DekTec
DTE-3137

- *Capable of inserting all the satellite transponders into a network*
- *Suitable for Unicast as well as Multicast streaming*
- *The complete data stream can be recorded*
- *Very flexible adaptation thanks to the C++ Library*
- *Complete control of the receiver via the network*

DVB-S/S2 Satellite Receiver for Network Applications

We already introduced the DTU-215 from DekTec to you in the 12-01/2012 issue of TELE-satellite. It is a terrestrial modulator that can take an available transponder stream and process it in a variety of different ways (for example, DVB-T or ISDB-T) and then modulate it on any desired VHF/UHF frequency. But the question is how do you obtain the complete transponder stream from a satellite transponder so that it can be processed, for example, with the DTU-215?

This exact question is answered by the new DekTec professional network satellite receiver DTE-3137. The DekTec DTE-3137 is a unique

TEST REPORT | Digital TV Modulator |

DekTec

DekTec DTU-215 Gold Edition

- *Professional modulator for nearly every digital modulation standard*
- *Ideal for use as a test signal modulator, for example, for receiver manufacturers*
- *Capable of modulating transponder streams as well as test signals*
- *Fully compatible with all HD standards*
- *Plug&Play for Windows PC*

■ **The DekTec DTU-215 test report from the 12-01/2012 issue of TELE-satellite**

TELE satellite AWARD 09-10/2012

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

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

DVB-S/S2 receiver that comes with a number of special features while at the same time certain other features that might be standard and required for an end user were left out from this piece of professional equipment. This satellite receiver is not meant for the private end user; it is dedicated to the professional users.

Thanks to its slim size (13.5 x 13.5 x 3.5 cm) and its very functional construction, the DTE-3137 can be installed in any standard
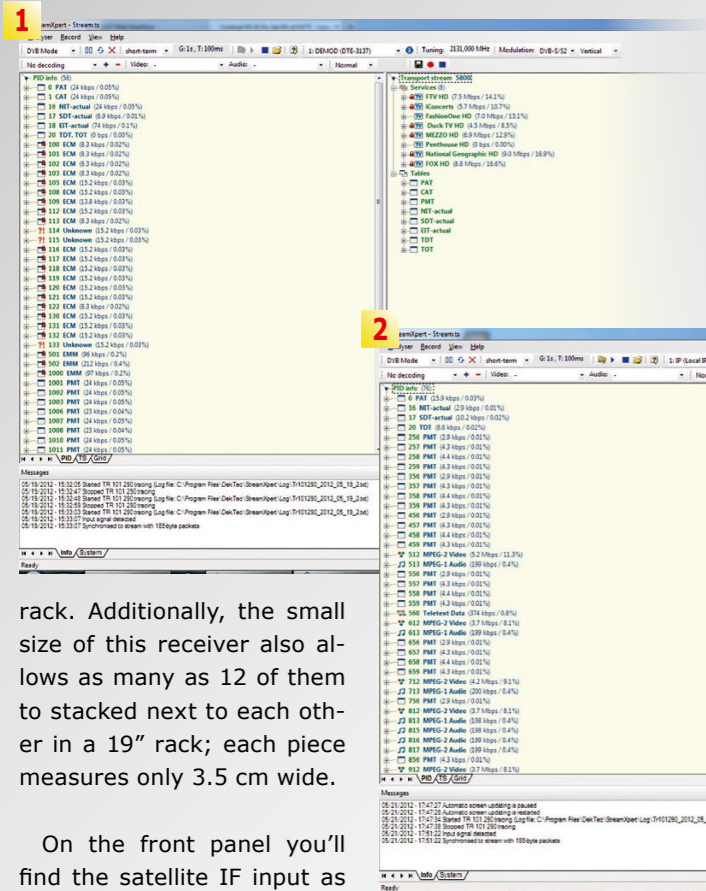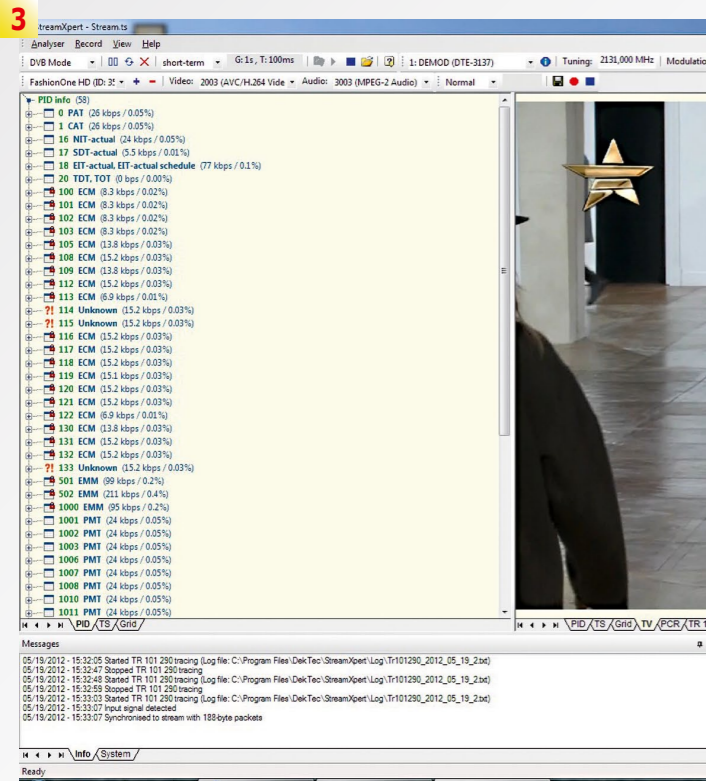
The built-in tuner receives signals in the 950 to 2150 MHz range with symbolrates from 2.0 to 40 Ms/sec. The manufacturer reports the input sensitivity to be from -30 to -60 dBm and, of course,

