224	4225	4224	Spanish
T	11.574	V	Nomeados	MPG2	27500	3	4800	4801	4800	
T	11.574	V	Portugueses	MPG2	27500	3	4816	4818	4816	
T	11.574	V	EMAs	MPG2	27500	3	4832	4833	4832	
T	11.579	V	Une	MPG2	25000	3	291	292	291	Spanish
T	11.579	V	C69 Latino	MPG2	27500	3	281	282	281	Spanish
T	11.579	V	Gigashopping	MPG2	27500	3	271	272	271	Spanish
T	11.579	V	Hispatel	MPG2	27500	3	318	352	318	Spanish
T	11.579	V	Ecuaplus	MPG2	27500	3	341	342	341	Spanish
T	11.811	V	Cinemania Clasico	MPG2	27500	3	165	100	165	Spanish
T	11.811	V	Cinemania Clasico	MPG2	27500	3	165	101	165	Original
T	11.891	V	C+ Cine 1	MPG2	27500	3	162	88	162	Spanish
T	11.891	V	C+ Cine 1	MPG2	27500	3	162	89	162	Original
T	11.891	V	C+ Cine 2	MPG2	27500	3	163	92	163	Spanish
T	11.891	V	C+ Cine 2	MPG2	27500	3	163	93	163	Original
T	11.891	V	D Cine Espanol	MPG2	27500	3	167	108	167	Spanish
T	11.891	V	C+ Cine 3	MPG2	27500	3	170	120	170	Spanish
T	11.891	V	C+ Cine 3	MPG2	27500	3	170	121	170	Original
T	12.092	V	Cubavision	MPG2	27500	3	4911	4912	4911	Spanish
T	12.303	V	Cinemania 2	MPG2	27500	3	161	84	161	Spanish
T	12.303	V	Cinemania 2	MPG2	27500	3	161	85	161	Original
T	12.380	V	Cinemania	MPG2	27500	3	160	80	160	Spanish
T	12.380	V	C+ Deporte 2	MPG2	27500	3	172	128	172	Spanish
T	12.380	V	C+ Deporte 2	MPG2	27500	3	172	129	172	Original
T	12.456	V	Canal de Historia	MPG2	27500	3	167	108	167	Spanish
T	12.456	V	Eurosport	MPG2	27500	3	168	112	168	Spanish
T	12.456	V	Cinemania 30	MPG2	27500	3	169	116	169	Spanish
T	12.456	V	Cuatro	MPG2	27500	3	132		173	Spanish
T	12.545	V	TVE 1	MPG2	30000	7	110	100	110	Spanish
T	12.545	V	TVE 2	MPG2	30000	7	210	200	210	Spanish
T	12.545	V	Tele 5	MPG2	30000	7	310	300	310	Spanish
T	12.545	V	Antena 3	MPG2	30000	7	410	400	410	Spanish
T	12.545	V	Tele 5 (Canarias)	MPG2	30000	7	510	500	510	Spanish
T	12.545	V	REG C+	MPG2	30000	7	810	800	810	Spanish
T	12.545	V	PP	MPG2	30000	7	710	700	710	
T	12.591	V	Cuatro	PAL_						Spanish

345.0 East (15.0 West) — TELSTAR 12

Typ	Freq [GHz]	Pol	Channel Name	Mode	SR	FEC	Video PID	Audio PID	PCR PID	Language
T	11.494	V	Rang a Rang	MPG2	17464	3	272	528	272	Farsi
T	11.494	V	Channel One	MPG2	17464	3	1760	1720	1760	Farsi
T	11.665	V	Five (Region 1)	MPG2	12797	3	512	640	8190	English
T	11.665	V	Five (Region 2)	MPG2	12797	3	513	650	8190	English

Legend:
- T = TV Digital
- R = Radio Digital
- T = TV Digital Crypt
- R = Radio Digital Crypt
- T = TV Analog
- R = Radio Analog
- T = TV Analog Crypt
- R = Radio Analog Crypt
- H = TV High Definition
- H = TV High Definition Crypt
- D = Data Channel
- P = Package

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	11.804	H	Antenna Satellite	MPG2	3300	3	4130	4131	4130	Greek
T	11.855	H	The Science Chann	MPG2	26027	3	4130	4131	4130	English
T	11.995	H	Made in Albania	MPG2	2180	3		768	769	
T	12.666	H	Seven TV	MPG2	1666	2	4450	4451	4450	Greek
T	12.666	H	no name	MPG2	1666	2	4194	4195	4194	
T	12.680	H	SEVEN	MPG2	3750	2	4450	4451	4450	

347.5 East (12.5 West) ATLANTIC BIRD 1

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	10.964	H	CGN TV	MPG2	9250	3	308	256	8190	
T	10.964	H	TCT	422_	9250	3	33	36	33	
T	10.964	H	3 ABN	MPG2	9250	3	49	52	49	
T	10.964	H	Chinese channel	MPG2	9250	3	65	68	65	
T	11.389	H	CGN TV	MPG2	15954	3	257	513	257	Korean
T	11.389	H	TV Sri	MPG2	15954	3	258	514	258	Sinhala
T	11.389	H	Rete Capri	MPG2	15954	3	262	518	262	Italian
T	11.389	H	LA 9	MPG2	15954	3	265	521	265	Italian
T	11.389	H	Trace TV	MPG2	15954	3	272	528	784	French
T	11.389	H	Wellenlaenge TV	MPG2	15954	3	290	546	290	German
T	11.389	H	Arkadas TV	MPG2	15954	3	291	547	291	Turkish
T	11.389	H	Canli Sohbet TV	MPG2	15954	3	292	548	292	Turkish
T	11.389	H	Chilli TV	MPG2	15954	3	293	549	293	
T	12.515	H	XXXX	MPG2	17452	3	275	276	275	
T	3.675	R	Perviy kanal Vsem	MPG2	29615	5	527	790	133	Russian
T	3.675	R	RTR-Planeta	MPG2	29615	5	528	800	134	Russian

352.0 East (8.0 West) TELECOM 2D

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	11.513	H	Pink Plus	MPG2	27500	3	2051	2052	2051	Serbian
T	11.598	H	National Geograph	MPG2	27500	3	307	407	307	German
T	11.598	H	National Geograph	MPG2	27500	3	307	427	307	English
T	11.598	H	AXN	MPG2	27500	3	308	408	308	German
T	11.598	H	AXN	MPG2	27500	3	308	428	308	English
T	11.598	H	Extreme Sports	MPG2	27500	3	309	409	309	German
T	11.598	H	Extreme Sports	MPG2	27500	3	309	425	309	English
T	11.595	V	Turkmeneli TV	MPG2	25775	2	2031	2032	2034	Turkish
T	11.595	V	Al Hurria TV	MPG2	25775	2	2038	2039	2038	Arabic

353.0 East (7.0 West) NILESAT 101, 102

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	11.747	V	A.B.C Aqtsadia TV	MPG2	27500	3	1005	1205	1005	Arabic
T	11.747	V	Al Zwraa	MPG2	27500	3	1006	1206	1006	Arabic
T	11.747	V	Salah el Din TV	MPG2	27500	3	1010	1210	1010	Arabic
T	11.747	V	Beladi Satellite	MPG2	27500	3	1026	1028	1026	Arabic
T	11.766	H	AL Parlman	MPG2	27500	3	3001	3004	3001	Arabic
T	11.803	H	ART Movis world	MPG2	27500	3	512	650	128	
T	11.803	H	B4U Movies	MPG2	27500	3	513	660	129	
T	11.803	H	B4U Music	MPG2	27500	3	514	670	130	
T	11.803	H	MCM	MPG2	27500	3	515	680	131	
T	11.803	H	Animal Planet	MPG2	27500	3	517	700	133	
T	11.803	H	Reality TV	MPG2	27500	3	518	710	134	
T	11.803	H	Discovery Science	MPG2	27500	3	519	720	135	
T	11.803	H	Ary Digital	MPG2	27500	3	520	730	136	
T	11.803	H	Asianet	MPG2	27500	3	521	740	137	
T	11.803	H	Granada UK TV	MPG2	27500	3	522	750	138	
T	11.803	H	CNBC	MPG2	27500	3	523	760	139	
T	11.803	H	Sky News	MPG2	27500	3	524	5634	140	
T	11.803	H	Star News	MPG2	27500	3	525	5644	141	
T	11.803	H	FOX News	MPG2	27500	3	526	5654	142	
T	11.861	V	Nojoom 3	MPG2	27500	3	204	304	204	Arabic
T	11.861	V	DIFF	MPG2	27500	3	207	307	207	
T	11.900	V	Mazzika Zoom	MPG2	27500	3	1001	1010	1001	Arabic
T	11.919	V	Marhaba	MPG2	27500	3	1021	1022	1021	Arabic
T	11.938	V	Zee Arabiya	MPG2	27500	3	4151	4152	4151	Arabic
T	11.957	H	ART Sport 1	MPG2	27500	3	512	650	128	
T	11.957	H	ART Sport 3	MPG2	27500	3	514	670	130	
T	11.957	H	ART Sport 4	MPG2	27500	3	515	680	131	
T	11.957	H	ART Sport 5	MPG2	27500	3	516	690	132	
T	11.957	H	ART Sport 5	MPG2	27500	3	517	700	133	
T	11.957	H	Prime Sport	MPG2	27500	3	518	710	134	
T	11.957	H	Fox Sport	MPG2	27500	3	519	720	135	
T	11.957	H	Ten Sport	MPG2	27500	3	520	730	136	

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	11.957	H	Eurosport	MPG2	27500	3	521	740	137	
T	11.957	H	Eurosport News	MPG2	27500	3	522	750	138	
T	12.015	V	TV Alafasy	MPG2	27500	3	1302	1303	1302	
T	12.034	V	Jordan Satellite	MPG2	27500	3	521	740	137	Arabic
T	12.034	H	Al Awael Channel	MPG2	27500	3	512	650	128	Arabic
T	12.034	H	ART Teenz	MPG2	27500	3	514	670	130	Arabic
T	12.034	H	ART Aflam 1	MPG2	27500	3	515	680	131	Arabic
T	12.034	H	Future TV	MPG2	27500	3	522	750	138	Arabic
T	12.034	H	ART Tarab	MPG2	27500	3	518	710	134	Arabic
T	12.034	H	ART Cinema	MPG2	27500	3	517	700	133	Arabic
T	12.034	H	Iqraa Channel	MPG2	27500	3	520	730	136	Arabic
T	12.034	H	ART Hekayat	MPG2	27500	3	513	660	129	Arabic
T	12.034	H	Art Aflam 2	MPG2	27500	3	516	690	132	English
T	12.034	H	RTT	MPG2	27500	3	523	760	139	Malay
T	12.034	H	BN TV	MPG2	27500	3	524	5632	140	English
T	12.034	V	Al Jazeera	MPG2	27500	3	526	5654	142	Arabic
T	12.053	V	Sharm One	MPG2	27500	3	2004	2005	2004	Arabic
T	12.053	V	Sama Alcham TV	MPG2	27500	3	2012	2013	2012	
T	12.053	V	Hi TV	MPG2	27500	3	2016	2017	2016	
T	12.192	V	Al Masar	MPG2	2017	3	100	110	100	Arabic
T	12.220	V	Al Cham	MPG2	2894	3	33	34	41	
T	12.226	V	Gear One	MPG2	27500	3	161	162	161	Arabic
T	12.226	V	Awtar TV	MPG2	27500	3	241	242	241	Arabic
T	12.301	V	Sahara One	MPG2	27500	3	512	650	128	Arabic
T	12.301	V	Indus Vision	MPG2	27500	3	513	660	129	Arabic
T	12.301	V	Kairali	MPG2	27500	3	514	670	130	Arabic
T	12.301	V	Smart Way	MPG2	27500	3	515	680	131	Arabic
T	12.301	V	Al Diyar	MPG2	27500	3	516	690	132	Arabic
T	12.301	V	Al Hakeka	MPG2	27500	3	517	700	133	Arabic
T	12.301	V	Nourmina	MPG2	27500	3	518	710	134	Arabic
T	12.301	V	LBC EU	MPG2	27500	3	523	760	139	Arabic
T	12.301	V	Seven Stars	MPG2	27500	3	520	730	136	Arabic
T	12.301	V	Ishtar TV	MPG2	27500	3	521	740	137	Arabic
T	12.301	V	VIP	MPG2	27500	3	524	5634	140	Arabic
T	12.301	V	ART Al Monasbat	MPG2	27500	3	525	5644	141	Arabic
T	12.301	V	W.Cup	MPG2	27500	3	526	5654	142	Arabic

355.0 East (5.0 West) ATLANTIC BIRD 3

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	3.648	R	Tele Sahel	MPG2	2170	3	768	769	768	French
T	4.157	L	RTG1	MPG2	8010	3	512	650	128	French
T	4.157	L	Téléafrica	MPG2	8010	3	513	660	129	French
T	11.590	V	France 2	MPG2	20000	2	120	130	120	French
T	11.590	V	France 3	MPG2	20000	2	220	230	220	French
T	11.590	V	France 4	MPG2	20000	2	320	330	320	French
T	11.590	V	Arte	MPG2	20000	2	520	530	520	French
T	11.590	V	La Chaine Parleme	MPG2	20000	2	620	630	620	French
T	11.590	V	France 5	MPG2	20000	2	420	430	420	French
T	12.648	V	CANAL+ France	SECM						French