fer of very large amounts of data. We were also impressed that the DTE-3137 can also be supplied with power via the Ethernet cable (Power over Ethernet) as long as the available network hardware supports this function. Especially when more than one DTE-3137 will be used, the user can avoid having to use external 24-volt power supplies. Of course, a power supply is included in the package since Power over Ethernet is not available in every network.

The manufacturer states that the DTE-3137 uses a maximum power of 17 watts and, as is typical with professional equipment, there's no standby mode. The hard-

rack. Additionally, the small size of this receiver also allows as many as 12 of them to stacked next to each other in a 19" rack; each piece measures only 3.5 cm wide.

On the front panel you'll find the satellite IF input as

well as the DVB-ASI output. There's also an RJ-45 network interface, a 24-volt input as well as a multidigit LCD display that shows status information.

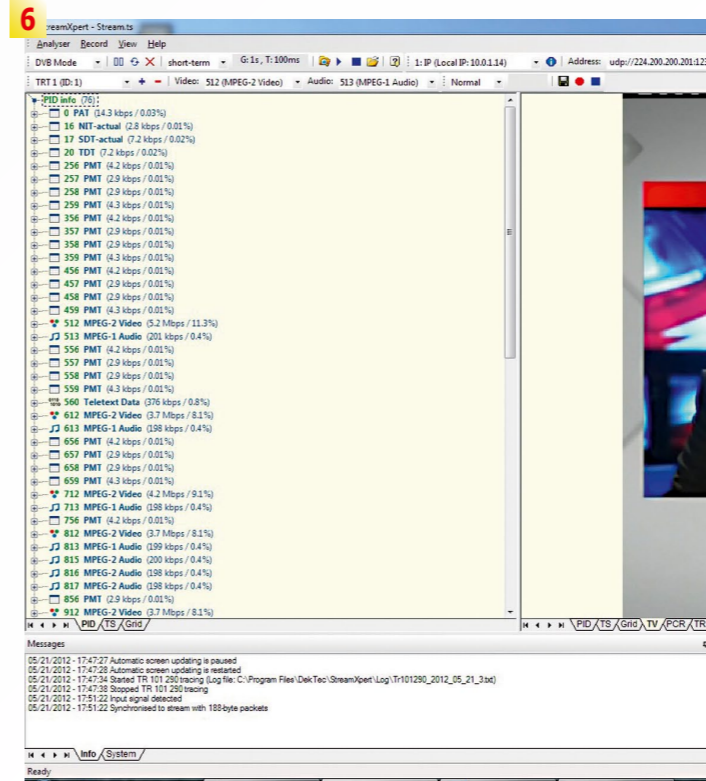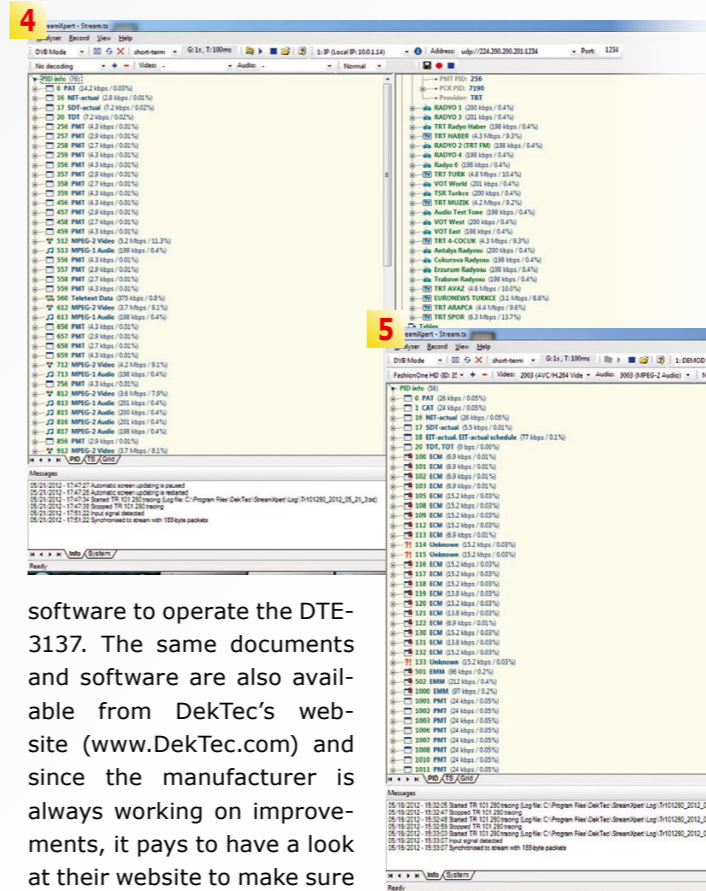An HDMI output, a Scart jack or RCA jacks that you would find on a normal re-

ceiver can't be found here since it simply would make no sense to have them given the application of this receiver. Studying the DTE-3137's technical datasheet reveals its baseline data: it's a DVB-S/S2 receiver that supports the QPSK, 8-PSK, 16-APSK and 32-APSK modulations.

The Gigabit network connection is accomplished in the RJ-45 format and thus permits the speedy trans-

all the necessary parameters needed to receive a satellite signal (13/18V control voltage, 22 kHz signal) are also supported.

In addition to the DTE-3137 and the power supply, the manufacturer also included in the package a USB stick on which can be found not only the user manuals but also all the required

ware is designed such that it can run 24/7.

1. StreamXpert in DTAPI Modus
2. Display of a transport stream that was received via Multicast in UDP format
3. Live playback of an HD stream
4. All stream parameters such as NIT are displayed
5. The data rate of every TV and radio channel is displayed
6. TRT transponder on TURKSAT 42° east

software to operate the DTE-3137. The same documents and software are also available from DekTec's website (www.DekTec.com) and since the manufacturer is always working on improvements, it pays to have a look at their website to make sure

IP address that it identified from the DHCP server of our LAN. Since there is no remote control, the only way to communicate with and control the DTE-3137 so that it can be loaded with the desired settings and parameters is via the network.

So we entered the DTE-3137's IP address into our PC's web browser and before we could blink the start page of the integrated web server appeared on our monitor.

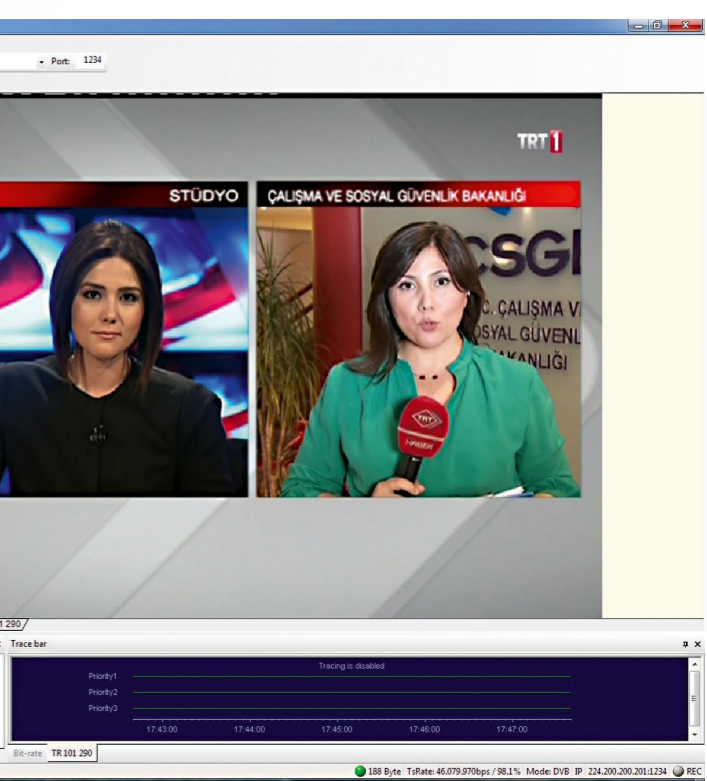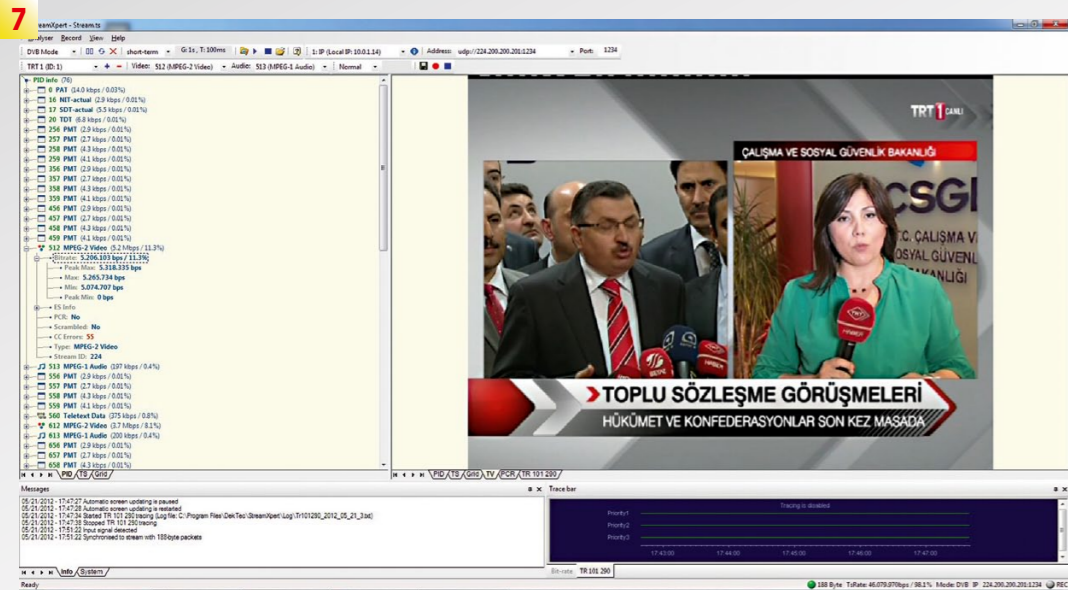the most current version of software is being used.

As the DTE-3137 is first unpacked, you get the feeling that it'll all be self-explanatory. The available connections are all perfectly labeled so you should have no trouble figuring out which

cable goes to what connection. It took us no time at all to connect the DTE-3137 to our test center's Gigabit Network, to attach a signal cable to the satellite IF input and to connect the included power supply. The LCD immediately comes to life and starts providing status in-

formation. No need to worry about the 'No Signal' message; the DTE-3137 has not yet been told what frequency it should receive.
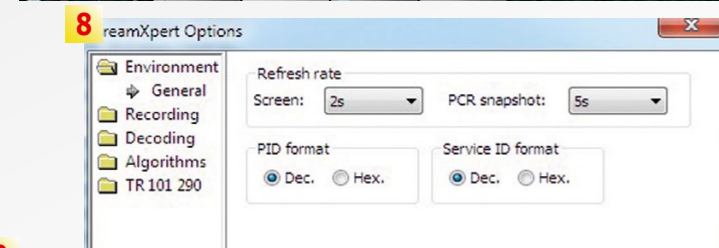
The take care of this, the user should look at the lowest part of the LCD where the DTE-3137 displays the

Fortunately, DekTec decided to do without all forms of scripts, flash animation and other bells and whistles so that you can access the control functions from truly any web browser on every possible operating system, from a SmartPhone, to a Windows PC, to a MAC up to and in-

own tool called the DekTec StreamXpert on the PC. This tool can be downloaded from DekTec's website. In this mode the web interface only serves as a status control; you cannot go through any settings here.