356.0 East (4.0 West) AMOS 1,2

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	10.758	V	Open World	MPG2	27500	3	524	672	524	
T	10.758	V	RTV International	MPG2	27500	3	526	674	526	
T	10.758	V	Nashe Kino	MPG2	27500	3	527	675	527	
T	10.762	H	M1 International	MPG2	23250	3	113	114	113	Ukraini
T	10.762	H	TRK SVIT	MPG2	23250	3	129	130	129	Ukraini
T	10.796	H	Cinemax 2 Bulgaria	MPG2	13740	3	510	506	510	Bulgari
T	10.803	V	Yes 1	MPG2	27500	3	519	667	8190	
T	10.841	V	Yes 1	MPG2	27500	3	512	660	8190	
T	10.841	V	Yes 2	MPG2	27500	3	513	661	8190	
T	10.841	V	Yes 3	MPG2	27500	3	514	662	8190	
T	10.841	V	Yes 4	MPG2	27500	3	515	663	8190	
T	10.841	V	Baby	MPG2	27500	3	516	664	8190	
T	10.841	V	Sport 5	MPG2	27500	3	517	665	8190	
T	10.841	V	Shabat Soccer	MPG2	27500	3	518	666	8190	
T	10.841	V	HOP!	MPG2	27500	3	519	667	8190	
T	10.841	V	Good life TV Netw	MPG2	27500	3	521	669	8190	
T	10.841	V	Yes Y	MPG2	27500	3	522	670	8190	
T	10.841	V	MGM	MPG2	27500	3	523	671	523	

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	10.841	V	Russian Music Box	MPG2	27500	3	524	672	524	
T	10.841	V	Hallmark Israel	MPG2	27500	3	525	673	525	
T	10.841	V	Sky NEws	MPG2	27500	3	526	674	526	
T	10.841	V	Viva Platina	MPG2	27500	3	527	675	527	
T	10.889	V	France 2	MPG2	27500	3	525	673	525	
T	10.993	H	Baki TV	MPG2	4850	3	4194	4195	4194	Azeri
T	11.189	V	Alpha TV Romania	MPG2	3333	3	4210	4211	4210	Romanian
T	11.303	V	4Story TV	MPG2	19540	3	800	801	800	Hungari
T	11.347	V	TMT	MPG2	2800	7	4194	4195	4194	Polish
T	11.427	H	MTV Adria	MPG2	3333	3	33	34	41	Croatian
T	11.474	V	ISR WGames	MPG2	27500	3	517	665	8190	Spanish
T	11.474	V	Xtreme play	MPG2	27500	3	521	669	8190	English
T	11.510	V	Biography	MPG2	27500	3	513	661	8190	
T	11.510	V	Sports 5+	MPG2	27500	3	521	669	8190	
T	11.558	V	Yes 1	MPG2	27500	3	512	660	512	
T	11.558	V	Yes 4	MPG2	27500	3	513	661	513	
T	11.558	V	Shopping	MPG2	27500	3	523	671	523	
T	11.558	V	TCM	MPG2	27500	3	528	676	528	
T	11.592	V	Yes 2	MPG2	27500	3	512	660	512	
T	11.592	V	The Discovery Cha	MPG2	27500	3	520	668	520	
T	11.592	V	VIZ	MPG2	27500	3	525	673	525	
T	11.592	V	Music 24	MPG2	27500	3	528	676	528	
T	11.592	V	VH1 Classic	MPG2	27500	3	529	677	529	
T	11.677	V	Yes Hanukkah	MPG2	27500	3	513	661	513	English

359.0 East (1.0 West) INTELSAT 10-02

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	4.175	R	The Pentagon Chan	MPG2	28000	3	1860	1820	1860	English
T	4.175	R	AFN Guide	MPG2	28000	3	1760	1720	1760	English
T	4.175	R	AFN Back-up to AF	MPG2	28000	3	1760	1330	1760	
T	4.175	R	U/I Voicline/Spli	MPG2	28000	3	1760	1332	1760	
T	4.175	R	Backhaul from Bag	MPG2	28000	3	1760	1522	1760	
T	4.175	R	AFN Back-up for A	MPG2	28000	3	1760	1330	1760	English
T	4.175	R	Backhaul to Japan	MPG2	28000	3	1760	1632	1760	
T	4.175	R	AFN Back-up to AF	MPG2	28000	3	1760	1722	1760	English
T	4.175	R	Guide/Voiceline/U	MPG2	28000	3	1760	1732	1760	
T	4.180	L	Nile News	MPG2	27000	3	4132	4133	4132	Arabic
T	4.180	L	ESC 1 (USA)	MPG2	27000	3	35	36	35	
T	12.527	H	Telesport	MPG2	27500	3	558	766	558	Romanian
T	12.527	H	Minimax Hungary	MPG2	27500	3	582	732	582	Hungari
T	12.574	H	A1 Plus	MPG2	10127	3	33	34	33	Macedon
T	12.574	H	BTR Sat	MPG2	10127	3	513	514	513	Macedon
T	12.574	H	Orbis	MPG2	10127	3	769	770	769	Macedon
T	12.574	H	Kanal 5	MPG2	10127	3	1537	1538	1537	Macedon
T	12.643	H	National Geograph	MPG2	27500	3	531	681	531	
T	12.687	H	N 24	MPG2	27500	3	510	660	510	Romanian
T	12.722	H	Telesport	MPG2	27500	3	513	663	513	
T	12.722	H	Spice Platinum	MPG2	27500	3	533	683	533	
T	12.722	H	Viasat History	MPG2	27500	3	548	698	548	

359.2 East (0.8 West) THOR 2,3

	Freq	Pol	Name	Enc	SR	F	V	A	PCR	Lang
T	11.261	V	DiTV	MPG2	24500	7	520	676	520	
T	11.403	V	TV2 Film	MPG2	24500	7	519	688	519	Danish
T	11.727	V	AXN	MPG2	28000	7	3858	3859	3857	
T	12.226	V	Royal League 2	MPG2	28000	7	514	688	514	
T	12.226	V	K5M	MPG2	28000	7	516	656	516	

TELE-satellite Receiver Guide

Satellite DVB Receivers

	Channel Memory (TV / Radio)	Symbolrate (Ms/sec)	SCPC Compatible	DiSEqC	USALS Compatible	NTSC/PAL	Modulator Output	Looped-Through IF	SatcoDX Compatible	Power Supply (Volt / Hertz)	Digital Audio Output	Audio/Video Output (RCA)	Scart Output	S-VHS Output (S-VHS)	Volt 0/12 Output (V 0/12)	Positioner	Mechanical Polarizer	Hard Disk (Built-in) (GB)	Serial Interface	CI Slots	Embedded CA	TSI Magazine (Issue)
ARION AF-9300PVR	8000	2-45	yes	1.0, 1.1, 1.2	yes	NTSC/PAL	yes, UHF	yes	no	100-240V 50/60Hz	yes (optical)	yes	yes, 2	yes	yes	no	no	yes	yes, RS-232	yes	no	#188 2005
BOTECH CA 9000 FTA/CI	4900	2-45	yes	1.2	yes	yes	yes, UHF	yes	no	90-260 VAC 50/60Hz	yes	yes	yes, 2	no	no	no	no	no	yes, RS-232	yes, 2	no	#189 2005
CAMOS SVR-200 Mobile FTA Receiver	4000	n/a	yes	1.0, 1.2	no	NTSC/PAL	yes	n/a	no	10-35 VDC	n/a	yes	n/a	yes	no	no	no	no	yes, RS-232	no	no	#184 2005
CHESS Digital 4000 FTA	3000	2-45	yes	1.0, 1.2	no	NTSC/PAL	no	yes	no	230V 50Hz	yes	yes	yes, 2	yes	yes	no	no	no	yes, RS-232	no	no	#186 2005
DIGITAL EVERYWHERE Fire DTV External PC Set Top Box	unlimited	2-40	yes	1.0, 1.1, 1.2	no	NTSC/PAL	no	yes	no	12 VDC	no	no	no	no	no	no	no	yes, in PC	no	yes, 1	no	#187 2005
DIGITALL WORLD SCI-4100E with CI Slot	4000	1-45	yes	1.0, 1.2, 1.3	yes	NTSC/PAL	no	yes	no	100-230V 50/60Hz	yes	no	yes, 2	no	no	no	no	no	yes, RS-232	yes, 1	no	#185 2005
DRAGON D-2100 FTA	5000	2-45	yes	1.0, 1.2, 1.3	yes	NTSC/PAL	yes	yes	no	90-250V 50/60Hz	yes, 2	yes	yes, 2	no	no	no	no	no	yes, RS-232	no	no	#186 2005
DSN-DIGITAL DEVICES GR 8300CI CU	5000	2-45	yes	1.0, 1.2, 1.3	yes	NTSC/PAL	yes	yes	yes	90-260V 50/60Hz	yes	yes	yes, 2	no	yes	no	no	no	yes, RS-232	yes	no	#186 2005
DSN-GR 7400 CI EXPLORER	5000 TV 1600 Radio	2-45	yes	1.0, 1.2, 1.3	yes	NTSC/PAL/SECAM	yes	yes	no	95-250V 50/60Hz	yes (optical)	yes	yes, 2	no	yes	no	no	no	yes, RS-232	yes, 2	no	#188 2005
EDISON 2100 FTA	4000	1-45	yes	1.0, 1.2	no	NTSC/PAL	yes	yes	no	90-250V 50/60Hz	yes	yes	yes, 2	no	yes	no	no	no	yes, RS-232	no	no	#187 2005
EUROSAT MANHATTAN PLAZA ST550 with Blind Scan	5000	2-45	yes	1.0, 1.3	yes	NTSC/PAL	yes	yes	no	100-240V 50/60Hz	yes	yes	yes, 2	yes	yes	no	no	option	yes, RS-232	yes, 2	yes, Irdeto	#185 2005
EYCOS S10.02F	4000	2-45	yes	1.0, 1.1, 1.2	yes	NTSC/PAL	no	yes	no	90-250 VAC	yes (optical)	yes	yes, 2	no	no	no	no	no	yes, RS-232	no	no	#189 2005
FORTEC STAR FSIR-5400 NA	4800	2-45	yes	1.0, 1.2	yes	NTSC/PAL	yes	yes	no	90-240V 50/60Hz	yes (optical)	yes	no	yes	no	no	no	no	yes, RS-232	no	yes, Irdeto	#190 2005
FORTEC STAR Lifetime Diamond DVB-S & DVB-T	3000	1-45	yes	1.0, 1.2, 1.3	yes	NTSC/PAL	yes	yes	no	90-250V 50/60Hz	no	yes	yes, 2	no	no	no	no	no	yes, RS-232	no	no	#187 2005
GLOBAL TEQ 6000PVR	10000	1-45	yes	1.0, 1.2	yes	NTSC/PAL	yes	yes	no	90-250V 50/60Hz	yes (optical)	yes	yes, 2	no	no	no	no	yes	yes, RS-232	yes	no	#190 2005
GLOBO PVR I with Hard Drive	4000	2-45	yes	1.0, 1.2	yes	NTSC/PAL	yes	yes	no	230V 50Hz	yes	yes	yes, 2	no	yes	no	no	no	yes, RS-232	no	no	#185 2005
GENERAL SATELLITE FTA-7001S	5000	2-45	yes	1.0, 1.2	no	PAL/SECAM	yes	yes	no	190-250V 50/60Hz	yes	no	yes, 1	no	no	no	no	no	yes, RS-232	no	no	#189 2005
GOLDEN INTERSTAR 9000 CI PVR Premium	9000	1-45	yes	1.0, 1.1, 1.2	yes	NTSC/PAL	yes	yes	no	100-250 VAC	yes (optical)	yes	yes, 2	no	no	no	no	yes	yes, RS-232	yes, 2	yes, 2	#190 2005
GOLDEN INTERSTAR DVB-T/S 8300 CI Premium	6000	1-45	yes	1.0, 1.1, 1.2	yes	NTSC/PAL	yes	yes	no	100-250 VAC	yes (optical)	yes	yes, 2	no	no	no	no	no	yes, RS-232	yes, 2	yes, 2	#189 2005
HOMECAST S 8000 CIPVR Twin Tuners with USB 2.0	4000	1-45	yes	1.0, 1.2, 1.3	yes	NTSC/PAL	yes	yes, 2	no	90-260V 50/60Hz	yes	yes	yes, 2	S-VHS	no	no	no	yes	yes, RS-232	yes, 2	no	#185 2005

Satellite DVB Receivers
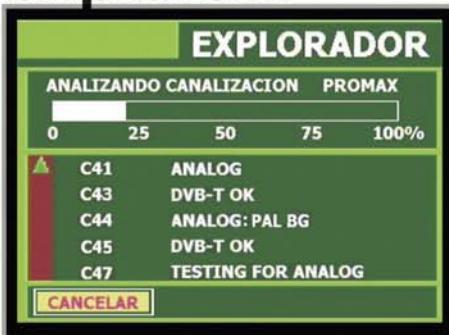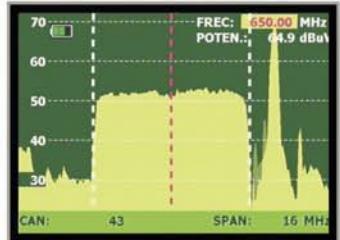
	Channel Memory	Symbolrate	SCPC Compatible	DiSEqC	USALS Compatible	NTSC/PAL	Modulator Output	Looped-Through IF	SatcoDX Compatible	Power Supply	Digital Audio Output	Audio/Video Output	Scart Output	S-VHS Output	Volt 0/12 Output	Positioner	Mechanical Polarizer	Hard Disk (Built-in)	Serial Interface	CI Slots	Embedded CA	TSI Magazine
	TV Radio	Ms/sec								Volt Hertz		RCA		S-VHS	V 0/12			GB				Issue
INVERTO IDL 5000HD	6000	2-45	yes	1.0, 1.1, 1.2	no	PAL	no	yes	no	100-250V 50/60Hz	yes, 2	yes	yes, 2	yes	no	no	no	no	yes, RS-232	no	yes, Irdeto	#186 2005
KAON HSC-N550H2R Twin Tuner plus Hard Drive	8000	2-45	yes	1.0, 1.2, 1.3	yes	NTSC/ PAL/ SECAM	yes	yes, 2	no	90-250V 50/60Hz	yes	yes	yes, 2	no	no	no	no	yes	yes, RS-232	yes, 2	no	#184 2005
KATHREIN UFD 580 Digital Twin Tuner with CI Slots	4000	2-45	yes	1.0, 1.2	no	NTSC/ PAL	no	yes, 2	no	230V 50Hz	yes, 2	yes	yes, 2	no	no	no	no	no	yes, RS-232	yes, 2	no	#184 2005
KATHREIN Euroline UFE 305 FTA	4000	2-45	yes	1.0	no	NTSC/ PAL/ SECAM	no	yes	no	90-260V 50/60Hz	yes	yes	yes, 2	yes	no	no	no	no	yes, RS-232	no	no	#185 2005
LEMON 030-CI	6000	starting at 1.8	yes	1.0, 1.1, 1.2	no	NTSC/ PAL	yes	yes	no	90-260V 50/60Hz 10.5-14DC	yes, optical &coax	yes	yes, 2	no	no	no	no	no	yes, RS-232	yes, 2	no	#187 2005
NEOTION 601 DVR	5000	2-45	yes	1.0, 1.2	no	NTSC/ PAL	no	yes	no	90-250V 50/60Hz	yes	yes	yes, 2	no	no	no	no	yes, external	yes, RS-232	no	yes	#188 2005
NEOTION Box 501 NC-SC FTA expandable	4000	2-45	yes	1.0, 1.2	no	PAL	yes	yes	no	90-250V 50/60Hz	yes	yes	yes, 2	no	no	no	no	no	yes, RS-232	no	no	#186 2005
NETA TROYA FTA	4000	1-45	yes	1.0, 1.2	no	PAL	yes	yes	no	230VAC	yes	yes	yes, 2	yes	no	no	no	no	yes, RS-232	no	no	#186 2005
PANSAT 3500S	5000	1-45	yes	1.0, 1.2	yes	NTSC/ PAL	yes, UHF	yes	no	90-250V 50/60Hz	yes (optical)	yes	no	yes	yes	no	yes	no	yes, RS-232	no	yes, Conax	#190 2005
PANSAT 500HC PVR&CI	10000	1-45	yes	1.0, 1.2, 1.3	yes	NTSC/ PAL	yes	yes, 2	no	90-250V 50/60Hz	yes	yes	no	yes	no	no	no	yes	yes, RS-232	yes, 2	no	#187 2005
PIXX Event	10000	1-45	yes	1.0, 1.2	yes	NTSC/ PAL	yes, UHF	yes	no	90-250V 50/60Hz	yes (optical)	yes	yes, 2	yes	no	no	no	yes	yes, RS-232	yes, 2	no	#190 2005
QUALI-TV QS 1080IR for HDTV and MPEG 4:2:2	unknown	2-45	yes	1.0	no	NTSC/ PAL	no	yes	no	100-240V 50/60Hz	yes	yes, audio only	yes, 2	yes	no	no	no	no	yes, RS-232	no	yes, Irdeto	#184 2005
QUALI-TV QS 1080IRCI for HDTV and MPEG 4:2:2	unknown	2-40	yes	1.0, 1.2	no	NTSC/ PAL	no	yes	no	100-240V 50/60Hz	yes	yes	yes, 2	no	no	no	no	no	yes, RS-232	yes, 2	yes, Irdeto	#187 2005
RELOOK 300S Twin Tuners with 80GB HDD and Linux	unlimited	2-45	yes	1.0, 1.2	no	NTSC/ PAL	yes	yes, 2	no	85-265V 50/60Hz	yes	yes	yes, 2	no	no	no	no	yes	yes, RS-232	yes, 2	no	#185 2005
STAR SAT SR-X3500CUCI Ultra	6000	2-45	yes	1.0, 1.2	no	NTSC/ PAL	yes	yes	yes	90-250 VAC 50/60Hz	no	yes	yes, 2	yes	yes	no	no	no	yes, RS-232	yes, 2	yes, uni-versal	#189 2005
STAR SAT SR-X1800D FTA	5000	2-45	yes	1.0, 1.2	no	PAL	yes	yes	yes	100-240V 50/60Hz	no	yes	yes	no	no	no	no	no	yes, RS-232	no	no	#186 2005
TECHNOMATE TM-7755 2VA 2CI	5000	2-45	yes	1.0, 1.2	yes	PAL/ NTSC/ SECAM	yes	yes	no	90-240 VAC 50/60Hz	yes (optical)	yes	yes, 2	yes (via scart)	no	no	no	no	yes, RS-232	yes, 2	yes, Viac-cess	#189 2005
TECHNOMATE TM 4100D FTA with Blind Scan	5000	1-45	yes	1.0, 1.3	yes	NTSC/ PAL	yes	yes	no	90-250V 50/60Hz	yes	yes	yes, 2	no	no	no	no	no	yes, RS-232	no	no	#186 2005
TOPFIELD TF5000CIP	5000	1-45	yes	1.0, 1.1, 1.2, 1.3	yes	NTSC/ PAL	yes	yes	no	90-250V 50/60Hz	yes (optical)	yes	yes, 2	yes	no	yes	no	no	yes, RS-232	yes, 2	no	#190 2005
TOPFIELD TF5000PVR Masterpiece	5000	1-45	yes	1.0, 1.1, 1.2, 1.3	yes	NTSC/ PAL	yes, UHF	yes	no	90-250V 50/60Hz	yes (optical)	yes	yes, 2	yes	no	no	no	yes	yes, RS-232	yes, 2	no	#188 2005
ZINWELL Fanchiou ZDX-7700	4000	2-45	yes	1.0, 1.2	no	NTSC/ PAL	yes, VHF	yes	no	110-240V 50/60Hz 12 VDC	no	yes	no	yes	no	no	no	no	yes, RS-232	no	no	#186 2005

Your questions, our answers

TSI Team

Ron Roessel
[USA]

answers
your questions

New to FTA

I am new to the FTA world and I would like to buy a new satellite receiver and a dish with a motor. Since I would like something very up-to-date and able to get the feed of various satellites what do you suggest?

The system you buy would depend greatly on what exactly you want to do with it. A simple free-to-air system would be a basic system. There are also receivers with built-in hard drives for channel recording if you want to spend more money. Another consideration is whether you want to receive Ku-band satellites only (small dish sizes around 90-100cm) or if you want to add C-band reception as well. A C-band dish can get fairly large (8-10 feet in diameter or even larger) but it can be used for both C-band and Ku-band reception. A small dish cannot be used for C-band reception. Then you would have to decide if you want to receive more than one satellite with your system. This would require adding a motor to your dish so that the antenna can move from one satellite to another. To get an idea of what is out there, you should flip through the pages of this magazine. There are test reports on all kinds of satellite equipment in every issue. It will give you a good idea of what is out there.

HD and Free to Air

I have noticed that Dish 1000 super dishes are appearing on the market that have three LNB's designed to handle HD. As HD will be the standard soon it would seem to be prudent to install this dish for my new FTA system. I have been told conflicting statements as to whether this dish would be compatible with high-end units. Are the receivers compatible with that dish for FTA, and will they be able to deliver HD? Or would I be better off to stay old school and junk the old system in a couple of years when FTA catches up with the pay services?

The antenna itself should not be too much of a problem other than its size; it is the LNB that might be though. These LNB's have built-in switches that are designed to be controlled by a DishNetwork receiver. To be honest, I am not certain if other FTA receivers are able to control these switches. If you are thinking of using this dish for true FTA reception on satellites other than Dish satellites, then you might want to consider a larger dish (90-100cm in diameter). Also the LNB's that come with DishNetwork antennas are not compatible with other satellites. This has to do with left/right circular polarization (DishNetwork LNB's) versus horizontal/vertical polarization for standard FTA LNB's. Also keep in mind that most (99%) of the FTA receivers available today are not HD compatible.

Dansat Receiver

Hi, I received a Dansat receiver as a gift and I want to watch the channels on Intelsat Americas 5, but the satellite is not listed in the receiver's satellite menu.

I know I can add it but I can't find some of the information that I have to enter like PCR PID and TELETEXT PID. Also, I am not sure how to make certain the info is locked in so that if I turn it off or there is a power outage I won't have to do it all over again. Plus I can't seem to find much information about Dansat online. All I have is just the manual. Please help me. Thank you.

Usually when you scan a satellite for channels, all of the necessary information, including PCR PID, etc., is identified automatically. This information is then stored in the receiver's memory and should stay there even if there is a power outage. That's how all of the receiver's I've ever seen have worked. If the Dansat is a new receiver, I doubt that it would behave any different. The only data you need is the downlink frequency and symbolrate of the transponder you want to scan. This can be found by looking at www.satcodx.com and then going to the satellite you want.

East-Facing Balcony

Hi, I live in Fort Lauderdale FL and I have an east-facing balcony. I am won-dering if there's a dish that would show me any Arabic channels. Your help is appreciated.

Unfortunately, the best thing for you would be a south-facing balcony. Then you would be able to get quite a few Arabic channels from Intelsat Americas 5. Instead, you have one option and that would be to point a 1-meter dish at Hispasat at 30 deg west. This satellite has a number of Arabic channels that are free-to-air. Any free-to-air MPEG-2 satellite receiver system should do the job. Telstar 12 at 15 deg west also has two or three Arabic language channels.

DGStation RELOOK 400S
Linux OS, Twin Tuner PVR
The Sky is the Limit!

This latest model from the well known Korean manufacturer DGStation, the Relook 400S has been introduced to the market very recently and has also arrived at the test labs of Tele-Satellite for an in-depth examination. Unlike the majority of today's digital PVR receivers, the Relook 400S operates under Linux, and what makes it unique for time being, is the double tuner!

present inside the receiver. After this, we could finally connect the unit and power it up.

The Relook 400S first displays a message to announce that it is preparing the hard disk, this takes a certain time depending on the disk size. After this the user is invited to select the various main options like the menu language, the time zone etc. The TV output signal can be configured RGB, CVBS or YUV. Since this receiver has two tuners, we decided to connect the first tuner to an antenna on a Stab USALS motor and looped the signal trough to the second tuner.

The next step is somehow unusual since each satellite the user would like to access, has to be installed in the tuner menu as a different LNB (i. e. one for Hotbird, another for Astra etc.), and here again each of these LNBs has to be assigned the appropri-

After unpacking, we discovered a full sized unit (approx. 37 x 27 x 7 cm) of an elegant sober design in metallic grey colour. On the front, you see just one big round on/off button which lights-up in blue upon its circumference as soon as the receiver is plugged into the mains, goes off during operation but blinks as a feedback, when commands are received from the remote control. Next to it is a wide window for the VFD (Vacuum Fluorescent Display). This whole front panel is in fact a flap and once opened, it reveals 8 pushbuttons to operate the PVR, two card readers and two CAM slots.

The rear panel is even more surprising: Besides the classical two Scarts, the RCA analogue outputs for stereo and video and a serial interface, you will discover two sets of LNB in/outputs for the 2 tuners, a UHF modulator, an opti-

cal digital audio output, a USB and an Ethernet interface and even a power switch. The remote control is rather small for the considerable amount of functions it has to command on a PVR receiver and people who use glasses for reading will certainly need them for this remote. A plus point is that it can be configured to command your TV set. The overall workmanship of this receiver makes a very solid and visually appealing impression.

Features

After the external appreciation, let's now take a closer look on the features of the Relook 400S. According to the manufacturers' specifications and besides all the classical features found on most of today's set top boxes, this receiver is capable of recording two channels, while it plays back another recording. In case a Viaccess CAM

you watch the other one. No CAM is needed for the playback of a scrambled pre-recorded program. The channel memory allows up to 10'000 channels to be stored, which is very convenient since the Relook 400S implements the DiSEqC 1.0, 1.1, 1.2 and 1.3 or USALS protocols.