Since the DTE-3137 is a professional piece of equipment, the StreamXpert software would be sufficient for most users although there are many applications that cannot be covered or cannot satisfy the requirements of the customers. For this reason a complete C++ library was made available to customers so that they could program their own DTE-3137 control software exactly the way they want it. What a great idea!

cluding Linux systems.

The DTE-3137's web interface is very nicely organized; experienced users will instantly spot the Application Switcher. It makes it possible to control the DTE-3137 two different ways. In DTAPI mode the receiver is fully controlled by its
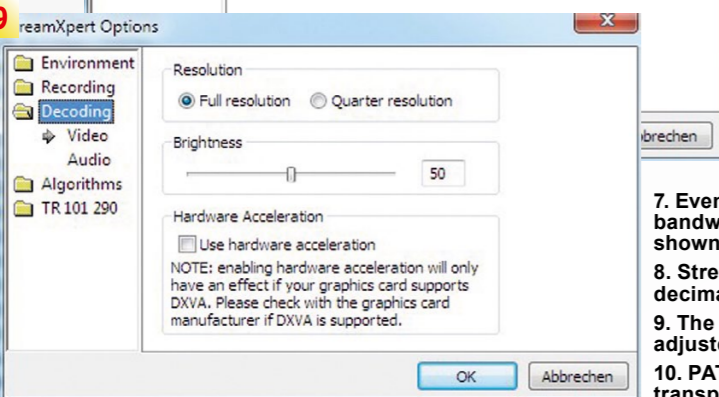
7. Even the minimum and maximum bandwidth used by a broadcaster can be shown

8. StreamXpert can display PID values in decimal or hexadecimal format

9. The displayed video image can be adjusted for resolution and brightness

10. PAT, CAT and PMT of the TRT HD transponders on TURKSAT 42° east

The second mode is named SMPTE and opens for the user the full control and settings capabilities of the DTE-3137 via the integrated web server and the SNMP interface. With the Simple Network Management Protocol it involves one of the

IETF (Internet Engineering Taskforce) developed network protocols that can be used to monitor and remotely control network devices from a central location via LAN. Since the SNMP doesn't define its own values - those that it could get from the attached devices – it is universally applicable and through so-called Management Information Bases (MIB) it can be individually matched to the control/monitoring devices. This database, that in the form of an MIB file must be made available by the manufacturer, contains all the necessary parameters that an SNMP client would need for successful communication with the network device.

Naturally, DekTec has this database available for its users via download so that every desired SNMP client can be used to control the DTE-3137. We opted to download and use the free iReasoning MIB browser that, as we expected, was able to work perfectly together with the DTE-3137 thanks to the MIB data made available by DekTec.