The unit that was sent to us did not include a hard disk. Nor-

		Features										
TEST RESULT		**Features**	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
		Channel Memory	✗	✗	✗	✗	✗	✗	✗	✗	✗	
SATELLITE INTERNATIONAL		**Channel Scan Speed**	✗	✗	✗	✗	✗					
		Channel Switching Speed	✗	✗	✗	✗	✗	✗	✗	✗		
		Video Quality	✗	✗	✗	✗	✗	✗	✗	✗	✗	
TELE		**Audio Quality**	✗	✗	✗	✗	✗	✗	✗	✗		
		Tuner Sensitivity	✗	✗	✗	✗	✗	✗	✗			

mally it is sold with a hard disk already installed. The receiver supports unlimited HDD size. Our first job was to install a 3,5 inch 200 GB HDD which was very easy as the cables and the cradle were

is fitted, it can as well descramble simultaneously two channels so that one could be recorded while

ate DiSEqC protocol, in our case USALS. While each satellite/LNB is assigned, the signal strength and it's quality are displayed on the menu page. The next step is to scan these satellites. The scan is rather slow but complete. After all, does this slowness really matter since such a scan is certainly not performed every day? The satellite fans who decide to look for new channels will certainly know in advance the frequencies and could enter them manually to memorize this very

Ihr Satelliten-Receiver als SOUND & VISION-Center

particular station they are looking for. Even better, the transponder list can be edited thanks to the "Relook PC Editor" software and the USB port which allows updates from SatcoDX.

After the scan, you always end up with an almost endless list of TV and radio stations. Many of them will either be scrambled or not interesting for the one or the other particular user. To organize such a crowded channel list, the user has two options: Either manually, or the second and more elegant way is to use this very same "Relook PC Editor". This program is free to download at the site of the manufacturer www.dgstation.co.kr .

Daily Use

Now that all these preliminaries have been dealt with, the next step would be to sit back and start watching your favourite channels. The switching from one channel to another is immediate, even on scrambled channels, the picture quality is flawless. Owning a PVR with a double tuner is factually a challenge for the user not to miss any of his favourite transmissions. The Relook doesn't deceive here, neither. Just press the Record button while you watch a movie and it will be stored on the hard disk. The default duration of the recording is 2 hours but this setting can be modified in the menu. This way you don't have to worry about the ending time of your recording.

Another way to achieve a recording is via the EPG, in this case the receiver inserts a "reservation" time before and after the programmed recording to allow for any changes in the schedule. Last but not least, thanks to the double tuner, a second simultaneous recording can be started manually or programmed in the

EPG. In our antenna configuration, this could only be achieved on a channel from the same transponder but in case of a different LNB for the second tuner, said recording could be from another transponder or satellite. The time shift function is available too. All these recordings on the hard disk can be downloaded to a PC where in a first pass they will have to be transformed into MPEG format and then edited with your preferred edition software. This transformation is taken care by the "Make PS" software available at DGStation's website.

Linux, Ethernet, USB and Co.

So far, we have described features that could be found on numerous other receivers. The Relook 400S has mastered them during our tests without any problems. But what makes this box so special is it's firmware compiled in Linux. Since Linux is an operating system with an "open source" philosophy, DGStation have made public the source code of their firmware to allow any interested user to develop his own modifications, improvements or add-ons. Alternative firmware is already available trough the numerous forums on the Web which transform the Relook 400S to an even more powerful tool for the satellite enthusiast, and this seems just to be the beginning! Talented programmers are constantly trying out new features very similar to those developed for another receiver from a German manufacturer that was tested

here at TELE-satellite approx. two years ago. The second reason all this has been made possible, is the presence of an Ethernet port. This way, the Relook 400S becomes an extension of your PC, can exchange data with it, connect to the Internet etc. As they say, The Sky is the Limit!

Despite all this, the Relook 400S remains a well thought-out receiver for the whole family with a very stable operation. On our test receiver we used the latest official firmware from DGStation, version 1.18 and never experienced any lock-ups, even after an intensive use.

TECHNIC DATA	
Manufacturer	DG Station, Rm.401, Bldg.A, Bundang Techno Park 150, Yatap-Dong, Bundang-Gu, Sungnam-Si Gyunggi-Do, Korea (Zip. 463-070)
Fax	+82-31-781-9016
Email	Sales@dgstation.co.kr
Internet	www.dgstation.co.kr
Model	Relook 400S
Function	Digital FTA + CI 2 PCMCIA twin tuner satellite receiver and PVR
Channel memory	10000
Network	Ethernet RJ-45 10Base T / 100 Base-TX– 8MB Flash + Expandable 96 MB SDRAM
CPU	IBM Power PC405, 350 MIPS
DiSEqC	1.0 / 1.1 / 1.2 / 1.3
USALS	Yes
Programmable0/12 V	No
Digital Audio Output	S/PDIF (optical)
Scart connectors	2
Video/Audio Output	3 x RCA
Colour system	PAL D/K, B/G, I
S-VHS Output	No
Modulator	Yes
SCPC compatible	Yes
EPG	Yes
Teletext	Yes (OSD und VBI)
Power Supply	90 –240 VAC 50/60 Hz
Power Consumption	50 W max. 7 W standby

Expert conclusion

+

The Relook 400S deserves the attribute "very attractive" for its' design as well as for the characteristics. The menus are logical and easy to navigate. A special mark should be given to the "VFD" display.

–

The remote control for a receiver of this class would have deserved to be designed more ergonomically. The noise of the small fan for the cooling of the hard disk and the CPU inside the receiver can sometimes be disturbing but this could be solved with new instructions in another firmware release.

Yanis Patalidis
TELE-satellite
Test Center
France

Main menu

Automatic channel search

Channel list

USALS setting

⊓⊓⋀X

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DiSEqC 1.0, 1.2

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Two Scart sockets
S/PDIF Audio out (coaxial)
Audio out via Cinch
Low power consumption:
20W operating with single LNB
3W standby mode

Chess®
FTA 45

Topp Seller

4500 channels programmable
Two Scart sockets
S/PDIF Audio out (coaxial)
Audio out via Cinch
4 digit front display
20W operating with single LNB
3W standby mode

Chess®
FTA 55

Topp Seller

4500 channels programmable
Two Scart sockets
S/PDIF Audio out (coaxial/optical)
Audio out via Cinch, S-Video out
4 digit front display
20W operating with single LNB
3W standby mode; power switch

Chess®
Digital 4000

Topp Seller

Illustration similarly

3000 channels programmable
Two Scart sockets
S/PDIF Audio out
Cinch sockets for audio
4 digit front display
DiSEqC 1.0, 1.2

Chess®
Digital 4000 M

Topp Seller

Illustration similarly

3000 channels programmable
Two Scart sockets
S/PDIF Audio out
Cinch sockets for audio
4 digit front display
DiSEqC 1.0, 1.2, modulator

Chess®
Digital 4000 CI

Topp Seller

Illustration similarly

3000 channels programmable
Two Scart sockets
S/PDIF Audio out
Cinch sockets for audio
4 digit front display
DiSEqC 1.0, 1.2, 2 CI slots

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BEL 5518
A settop box for tropical India

Everyday use

By default the BEL 5518 is set up to receive the Ku band signals of the NNS6 satellite position. If the antenna is aligned for the reception of DD DTH – as was the case with our test setup – the first picture will appear on the screen shortly after switching on the box. A quick guide is

The Indian electronics corporation BEL has just introduced what must be one of the world's smallest satellite receivers. The tiny box is compatible with C and Ku band signals and even offers some remarkable features such as picture-in-picture for six segments.

The receiver is produced in India by the state-run armament company Bharat Electronics Limited, which is commonly known by its abbreviation BEL. The company was founded in 1954 and originally focused on military technology, which continues to be a major field of business for the company. The headquarters of BEL are located in Bangalore, and it is from there that we received our test unit.

Direct-to-home (DTH) satellite reception has been offered in India only for the past two years, and the demand for corresponding receivers has been on the rise ever since. Due to the extreme climate on the subcontinent the boxes have to be fit for use in a tropical environment, which

basically means they have to be able to bear a very high level of humidity and heat. In addition to that, the receivers must tolerate the less than perfect power supply system India.

The small BEL 5518 has a size of only 20 x 3 x 18 cm, which makes it even smaller than an average car radio. Its memory can hold up to 2000 C or Ku band channels and the receiver comes with a one-year warranty in India. On the front panel there are the main switch and the channel up and down buttons for controlling the box when the remote control is misplaced or out of batteries. In line with the rest of the receiver, the display is rather small as well and shows the channel number. On the rear

A glimpse through the window of the Test Center in India: The monsoon blacks out all Ku band signals.

panel there is just about enough space for the antenna input and a looped through signal output and a set of RCA sockets for audio and video output. There is no euroscart connection, because it is not commonly used in India and would not fit on the back panel anyway. An S-Video output is missing as well.

The remote control has a good feel and its ergonomics leave nothing to be desired. However, we would have preferred it in a slightly larger size.

available for adjusting the settings to receive signals from a different satellite. The user interface quickly guides users through the system settings in order to choose the correct LOF, DiSEqC settings, LNB power supply, time and language. Our test receiver offered only English and Italian.

The installation menu offers all expected adjustments such as a network scan of pre-stored transponders or a manual search to add new channels. Our tests

		TEST RESULT										
SATELLITE INTERNATIONAL / TELE	Features	✗	✗	✗	✗	✗	✗	✗	✗		
	Channel Memory	✗	✗	✗	✗	✗	✗	✗			
	Channel Scan Speed	✗	✗	✗	✗	✗	✗	✗			
	Channel Switching Speed	✗	✗	✗	✗	✗	✗	✗			
	Video Quality	✗	✗	✗	✗	✗	✗	✗			
	Audio Quality	✗	✗	✗	✗	✗	✗	✗	✗		
	Tuner Sensitivity	✗	✗	✗	✗	✗	✗	✗	✗		

showed that the BEL 5518 is rather swift as it finished scanning the NNS6 satellite in less than a minute.

Many features

Considering its size the BEL is filled to the brim with nice features. These include a picture-in-picture mode showing six individual screens, which is a very welcome option given the recent popularity of large-screen TV sets in India. The on-screen menu is very user-friendly and the overall design is functional. Thanks to its small size the receiver will never be obtrusive in any environment. A number of integrated games will be handy during times of the Ku band blackout (11 GHz range) when monsoon rains hit India.

Expert conclusion

+

The BEL 5518 is a functional receiver with a minimum size. It survives the tropical climate and has a solid build. It tolerates extreme weather and electricity surges and drops while consuming only little power.

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No additional connections possible.

P. Srivatsa
TELE-satellite
Test Center
India

TECHNIC DATA

Distributor	ESS EM KAY ENTERPRISES & Ramakrishna Electro Components Pvt. Ltd.
Fax	+80 22124570/011 51010816
Internet	www.bel-india.com
Model	5518DTH Premium and gold.
Channel memory	2000
Satellite	43 preprogrammed
Symbol Rate	2 to 40000
DiSEqC	1.0/1.1/1.2
USALS	No
Programmable	0/12/No
Digital Audio output	No
Scart Connector	No
Video/ Audio output	3*RCA
Colour	PAL
S.VHS Output	No
Modulator	Yes
SCPC Compatiable	Yes
EPG	No
Tele-text	yes OSD
Powersupply	90 to 270V
PowerConsumption	<20W

Picture-in-picture

Remote display inside menu
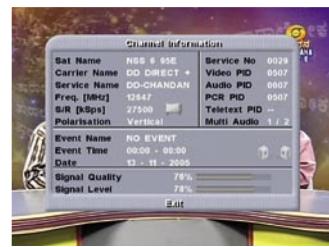
Channel info

Channel list

TechniSat Multytenne
The 'happy go lucky' package

When the courier delivered a quite compact package (considering we were expecting a satellite dish) from TechniSat to the sacred halls of our editorial offices just before the deadline for the current issue we were a little surprised, to say the least. This miracle dish has a width of just 45 cm and should be able to receive four satellites simultaneously: Astra 19.2° East, Hotbird 13° East, Astra 2 28.2° East and Astra 3A 23.5° East.

We quickly opened the package and started to assemble the individual items. TechniSat really did a great job here with its very comprehensive, logical and easy to understand manual. Even absolute beginners should be able to assemble and align the antenna in next to no time.

The package comes complete with a wall-mounting device, which is necessary because the Multytenne is not compatible with standard installation equipment and must be mounted on this particular device. The LNB is specifically developed and designed for this dish and looks rather futuristic. It would easily fit in any science fiction movie.

It is fairly easy to correctly align the antenna because only Astra 19.2° East has to be found and all other positions are then automatically be received thanks to the special multi-feed LNB. We should emphasise at this point that it absolutely pays to spend some extra time on precisely aligning the dish towards Astra 19.2° East, because an exact alignment makes sure that the three other satellite positions will be received with reasonable quality as well.

Another point worth mentioning is the fact that TechniSat has optimised this dish specifically for the German speaking countries. Once the Multytenne is introduced in these countries TechniSat might present special versions for other markets and satellite positions as well.

Everyday use

Unfortunately the Multytenne arrived just before the editorial deadline for the current issue, so we did not have all the time we would have liked to thoroughly test the reception quality for all four positions. We can, however, give you a short overview of the antenna's capabilities:

As expected there were no problems whatsoever with the reception of the strong satellite positions Astra 1 19.2° East and Astra 3A 23.5° East and all transponders that we scanned and measured for testing purposes were processed flawlessly and with a surprising good C/N value, considering we're talking about a 45 cm dish here.

A slightly different picture emerges for Astra 2 and Hotbird. While all transponders of Astra 2A and 2B could be received without problems, some signals of Astra 2D and Eurobird did not make it to the TV screen. However, this is not to blame on the Multytenne but rather on the weak signals being beamed from these two positions. The reception of Hotbird signals was generally OK, even though we noticed that of all four satellite positions the signals from Hotbird were the weakest. Nonetheless, MCPC transponders with high symbol rates came in without difficulties.

On the whole it can be stated that the Multytenne is an almost perfect compromise between a maximum of positions for multi-feed reception and the smallest possible antenna size. The spreadibg of interesting and popular channels over different satellite positions – such as the moving of HDTV channels to Astra 3A – or the quite large range of English language channels on Astra 2 as well as the increasing number of erotic channels on Hotbird make the Multytenne an interesting option for many households. Thanks to its small size it will fit and work on any south-facing balcony.

Digit MF4-S

You can use the Multytenne

in combination with any receiver featuring the DiSEqC 1.0 protocol, but TechniSat sells the Multytenne package complete with its own Digit MF4-S digital satellite receiver. It, too, looks very futuristic at first sight, thanks to its simple but elegant design.

On the front panel we find an LED segment display plus three buttons for controlling the receiver without using the remote control, as well as a card slot. On one side the box features a Common Interface slot and an RS-232 serial interface for connecting the receiver to a PC. Multytenne packages sold in the German speaking countries also include a smartcard for reception of the TechniSat satellite radio package.

The back panel of this very slim digital receiver (28.5 x 13 x 4 cm) features two scart euroconnectors, two RCA sockets for stereo audio out, the IF input for the satellite signals as well as an optical and an electrical output for digital audio. The remote control has a nice touch and feel and is characterised – just like the receiver and the Multytenne – by immaculate build quality.

Reception

After switching on the receiver for the first time the typical TechniSat installation wizard appears on the screen and allows the user to customise the box step by step. The first and most important step is the selection of the preferred OSD language. The Digit F4-S is very international

and offers English, German, French, Italian, Spanish, Turkish, Swedish, Portuguese, Russian, Polish, Czech, Hungarian and Dutch.

The next step is a special feature of this TechniSat receiver: from a list of 19 different countries the user can select his country and the receiver will then automatically adjust all country-specific parameters such as the local time zone. What follows is the antenna configuration, which has no default setting for the Multytenne yet and has only Astra 19.2° East and Hotbird 13° East activated right from the beginning. By clicking on 'Manual', however, the settings can be changed to include the other two satellites as well.

The box then automatically checks whether new software is available over-the-air and if so downloads and installs it. The final step is the channel search and the MF4-S took a little less than six minutes to scan an 80-transponder satellite. While not being that fastest on the market, it certainly is one of the most thorough boxes and found all channels. After all, you don't do a complete search every day.

The logical main menu can be used to adjust all major settings such as the video output (CVBS, RGB or S-Video) or the favourite lists for radio and TV. Just like all other TechniSat digital receivers the MF4-S is capable of downloading pre-sorted channel lists saving users the fuss of manually arranging their lists.

The EPG of TechniSat receivers is another very handy feature deserving special praise. TechniSat has its own editorial staff for EPG information for all German language satellite channels, which is downloaded at given times by TechniSat receivers. The feature is called SFI and allows for a very clear and comprehensive EPG overview with the option of marking events for recording using a connected recording device.

Channel switching takes approximately one second,

which is absolutely reasonable. The perfect overall impression of MF4-S is complemented by the built-in teletext decoder and the possibility to use the multichannel feeds offered by German pay TV provider Premiere.

Multytenne LNB

Expert conclusion

Thomas Haring
TELE-satellit
Test Center
Austria

+

With its Multytenne TechniSat offers a true 'happy go lucky' package. Assembly is child's play, the reception quality of the dish is very good considering it's a 45 cm antenna. The receiver that is included in the package is easy to use and fit to please the whole family. You could hardly wish for more!

–

None

TECHNIC DATA

Manufacturer	TechniSat Digital GmbH TechniPark, D-54550 Daun Germany
Fax	+352-710707-959
E-mail	international@technisat.com
Model	Multytenne
Function	Satellite antenna for multi-feed reception of Astra 19.2° East, Hotbird 13° East, Astra 3A 23.5° East and Astra 2 28.2° East
Antenna diameter	45 cm
USALS	Yes
DiSEqC	1.0 / 1.2 / 1.3
Scart connections	2
Audio output	2 x RCA
UHF modulator	No
0/12 Volt output	No
Digital audio output	Yes
EPG	Yes
Power supply	180-250 VAC, 50 Hz

Installation wizard

Channel list
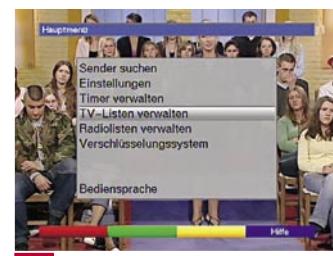
Main menu

Info bar

Your questions, our answers

Thomas Haring
[Austria]

answers
your questions

Romanian TV via satellite

I would like to receive Romanian TV via satellite, but all the programs are encrypted in PowerVU. Is there a way to decrypt them?

Romanian TV via Amos 4° West

By getting a PowerVU card, but seriously, there is no way to decode PowerVU encrypted channels without a proper smartcard and if there were some ways to do it, we could not forward that information to you. So I can just offer you two solutions: First of all you could try to get a PowerVU smartcard in Romania, or you stick to the FTA channels available via different satellites. I made a quick check and found 16 programs, transmitting via Amos 4° West, EutelsatW2 16° East, Intelsat 10-02 1° West, Sirius 5° East and Hotbird 13° East. For further information, please take a look at the satellite charts at www.satcodx.com

African TV in Germany

I'm an African living in Germany and I would like to receive programs from South Africa via satellite. Can you tell me how to do that?

You just need to get a 90cm offset dish and align it to PAS10 68,5° East. There

African TV via PAS10 68,5° East

you will find some FTA African programs and additionally the Vivid package containing the channels SABC1,2,3 and ETV. For further information, please check the Vivids website http://www.sentech.co.za/

DVB-ASI

Again and again I'm reading the term „DVB-ASI" in connection with professional equipment. Can you give me any further information on how this „Asynchronous Serial Interface" works?

DVB-ASI is a broadcasting protocol, which allows content providers to transport up to 16 different streams via one

„channel". Please check this website www.broadcast.bt.com/home/pdf/22336_DVB_ASI.pdf for further information and exact technical data.

Austrian channels in Pakistan

We are a team of Austrian soldiers, helping people in the earthquake regions of Muzaffarabad in Pakistan to restore their water supply. From our command we received a satellite dish and an Austrian dvb-s receiver, but we were not able to get any Austrian or German TV programs. Can you help us to get programs from home or at least English TV?

Everything depends on the size of your dish, which you did regrettably not mention. If the antennas' diameter is large enough (about 2,4-3m) you should be able to receive some German TV via the Hotbird satellites on 13° East, but there is no way to get Austrian TV in Pakistan, because they are just transmitting on Astra 19,2° East. If your dish is not large enough, you could try to get some English channels via Arabsat 26° East, for example Channel2, MBC4 and One

MBC4 via Arabsat 26° East

TV. These channels offer American talk shows, series, reality shows and movies in the original language with Arabic subtitles.

Topfield TF5000CIP

In the last issue of TELE-satellite International you described the new TF5000CIP. I tried to buy this receiver in Germany but failed. My local reseller offered me the TF5000CI instead. What do you think about that?

If you use a 36V actuator to move your dish, you need a receiver which is able to control the motor. The TF5000CIP is able to do that, the TF5000CI is not. Both receivers are basically the same model, except for the motor control. If you can't find the receiver in your area, please contact the German Topfield distributors Satforce www.satforce.at or Sky Vision www.sky-vision.de

Alberto Boselli
[Italy]

answers
your questions

Digital Satellite Receiver

I own a 120 cm dish with a motor. I'd like to buy a digital satellite receiver having the following features:

1) 8000 channels
2) Twin tuner with loop-through outputs
3) 2 Common Interface slots
4) 2 Universal embedded slots
5) PVR with at least 80/100 GB, better if removable
6) Built-in positioner with four wires motor control
7) USB 2.0
8) Optical digital audio output
9) HDMI Digital video output
10) 2 scart connectors
11) PAL/NTSC
and, but this is not mandatory, it should be able to receive HDTV signals.
Does such a receiver exist? Where can I buy it?
Thank you in advance.

And what about MPEG-4? And where is DVB-S2? Unfortunately, you describe a fantastic receiver that doesn't exist, but, even if the question came only a few days ago, it could be a somehow outdated receiver. In this issue of TELE-satellite International you can read a report about the newest technologies of Digital satellite TV which will be available in upcoming set-top-boxes. In practice, it's almost impossible to find the "perfect" receiver, but if you read carefully our test reports, you'll certainly find something very close to it.

NBA Basketball Feed

The NBA Basketball championship started a few weeks ago. Do you know something about feed signals from USA? I'd like to know Ku-Band and C-band satellites, dish sizes, frequencies, polarizations, symbolrate, etc. I'd very happy if you could help me.

Fortunately, many European Pay-TV packages offer NBA matches in their sport channels, so USA broadcasters have to transmit them towards Europe using some of the Atlantic satellites. On the other hand, due to the wide interest for US basketball, it often happens that these signals are encrypted. Anyway, why not to try? Here are some of the frequencies where you can find what you're looking for:

Intelsat 901 at 18.0° West - 11673 H, SR 28565 FEC 7/8 (NBA TV, usually encrypted in Videoguard, but sometimes with FTA feeds)
Intelsat 901 at 18.0° West - 11661 H - 11670 H - 11679 H all of them with SR 5632 and FEC 3/4
NSS 7 at 22.0° West - 11670 H SR 10000

Intelsat 907 at 27.5° West - 11516 V, SR 5632 FEC 3/4
Telstar 11 at 37.0° West - 11664 H and 11672 H, both of them with SR 5632

American Channels in Italy

I'm a beginner in the satellite world and I'd like to install a motor system to receive free-to-air channels both in Ku-band (to receive Colombia TV) and in C-band (just in case there will be channel from Colombia in this band too). How large should the dish be? How much will I pay for such a set-up? (At present, I only own the TV set).

This in only one of the many questions we got about reception of American channels in Europe. Other readers was asking for channels from Argentina, Brazil, New York City, Honduras or even for all the existing channels from South America. Unfortunately, the answer is always the same: in general, American satellite channels are not receivable in Europe because most of the satellites from where they are broadcasted are not "visible" from European longitudes since they are located behind the horizon.
Even when the satellite can be received from Europe (for example several Atlantic channels such as Hispasat at 30° West or Panamsat 3R at 43° West), each transponder covers either America or Europe, but not both of them at the same time. Chances to get American channels are limited to feed signals (see previous question) or sometimes free-to-air channels transmitted to Europe where they are rebroadcasted as part of pay-tv packages. For example, in this moment from PAS 3R at 43° West (frequency 12708 V, SR 5390, FEC 2/3) you can receive Tele Amazonas and Ecuavisa International using a "normal" size dish.

Advice for Antenna Setup

Currently, I own a dual-feed antenna for Astra 1 and Hot-Bird. I subscribed to an Internet via satellite service available through three different satellites: Eurobird A, Eurobird B and Telecom 2D. If I decide to loose Astra reception while keeping only HotBird, can I use the same dish or should I install a different antenna?

Unfortunately, both Eurobird 3 satellite at 33° East (what you call Eurobird A and B are actually two of the coverage spots used by Eurobird 3) and Telecom 2D at 8° West are too "far away" from Hotbird to be received with a single antenna. In a dual-feed setup the 2 LNB's are aimed to satellites placed at orbital positions separated by about 6°. In your case, the distance from Hot-Bird would be at least 20° choosing either Eurobird 3 or Telecom 2D. The best solution would be to install a new antenna for the Internet via Satellite service. This way, someone else in your family will also be able to keep on watching satellite TV (from the old antenna) while you're surfing the Internet (from the new one).