Since developing our own control software using the DTAPI C++ library provided by DekTec would have been an extremely complex undertaking, we decided for the purposes of this test report to use the StreamXpert tool from DekTec. This tool is available on the USB stick that accompanies the DTE-3137.
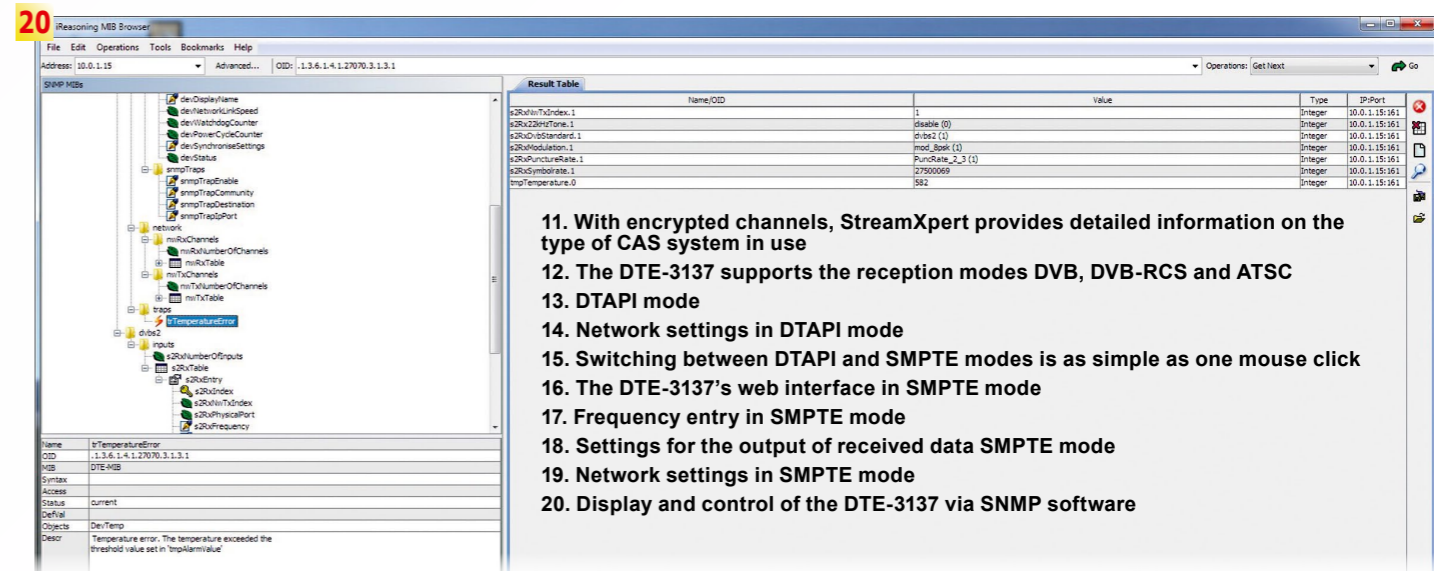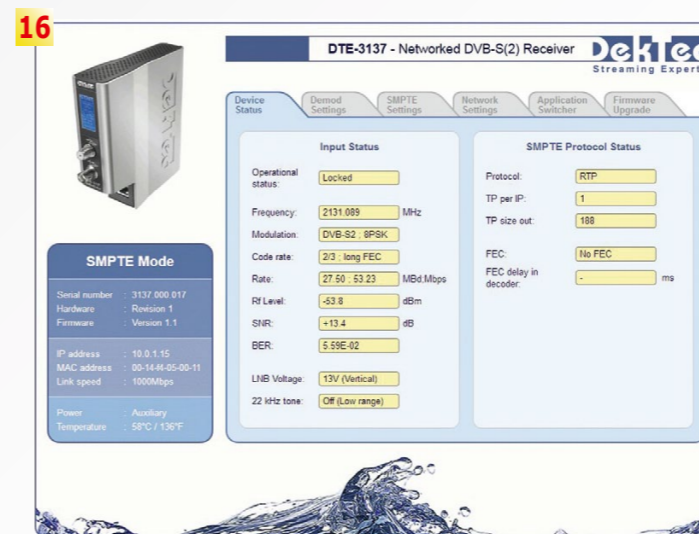
When StreamXpert is started, it automatically recognizes (in DTAPI mode) the DTE-3137 receiver in the local network and instantly creates a link between the two. According to DekTec, the PC hardware requirements for the StreamXpert tool are as follows: Windows XP, Windows 2003, Vista or Windows 7 operating system with a minimum of a Pentium 4 processor (1.7 GHz) for decoding SD transport streams or an Intel Core 2 or Intel Core i7 for decoding HD transport streams.

The main window of StreamXpert is divided into three sections. The two larger sections in the middle of the screen provide information on the currently received transport stream and the corresponding PID structure while the bar at the bottom provides valuable status information to the user. StreamXpert is so clearly and intuitively programmed that there's almost no need to reference the user manual included on the USB stick. If you have just a little bit of understanding of what

this tool can do, namely the analysis, display and recording of transponder streams that can be received with a compatible receiver, such as the DTE-3137, the use of this tool will be nothing less than self-explanatory.