Your world of digital Television & Broadcast

Max Communication Chess Multiswitches 17/6 NT & 17/6 K

Distribution solution for a family house or a block of apartments

Multiswitches are very useful devices when you need to distribute satellite signal to several rooms while keeping a number of dishes to a reasonable minimum. Depending on model, they allow you to distribute the signal from either a single dish or a few dishes to several receivers. Max Communications has provided us with two types of multiswitches that can cooperate with each other.
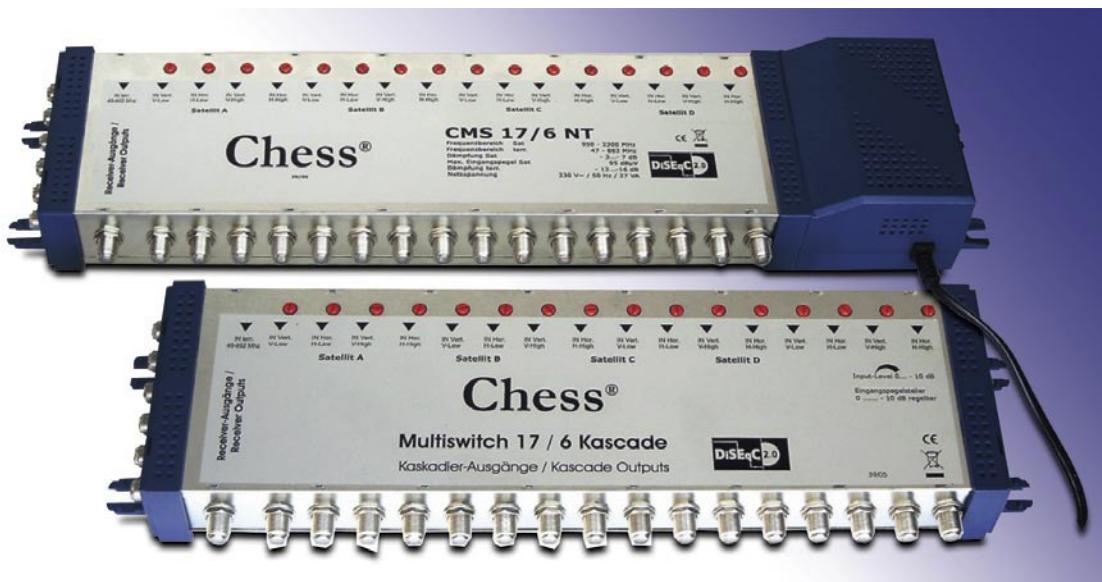
Chess 17/6 NT

The Chess 17/6 NT is designed to deal with 4 dishes equipped with Quatro LNB's. That gives us 16 inputs. An important advantage of the system with a multiswitch is that only one coaxial cable is required between the switch and a receiver. As you can probably figure out, this model has 6 outputs. So, you can connect up to 6 satellite receivers. A living room, a study plus 4 bedrooms - very good solution for a family house.

You will be able to receive any channel from anyone of the four satellites independently of what is being received on the set-top-boxes in other rooms. There's only one condition: your receivers must be compatible with DiSEqC.

Otherwise, they will not be able to switch among satellites – only satellite "A" will be available to them. Of course, we are speaking here about reception in Ku-band, as the Quatro LNB implies.

Except for the 17 inputs and 6 outputs, the multiswitch additionally has 17 cascade (pass-through) outputs. They are used to connect Chess 17/6 K unit.

Chess 17/6 K is an extension device that when connected to the base model increases the number of outputs from 6 to 12. According to the manufacturer, by cascading more 17/6 K's, you may get 18, 24 or even 30 outputs. Such system can distribute satellite signal in a block of apartments.

In most cases, a multiswitch will be put close to the roof of the building where the temperature can vary significantly. The

Fig. 1. Signal level at the receiver output with respect to the input signal level
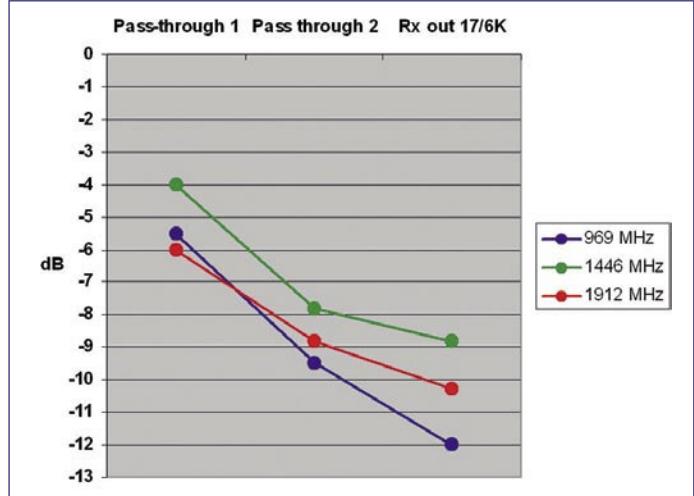
Fig. 2. Signal level at the 17/6 K input, pass-through output and receiver output

units described in this report can operate in the temperature range from –20 through + 60° C - so this should not pose a problem for them. Keep in mind, though, that they are not to be operated outdoors.

In the Practice

Time to take a few measurements of Chess 17/6 NT. Every satellite input coming from Quatro LNB is somewhat attenuated by the multiswitch. According to specification, before it reaches the receiver it is down by 5 dB ±2 dB. We obtained in our measurements results from –2 through –8.5 dB depending on the receiver output used and the input frequency (see figure 1).

But how does the multiswitch influence the quality of signal? We measured the C/N ratio before and after the multiswitch for 2 different signals. For the receiver output, we observed that it went down 0.8 dB from 10.3 to 9.5 dB. For the pass through output C/N degraded from 11.5 to 11.0 dB.

It is negligible for strong signals (e.g. those from Astra or Hotbird in Europe) but may pose problem for weak satellites. However, one can not expect here a miracle. Distributing weak signals (or signals with low C/N ratio) will always be a problem for any switch, splitter or cabling. Chess multiswitches are not at all bad in this respect.

The multiswitch is marked as DiSEqC 2.0 compatible. It means that it should work with a receiver using DiSEqC 1.0 to choose a satellite. We tried it and the system was working flawlessly. "Toneburst" switching also worked but one could select only satellite A or B with this simple method.

We checked if the signal present on one input can induce some interference on the other inputs and did not find anything wrong here. The same applies to the receiver outputs. The signal selected on a given output has no effect on the signals on any other output. There was nothing we could observe or measure. So the isolation among the inputs/outputs is quite satisfactory.
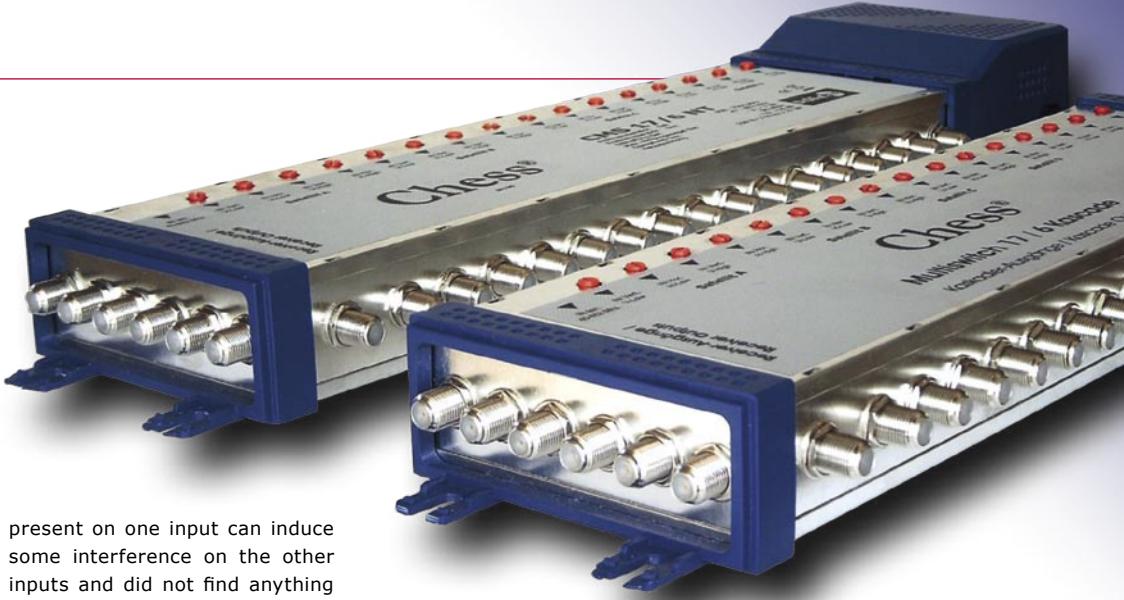
Cascading Multiswitches

After measuring the single switch, the next necessary step was to connect another switch Chess 17/6 K to the system to increase the number of receiver outputs to 12.

However, before that, we checked the IF pass through loss. We have got values from 5.5 dB for 969 MHz and 6.0 dB for 1912 MHz. For the 17/6 K, we got 4.0 dB and 3.8 dB for 969 and 1912 MHz respectively. If you compare them with the specified values, you will see that the manufacturer was too optimistic here. Total signal attenuation at the 17/6 K connected in a cascade with a 17/6 NT is presented in figure 2.

Pass-through 1 is the output of 17/6 NT being at the same the input for 17/6 K.

Pass-through 2 is the output of 17/6K for the following multiswitch.

Rx out is the signal level at one of the receiver's outputs of 17/6 K.

As you can see, the signal passed through by the 17/6 NT to 17/6 K is attenuated. If you want to cascade multiswitches, you should insert amplifiers between the LNB's and the base multiswitch inputs. Usually, 20 dB amplifiers are added here.

In a cascaded network, you will need to use the attenuators built-in in every IF input to equalize the outputs from the different multiswitches. Without the attenuators, the multiswitch closest to the LNB will always provide the output of the highest level, and every next multiswitch a few dB weaker signal.

So our next job was to measure if we really have 10 dB of attenuation adjustment available as specified. Our measurements revealed the adjustment range is even slightly higher – about 11.5 dB.

Conclusion

The bold manufacturer's statement about getting 24 or even 30 receiver outputs with Chess 17/6 NT and a number of 17/6 K's seems to be quite feasible if you install additional 20dB amplifiers between LNB's and the first multiswitch.

Expert conclusion

+

Excellent isolation between different inputs and outputs keeps interference below the reception threshold. Low noise. Low current drown from a receiver – below 20 mA.

–

Signal losses are slightly higher than specified. No built-in amplifiers – you must buy them separately.

Peter Miller
TELE-satellite
Test Center
Poland

TECHNIC DATA	
Manufacturer	Max Communication GmbH, Siemensstr. 53, 25462 Rellingen, Germany http://www.maxcommunication.de/
E-mail	info@max-communication.de
Phone	+49 4101 / 6060-0
Fax	+49 4101 / 6060-9 99
Models	Chess 17/6 NT and 17/6 K
Description	Chess 17/6 NT - multiswitch with the embedded power supply.
	Chess 17/6 K – extension to NT with additional 6 receiver outputs
Inputs	16 satellite + 1 terrestrial
Receiver outputs	6
Cascade outputs	17
Input frequency	950-2150 MHz (Sat.) and 47-862 MHz (Terr.)
IF tap loss	5 dB ±2 dB
IF input attenuation adjustment range	0 … 10dB
IF pass-through loss	1.5 dB for 950 MHz, 3.5 dB for 2300 MHz
Terrestrial tap loss	16 dB ±2 dB
Terrestrial pass-through loss	5 dB
Isolation between satellite inputs	> 30 dB
Isolation between satellite and terrestrial inputs	> 35 dB
Current drawn from receiver	60 mA max.
Embedded power supply (NT model only)	12V/1600 mA
Polarization switching voltage	14.5-15.5 V
Band switching frequency	22 kHz ±4 kHz
Operating temperature range	-20… + 60° C/dry indoor use

Self-made satellite antenna

Frank Altenwerth

Inspired by the report about a self-made satellite dish made of wood in TELE-satellite 04-05/2005, I decided to have a go myself at such a project. If you look up the Internet address[1] given in the report and if you google for 'wooden' and 'dish' the corresponding thread soon pops up and even shows interesting pictures of the individual construction stages. The "Microwave Antenna Book"[2] by Paul Wade turned out to be another valuable source of information.

Apart from general considerations regarding such a project I also intended to make some improvements to the base construction. Since it is not possible for me to erect such a huge dish outside and since a rooftop installation is also out of the question due to the sheer size of the antenna, the only option left was the attic. Luckily enough, a window sized 1.2 by 1.2 meters was available in the direction of the desired satellite.

Next problem: installation and transfer of the construction up to the attic. Considering a final diameter of 1600 mm the small trapdoor leading up to the attic is definitely too narrow, which would make assembly on site in the attic a necessity. Then again, I would not be too happy to have to disassemble the whole thing in case I need to move it to another location one day. So the possibility to reasonably dismantle the construction into individual modules was item number one on my list of improvements.

The satellite dish needs a diameter of 1600 mm because this is the minimum size required to cover the complete window with its 1.2 by 1.2 meter dimension in order to make sure no signals are lost. I have tried before to receive satellite signals through a window and the results were quite encouraging. Even multi-feed reception of Astra and Hotbird signals was possible.

Now that I had found the 'perfect' location I needed to think about a support base for assembling and adjusting the dish in the attic. A visit to the local DIY store quickly showed that roof laths and framing timber are the perfect materials – meaning they are very inexpensive.

Next I had to think about the best way to create the frames. Coming up with a template to mark out the frames was the least of my problems, but the vision of sawing and cutting each and every single frame by hand was a major setback. I would be left with some 16 to 20 frames, after all. I needed to sleep over that – for two nights! But then I found a solution.

General prerequisites

Stage 1 is all about determining the right diameter of the reflector. Based on my situation and my requirements a diameter of 1600 mm turned out to be reasonable, even though this is a rule of thumb rather than set in stone. I will, however, always refer to this diameter in this report.

The second important measurement is the relation between the focal distance and the diameter (f/D relation, also referred to as f/D). This quotient has to be defined beforehand in order to be able to perform the calculations. I chose an f/D of 0.7. In chapter 4 of his book Paul Wade defines the range of useful f/D values from 0.25 to 0.65, and an Internet search revealed that IRTE uses 0,35 while offset antennas feature values between 0.65 and 0.7. The antenna presented in the Vetrun forum had an f/D of 0.7.

The determination of the f/D relation is a major aspect. If the f/D value increases beyond a certain level, the feed arms for holding the LNB must be longer in consequence. Given an f/D of 1 and a dish diameter of 1600 mm the focal distance would be 1600 mm and the feed arms would need to be quite long which requires a sophisticated and robust construction. If the f/D is decreased the focal distance decreases accordingly: with an f/D of – for example – 0.5 the focal point would be only 80 cm from the reflector.

It should also be mentioned that the longitudinal alignment of the LNB is best if the focal point of the reflector coincides with the feed opening. The feedhorn geometry of course also influences the selection of the optimum f/D relation and depending on the location of the focal point the feedhorn must be designed differently – please see below for more details.

Now that this fundamental question has been answered and the favourite diameter has been decided upon, we can turn to the mathematics. This means formulas galore.

Mathematical prerequisites

Illustration 1 shows a parabola in a general shape, whereby only the hatched area is of interest for our calculations and therefore I will only refer to the hatched area in all subsequent explanations. The abscissa (x axis) constitutes the diameter D of the reflector, the ordinate (y axis) constitutes its depth T. The satellite signals travel towards the parabola's surface in parallel to the ordinate and are then reflected from the parabola's surface to the focal point f.
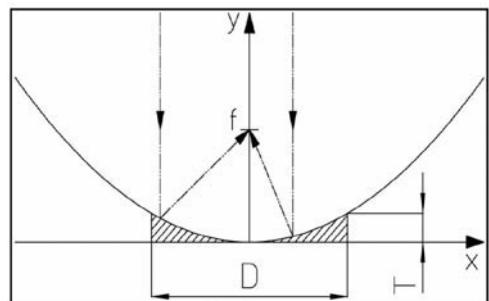
Illustration 1

Based on **illustration 1** the basic equation for the parabola is:

$$x^2 = 4 \cdot f \cdot y \quad (1)$$

After conversion to y this formula is:

$$y = \frac{x^2}{4 \cdot f} \quad (2)$$

The required value for the dish diameter D is calculated by assuming that the maximum positive expansion of x of the parabola corresponds to 50% of the dish diameter (referring to the area of interest to us), so it can be stated that:

$$x_{max} = \frac{D}{2} \quad (3)$$

So now we have managed to incorporate the dish diameter D into an equation and we arrive at the formula for calculating the dish depth T by inserting equation 3 into equation 2.

$$y_{max} = \frac{x_{max}^2}{4 \cdot f} = \frac{\left(\frac{D}{2}\right)^2}{4 \cdot f} = \frac{D^2}{4 \cdot 4 \cdot f} = \frac{D^2}{16 \cdot f} = T \quad (4)$$

This equation now has only one unknown value left, namely the focal point distance f. This value can be calculated via the relation between focal point and diameter (f/D relation)

$$\upsilon = \frac{f}{D} \quad (5),$$

which – when converted to f – delivers the last variable, namely the distance of the focal point:

$$f = \upsilon \cdot D \quad (6)$$

The f/D relation must be determined beforehand, because otherwise the number of unknown values would be too high in relation to the number of equations.

The last step now is to insert equation 6 into equation 4, which gives us a formula for calculating the dish depth without any additional unknown values left, apart from D and υ, both of which have to be determined beforehand, however:

$$T = \frac{D^2}{16 \cdot f} = \frac{D^2}{16 \cdot \upsilon \cdot D} = \frac{D}{16 \cdot \upsilon} \quad (7)$$

It is of course insignificant whether the dish depth T is calculated using equation 4 or equation 7. The nice thing about equation 7 is that the dish diameter must not be squared and υ can be freely selected, whereas the focal point distance f first has to be calculated.

As we now only have the final and/or maximum values – while the fabrication of the template also requires intermediate values – we have to extract the root out of equation 1:

$$x = \sqrt{4 \cdot f \cdot y} \quad (8)$$

The y values are now increased by steps of, say, 1 mm, starting from y = 1, until half the dish diameter, i.e. the value of x_{max}, is the

result and/or this value is surpassed. Larger steps naturally lead to a smaller set of values, but also to a less refined grading.

The individual sets of values for x and y can then be marked out on a sufficiently large piece of cardboard. While this sounds like a rather tiresome procedure, the result will be surprisingly accurate after all dots on the cardboard have been connected. A bendable curve template is the tool of choice for this job. Simply cut the cardboard very carefully along the lines and you will end up with a positive shape which will be the template for cutting the frames. (**see illustration 2**).

Please note that you can avoid this troublesome and time-consuming job – after all you need a considerable number of frames – if you create a template which is reduced by factor 2. This template – with the negative shape playing the decisive role now – acts as the basis for a mechanical fret saw which requires you to cut only one negative frame by hand and produce all positive frames with a kind of volume production. I should emphasise at this point that all positive frames will be absolutely identical, which means that any flaw will also be replicated.

If the negative form is created with the greatest care and diligence there will be no need to fine-tune the individual positive frames.

Example:

If a dish diameter of 1600 mm is selected together with an f/D relation υ of 0.7, the focal point distance f can be calculated using equation 6:

$$f = \upsilon \cdot D = 0.7 \cdot 1600mm = 1120mm$$

The dish depth T is calculated using equation 7:

$$T = \frac{D}{16 \cdot \upsilon} = \frac{1600mm}{16 \cdot 0.7} = \frac{1600mm}{11.2} = 143mm$$

In order to create a template a number of intermediate values are required. For this we use equation 8 ($x = \sqrt{4 \cdot f \cdot y}$).

With the known value of f = 1120 mm and a y value which is always increased by 1 mm it follows, for example, that the dish depth T = 5 mm (T = y) is 150 mm away from the central point of the dish, the so-called zero point (see illustration 1). In other words, in x distance of 150 mm the dish depth is 5 mm. If the depth value is always increased by 1 mm we receive 143 value pairs until we arrive at the maximum radius of 800 mm, which means that the chart becomes exceedingly complex. On the other hand, this procedure creates a very fine grading which in turn leads to a very precise geometry. Below is a chart extract with intermediate values.

y [mm]	1	2	3	4	5	6	7	...	139	140	141	142	143
x [mm]	67	95	116	134	150	164	177	...	789	792	795	798	800

Of course calculations can also be performed with given x values, in which case equation 2 would be applicable. However, this would make 1 mm steps unreasonable since we would end up with 800 value pairs (even more for dishes with a larger diameter) so that we would have to select a different step distance. Since the gradient of the parabola is very flat near the zero point and only increases quickly and sharply as we increase the distance from the zero point, the step distance would in consequence have to be reduced bit by bit. The exact distances, however, are not known beforehand and are difficult to predict, thus making this procedure not very reasonable.

For the above-mentioned template in 1:2 scaling only every other pair of values is taken from the chart (otherwise the number of value pairs would be higher than necessary) and the x and y values are divided by 2. Please note: the values in the chart are rounded.

y/2 [mm]	1	2	3	4	5	6	7	...	68	69	70	71	71.5
x/2 [mm]	47	67	82	95	106	116	125	...	390	393	396	399	400

Once the values are marked out on the cardboard and the upper negative form is cut off the lower positive form the required template for the mechanical fret saw is finished. We will discuss this in more detail in the next issue of TELE-satellite.
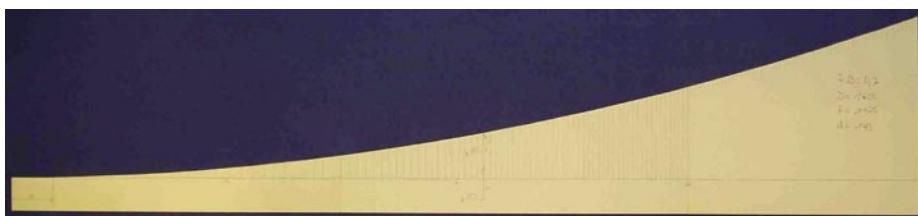
Illustration 2

Illustration 3

[1] **www.vetrun.com**

[2] **www.w1ghz.org/antbook/contents.htm**

C-band With a Ku-band Dish? Could It Be?

Ron Roessel

I was sitting here looking at all the work I had to do for this issue trying to decide where to start when an e-mail popped up on my PC screen. It was from a DXer in Canada and he wanted to know if we'd be interested in hearing about his success with C-band reception using a small dish. I replied by saying that I too have a small prime focus C-band dish that is 1.6 meters in diameter and that I've had good results with that. "Well, what about a 1.2-meter or even a 1.0-meter offset dish?" he then asked. Naturally, upon hearing this, I had no choice but to stop what I was doing and find out more.

⏐ **The Cone-shaped Scalar Ring**   ⏐ **Vito and Tony Setting Up the 1.2-Meter Antenna**

C-band reception with antennas this small is unheard of and to the best of our knowledge has been attempted in the past but never with any positive results. Of course, the C-band satellites that are in orbit today are much more powerful than those from just a few years ago so it stands to reason

that you can get away with smaller dishes. But, only 1.2 meters?   And even smaller? This we had to see.

Vito Carriero lives in Toronto, Ontario, Canada. He has been an avid DXer for many years.   One day he decided to see what

he could do with a 1.2-meter dish pointed at some of the more popular C-band satellites. The "ingredients" for his experiment included:

Fortec Star 1.2-Meter Offset Dish
Stab HH 120 Motor

Eagle Aspen C Band LNBF (NR: 15°K, Gain: 62dB)
Cone Shaped Scalar Ring
C-Band LNBF Holder for an Offset Dish
Fortec Star 5400NA Receiver

Some of you might be saying right now: Scalar Ring? C-band LNBF? On an offset dish? Clearly, these items are normally not found on an offset dish so some modification of the LNB mount was necessary. The standard Ku mount was removed in favor of a customized C-band mount with a clamp large enough to accommodate the diameter of the C-band LNBF. The 1.2-meter antenna was mounted on a Stab H-H motor, which in turn was installed on a vertical pole cemented into the ground. This was all connected to a Fortec Star 5400NA receiver.

The antenna was first fitted with a Ku-band LNBF so that its alignment could be optimized. The antenna was moved from one end of the satellite arc to the other to verify everything was properly adjusted. The Ku LNBF was then replaced with the Eagle Aspen C-band LNBF so that the fun could begin.

Vito first pointed his dish to Intelsat 805 at 55.5° west primarily because of its strong beams but also because of his interest in foreign language programming. Initial results were impressive: the receiver was able to lock onto 15 C-band transponders of which 14 of these signals produced stable video and audio! Vito first used a standard Scalar ring but discovered that using a cone-shaped scalar ring improved signal quality by roughly 10%.

So, with the success of Intelsat 805, it was time to move on to other satellites to see what could be done. Similar results were obtained with numerous other C-band satellites. The receiver was able to lock on to C-band transponders from Pas 1R, Pas 9, AMC 6, AMC 3, Galaxy 11, Intelsat Americas 6, Galaxy 3C, Intelsat Americas 5, Galaxy 4R, AMC 4, AMC 1 and Anik F1. Most of the transponders on these satellites that were recognizable by the receiver produced stable video and audio. There were of course a few

transponders with signals that were borderline and made for unstable video and audio but overall the results were quite good.

The next logical question would be: what about a dish that's even smaller? Tony DiRienzo, a DXer also out of Toronto in Canada, was thinking along the same lines. He decided to attempt C-band reception with a 1.0-meter dish. His recipe included the following:

Fortec Star 1.0-Meter Offset Dish
Stab HH 100 Motor
Astrotel Precision C Band LNBF (NR: 20°K, Gain: 65dB)
Cone Shaped Scalar Ring
C-Band LNBF Holder for an Offset Dish
Fortec Star 5400NA Receiver

Just like Vito did with his 1.2-meter experiment, Tony also first used a Ku-band LNBF to optimize the alignment of his antenna. Once this task was finished, he switched over to the C-band LNBF to see what he could do.

Believe it or not, he too was able to show that C-band reception with a small 1.0-meter dish was possible! The dish was first pointed to AMC 12 because it is known to have a very strong transponder at 3.866 V. He was not disappointed. The receiver quickly locked onto this transponder and identified three channels. It went on from there. He achieved the most success on Galaxy 11 by locking onto a total of 15 channels of which 12 were religious channels and two were encrypted. He was also successful in locking onto transponders on Intelsat Americas 13, Anik F2, Anik F1, AMC1, AMC4, Galaxy 4, AMC6, Intelsat 805, Panamsat 1, NSS 806 and NSS 7.

All in all, it is safe to say that these experiments were very successful. DXer's and weekend satellite hobbyists alike always want to be able to get as many channels as possible with the system they have. The problem with C-band has always been that it required a much larger diameter antenna than Ku-band. Even if the cost of a 10-foot dish was not an obstacle, its installation usu-

Astrotel LNBF with Cone-shaped Scalar Ring on the 1.0-Meter Dish

The Complete 1.0-Meter Dish Assembly

The 1.0-Meter Dish on a STAB HH 100 Motor

ally was. C-band antennas take up quite a bit of space and were usually never an option for those who lived in apartment buildings or in houses in and around populated areas.