In the tool's upper-most symbol bar, StreamXpert shows the reception hardware found in the local network. Right next to that are two entry fields for frequency and modulation parameters. And, as is typical with professional equipment, the IF frequency of the desired satellite transponder has to be entered, in other words, the LOF must first be subtracted

from the satellite transponder frequency. For example, if the DTE-3137 is to receive the frequency 12150 MHz and you're using a universal Ku-band LNB, you would enter the IF frequency of 1550 MHz (12150 MHz – LOF of 10600 MHz). What might be standard and typical for a professional might at first

be a little irritating for a beginner but it ends up saving the manufacturer a lot of extra work if they were to take into account all the different types of LNBs that are in use today. Along those lines, it also makes sense that the 22 kHz signal is not automatically turned on or off based on the frequency that

11. With encrypted channels, StreamXpert provides detailed information on the type of CAS system in use
12. The DTE-3137 supports the reception modes DVB, DVB-RCS and ATSC
13. DTAPI mode
14. Network settings in DTAPI mode
15. Switching between DTAPI and SMPTE modes is as simple as one mouse click
16. The DTE-3137's web interface in SMPTE mode
17. Frequency entry in SMPTE mode
18. Settings for the output of received data SMPTE mode
19. Network settings in SMPTE mode
20. Display and control of the DTE-3137 via SNMP software

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www.TELE-satellite.com — 11-12/2012 — TELE-satellite International — 全球发行量最大的数字电视杂志 **41**

is entered, instead the user has to enter this in manually as well while selecting the required polarization voltage of the LNB.

Additional reception parameters such as modulation type, symbolrate or FEC are not necessary; after pressing the enter button, the DTE-3137 automatically analyzes the entered frequency and recognizes all the necessary parameters on its own. A green dot in the StreamXpert's status bar indicates that the DTE-3137 was correctly able to read and process the selected frequency.

Next, all the usable information from the incoming transponder stream is then instantly displayed in the two main windows including a complete PID overview as well as the content of all the information tables such as PAT, CAT, PMT or NIT. As useful as all of this informa-

tion can be, sometimes you might just want to know what channels are being received by the DTE-3137 at that moment. No problem, with just a few mouse clicks the StreamXpert software shows all of the available TV and radio channels on the currently received transponders. These channels can also be viewed live. It makes no difference if it's an SD or HD channel; keep in mind though that encrypted content cannot be decoded due to the lack of a CI slot.

Underneath the frequency and modulation entry fields are the control buttons for recording the current transponder stream. With just a few mouse clicks, the software can record the entire transponder stream onto the hard drive of the PC. Thanks to the Gigabit Ethernet connection the recording function worked perfectly even on HD content with large

amounts of data without putting much of a load on the processor.

Additionally, the StreamXpert software allows other basic settings such as displaying PIDs in decimal or hexadecimal format, the use of the hardware acceleration of a DVXA compatible graphics card for the live display of DTE-3137 received channels on a PC, the selection of the reception mode to be used (DVB, DVB-RSC or the American ATSC) and the creation of a complete log file in XML format.

Changes to the displayed transponder stream cannot be done with the StreamXpert software; it can only be used to completely and precisely record the data stream on a PC as it was received as well as display all the internal values to the user.

Through the web interface the operational mode of the DTE-3137 can be switched to SMPTE with just one mouse click and after a quick hardware restart, numerous additional menu points appear in the receiver's web interface. The user now has the capability to modify a variety of reception parameters via the web interface and also how the user can have control over the data output via the network connection. The tuner control, apart from its graphical representation, corresponds exactly to the depicted operation via StreamXpert. Via its own status page the user will receive all of the necessary and interesting parameters (such as modulation type, symbolrate, FEC, BER or SNR) of the currently selected transponder. The status indicator 'Locked' tells the user that the DTE-3137

is in operation and processing received data.

For the output via network, there are two different modes available: Unicast and Multicast transmission. The difference between the two modes simply has to do with the number of receivers. While Unicast is meant for one single receiver, Multicast streams can be received and processed by a group of receivers. All of the required IP parameters can be entered directly in the DTE-3137's web interface; this also functioned without any problems in our tests. Transmissions can take place in RTP mode as well as UDP mode making the DTE-3137 a truly universal device.

To monitor and control the DTE-3137 in SMPTE mode, not only can the integrated web server come into use, but also any SNMP client. As we mentioned at the beginning of this report, DekTec provides the required MIB files for this purpose. As before, we created a connection to the DTE-3137 via the iReasoning MIB browser that allowed us to read and display a multitude of usable information. The possibilities range from hardware status information (such as internal temperature) to tuner parameters that have a direct influence on reception. Thanks to the easy-to-understand MIB browser, the user can select any value from the numerous possibilities that would be interesting to him and display them in an organized table format.

The Unicast or Multicast transponder stream data can also be received and recorded by the StreamXpert software. It automatically adapts itself to the DTE-3137

in SMPTE mode and changes the entry fields for frequency and modulation mode in the entry possibilities for IP address and port of the received data stream.

Naturally, the data can also be used in other applications and programs that can work in Unicast or Multicast mode. Using the web interface, the transmission mode can be set to RTP (Real Time Transport Protocol) or UDP (User Datagram Protocol) and the parameters TP per IP and TP size can also be set.

As part of our tests, we attempted to receive the data stream sent by the DTE-3137 using the very popular VLC Player (www.videolan.org) on a Mac and a Windows PC; as expected, it functioned without any problems.

Regardless of which mode was selected, the complete transport stream is always available on the DTE-3137's DVB-ASI output so that, for example, it can be passed on loss-free to a Re-Multiplexer or other professional DVB data stream processing equipment.

The LCD display on the DTE-3137 continuously shows information on the status of the currently received transponder (signal level, SR, SNR and BER); it allows a technician to monitor the signal reception directly on the hardware.

A special section in the DTE-3137's web server makes it possible to update the firmware to the latest version once it has been downloaded from the manufacturer's web site. In addition, critical DTE-3137 status information is continuously available via the web in-

terface such as the current hardware revision, the currently installed firmware, the current IP address or the connection speed of the network. By the way, if the network doesn't have a DHCP server with automatic IP address recognition, it can, of course, be entered manually.

For our tests we put the DTE-3137 through several days of continuous operation and during that time recorded an enormous amount of data via satellite (several terabytes). And just as we expected, the DTE-3137 worked perfectly without any errors or crashes. At the same time, the transponder streams were consistently transmitted to our PC without any interference. Even a simulated power failure did not disturb the DTE-3137; as soon as power was restored, it went right back into service without any interaction by the user.

The DTE-3137 is a very reliable DVB-S/S2 receiver that was explicitly designed for professional applications. It takes the received data and passes it on via a network or DVB-ASI output.

Thanks to the two control modes it has universal applications. For example, it can completely record a DVB-S/S2 transponder stream, it can pass on a DVB-S/S2 transponder stream to other devices, it can pass a stream on via a network or through the DVB-ASI output to, for example, feed it into a DVB-C cable network or to modify and re-multiplex the transponder stream.

The manufacturer-provided C++ library available for download also allows the individual integration of all

available hardware features in the personal control environment of the user.

The built-in tuner is very sensitive and demonstrated in our tests that it could easily handle weak and narrow-band satellite signals. The automatic recognition of all the necessary reception parameters functioned consistently without any difficulties.

Multiple reception tests on, for example, TURKSAT at 42° east, BADR at 26° east or NILESAT at 7° west clearly verified this to be true.

Thanks to the StreamX-pert software as well as the wide-ranging settings and monitoring functions via web interface or SNMP software, the user can fully control the DTE-3137 from remote locations.

Expert Opinion

+ Professional equipment with unsurpassable features. Trouble-free operation of all features, very easy control and configuration via SNMP or web interface. Thanks to the downloadable C++ library, the user can integrate all of the functions individually in his software. The output of the received data stream is carried over the network either directly to the StreamXpert software or via Unicast/Multicast in RTP or UDB.

Thomas Haring
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− None

TECHNICAL	
DATA	
Manufacturer	DekTec Digital Video B.V., Godelindeweg 4, 1217 HR Hilversum, The Netherlands
Email sales	info@dektec.com
Internet	www.dektec.com
Model	DTE-3137
Function	Networked DVB-S / DVB-S2 Receiver
Frequency range	950 - 2150 MHz
Transmission Standards	DVB, DVB-RSC, ATSC
Modulations	QPSK, 8-PSK, 16-APSK and 32-APSK
Symbol rate	2-40 Ms/s
Connectors	Sat-ZF IN, DVB-ASI, RJ-45
Power consumption	max. 17W
Dimensions	13.5 x 13.5 x 3.5 mm

ENERGY
DIAGRAM

Mode	Passive	Active	Factor
Power On	15.5 W	8.8 W	0.56