But now that it has been shown that C-band signals can be received with a dish as small as 1.0 meter in diameter, it is quite possible that this entire train of thought is about to change. All of the C-band testing described above was performed in perfect weather conditions. The situation hardly changes even if the weather turns sour. Unlike the Ku-band where a rain shower could have a profound effect on signal reception, only marginal degradation of the C-band signal was observed in bad weather. Even so, this is a giant step in the right direction!
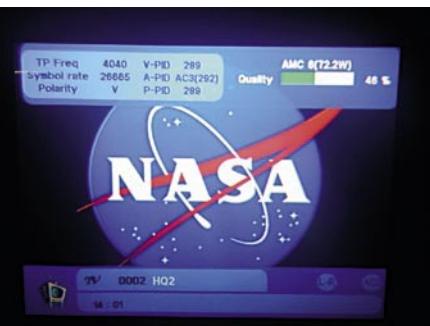
Screenshot of NASA TV on AMC 6 (4040 V) with 1.2-Meter Dish

Screenshot of Peru TV on IS 805 (3794 H) with 1.2-Meter Dish

Saleh Al-Wehaimod
[Egypt]

answers
your questions

How to get Nilesat?

I live in Dubai, UAE. I was not able to receive any channels from Nilesat on this frequency 11.595 V 25575 2/3; eventhough I have strong signals from other Nilesat frequencies. How can I receive the missing frequency.

Nilesat is located at 7 degrees West. You must be talking about the Nilesat package that just started on Atlantic Bird 2 at 8 west. In order to capture this frequency, you have two options. The first one is to move your dish exactly at 8 West, but you will probably lose the Nile-sat channels depending of your dish size. The other option is to move your dish between the two satellites like 7.5 West in order reveive them both. Because Nilesat frequencies are almost full, Nilesat has used the capcity of Atlantic Bird 2 at 8 degrees west to receive the two satellites in one position.

All in one

Is it possible to receive Nilesat, Intelsat 902, and Eurasiasat with a 1.4 m fixed dish in Dammam, Saudi Arabia?

Intelsat 902 is at 62 degrees East and Eurasiasat is at 42 degrees East. Nilesat is at 7 degrees west, which makes it far from the other two satellites. Therefore, it will be impossible to receive Nilesat with them. Since Nilesat is mostly for Arab viewers, Arabsat is also targeted for Arab vieweres and it fits perfectly with Intelsat 902 and Eurasiasat in one fixed dish. You can put the master LNB for Eurasiasat at the middle of your dish, and use holders for Arabsat and Intelsat 902. Of course, the best solution is to use a motorized dish to get them all.

Philippine TV in Lebanon

I would like to ask if I can get Philipine channels on my dish located in Lebanon, which satellites and frequencies?

You can get PBO and Pinoy Prime by subscribing to Orbit Network at Arabsat 3A. You can also subscribe to ABS-CBN on Atlantic Bird 3.

Telstar in Kuwait

I am trying to receive Telstar 12 at 15 degrees west in Kuwait, but I was not able to receive it. How can I find it?

You have to make sure that you use the appropiate size of dish - 1.2m would be enough. Since Telstar 12 is at 15 degrees west, you have to make sure that there is nothing blocking your dish from receiving the signals, such as walls or trees. Besides that, in some receivers, signal quality from Telstar 12 comes 2 or 3 seconds late. So, you have to put that under consideration.

More satellites in Lebanon

I have a 1.8 m fixed dish pointed at Hotbird and I use holders to receive Nilesat and Arabsat at 26 degrees East. Is it possible to receive other satellites by the same dish in Lebanon?

Yes, it is possible to receive some satellites that have strong signals in your area. For example, Eutelsat W3 at 7 degrees east, you can try picking it up by putting your LNB between Hotbird and Nilesat.

RECEPTION TECHNOLOGY | Dish Calculation |

Excursus regarding the influence of the feedhorn geometry depending on the f/D relation

Depending on the extent of the f/D relation the distances between the focal points and the reflector base differ with a uniform dish diameter. **Illustration 4** shows this concept on a parabolic antenna with a diameter of 1600 mm. For the following explanations the exact geometry of the parabola is not significant, so in the illustration below the geometry corresponds in shape to an f/D of 0.7. Actually, the outward gradient of the parabola would have to increase as the f/D value decreases. For the purpose of my observations I have concentrated on the radio waves that reach the outermost border of the parabolic antenna. As can be seen from the detailed illustration, they reach the feed with the widest angle which can lead to problems regarding the reflection in the feedhorn.

Below are some detailed sketches to illustrate the path of signals in the LNB area based on f/D=0.25 to f/D=0.7 (**illustration 5**).

We will not consider here that radio waves come in amplitudinal form, since this is insignificant for our general observations. It also has to be noted that I have taken strictly hypothetical measurements for the feed cone without the help of a model sketch. It can be clearly seen, however, that its geometry influences the selection of the focal point distance and/or the f/D relation.

It can be observed that an f/D of 0.25 will lead the signal directly out of the feedhorn again, and that a value of 0.35 also causes the radio wave to leave the feed after being reflected twice. With an f/D of 0.5 the signal meets the feedhorn vertically at the second point of reflection and then leaves the feedhorn in the opposite direction which means that the signal is cancelled. It can be seen, however, that the signal would not be reflected back if the cone of the feed had a more acute angle. Finally, with an f/D of 0.7 the radio waves can easily travel through the feedhorn to the reception antenna in the rear part of the LNB.

From this it becomes apparent that a lower f/D requires a cone with low diameter differences in order to make reception possible. In general, standard LNBs are designed for offset dishes with an f/D of approximately 0.7, so it is reasonable to take this as a benchmark for any DIY satellite dish.

It also follows that while it may be possible to use an LNB designed for a low f/D with a dish featuring a high f/D, the same may not be true the other way round. Of course it is always possible to create a self-made input cone as well – even though this is a rather complex task.

In addition, a minimum opening diameter and a minimum cone length are required, depending on the frequencies to be received, since lower frequencies are characterised by stronger amplitudes.
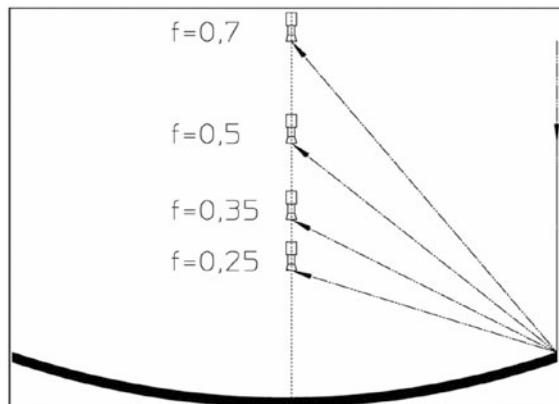
Illustration 4

Illustration 5
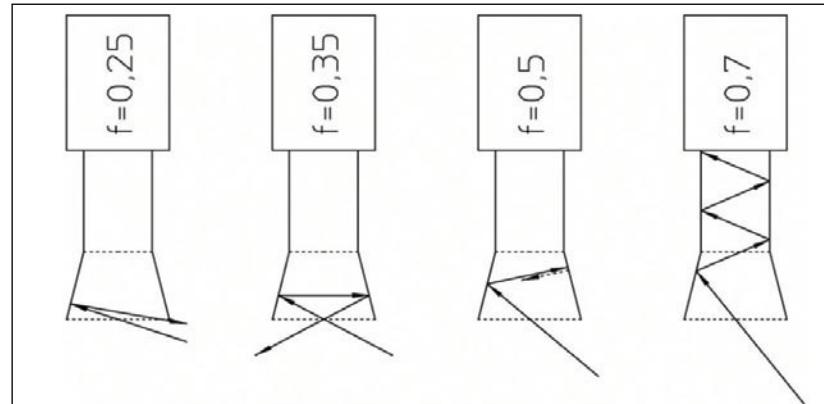
Your questions, our answers

Andy Middleton
[UK]

answers
your questions

Eurasiasat in "Pieter"

I live in St Petersburg, Russia. Is it possible to get Eurasiasat here? If so what size dish do I need?

Yes, at least partially. The western beam of Eurasiasat covers the whole of Europe including your part of Russia. A 1.2m dish should bring you all the channels on that beam, as well as all those from Turksat at the same orbital position. The Eastern beam would be more of a problem as you are a few hundred miles from the edge of the footprint, but you may get lucky wit a 1.2m, or use a larger dish and a sensitive LNB to increase your chances.

Expat in Spain

I live in Galicia in the north-west corner of Spain. Is it possible to receive English TV channels, for example BBC, ITV and Sky TV programmes?

Whilst you are outside the official footprints of the Astra 2D satellite used by Sky for the BBC and ITV, people from across Europe have successfully received them. At your location for the 2D channels, a dish of around 1.6m should bring them in without too many problems. It's likely other English-speaking residents will already have such systems, so it would be good to speak to them to hear their stories of success or failure. The BBC and now ITV are free-to-air, but for the others you'd need a Sky Digibox and a card for the channels you wish to view, which would need to be registered to a UK address.

Antique Receiver

My ageing neighbour has an Amstrad SRD400 on which she had subscribed to Sky. Owing to cost she did not continue subscribing. I purchased a viewing card from Sky which would enable her to receive the free channels. I rang today to get the card activated but could not carry out their instructions as I was unable to find coloured buttons to get to service screen. How do I display these menus from this Amstrad box...have I got the wrong remote?

The SRD400 is almost an antique these days! It's an analogue receiver with fixed frequencies, used long before Sky switched their service to digital only. I'd guess that the dish is aligned to the Astra 1 satellite that Sky used in the analogue days, where you could still receive Eurosport and CNN in addition to several non-English channels in analogue form.

To receive the free channels via Sky
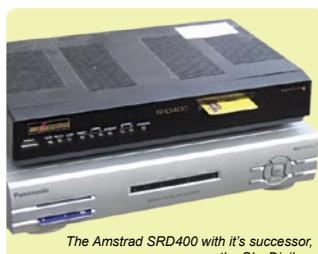
The Amstrad SRD400 with it's successor, the Sky Digibox

Digital, you'd need to get a Sky Digibox receiver which can be obtained directly from Sky or one of their dealers, or they are also available fairly cheaply on the second-hand market. If you're still able to see analogue channels this would confirm the dish would need to be realigned to the Astra 2 and Eurobird satellites which Sky now use, and you should also ensure you have a universal LNB on the dish. A local satellite installer should be able to do this for you.

Arc Alignment

I have a 10ft mesh dish that receives Nilesat, but when moved with the actuator does not receive all the other satellites. If I adjust the position I can receive all the other satellites but not Nilesat. I called a mechanic who told me that Nilesat is not on the same belt as the others and I need to buy one dish for Nilesat and another for the others. Is that really true?

I don't think so. If you find you have to move the dish up or down to get a better signal on the other satellites instead of simple east-west fine-tuning with the receiver or positioner, this means that the dish's central position or the motor's alignment is not accurate. Nilesat is above the equator at the same latitude as other satellites, so this is not a problem here. Find a more knowledgeable installer who should be able to easily correct the alignment.

MPEG 4:2:2

How can I receive broadcasts in 4:2:2 format? What receivers are available in the market to receive such signals?

The most-cost effective way to receive 4:2:2 signals at the moment is with a DVB-S PC card receiver such as a Skystar or Broadlogic. Used with software such as ProgDVB, 4:2:2 transmissions can be received as easily as a normal 4:2:0 broadcast. For a standalone solution without using a computer, there are few options outside receivers made for professional use. However, the Quali-TV QS1080IR can receive 4:2:2 in addition to 4:2:0 and high definition transmissions.

Exhibition Preview

● **1 - 3 March 2006: DVB World 2006**
Expert Conference
Dublin, Ireland
www.iab.ch

● **2 - 4 March 2006: AustralAsian Satellite 2006**
Conference and Tradeshow
Queen Victoria Museum, Launceton, Australia
www.conferenceplus.com.au

● **6 - 9 March 2006: CABSAT 2006**
Electronic Media Event and Communications Event
Dubai International Convention and Exhbition Center
www.cabsat.com

● **18 - 22 April 2006: Satellite Expo 2006**
Opportunity for satellite retailers, technicians and exhibitors
Georgia International Center, Atlanta, USA
www.satelliteexpo2006.com

● **30 May - 1 June 2006: ANGA Cable 2006**
Trade Fair For Cable, Satellite and Multimedia
CongressCentrum East, Koelnmesse, Germany
www.angacable.de

● **20 - 23 June 2006: CommunicAsia 2006**
17th International Communications and Information Techno-
logy Exhibition & Converence
Singapore Expo, Halls 2B – 6, Singapore
www.communicasia.com

● **28 - 30 September 2006: SatExpo 2006**
Space and Advanced Telecommunications
Vicenza Trade Fair, Vicenza, Italy
www.satexpo.it

● **October 2006: EEBC 2006**
Eastern Europe Broadband Convention, Kiev, Ukraine
www.eebc.com.ua