TELE SATELLITE AWARD & BROADBAND 08-09/2009
SPAUN SPAROS 609
Extremely versatile and easy-to-use state of the art TV signal analyzer

SPAUN SPAROS 609
Who could ask for more?

Digital TV receivers get more and more versatile and complex. The same is true for signal analyzers. Once you think that the newest signal analyzer has everything you can ever need, another model hits the market and suddenly you discover that it has something the older model did not have. When it comes to adding new functions and making the instrument more useful – sky is the limit. That was exactly the case with SPAROS 609 of SPAUN.

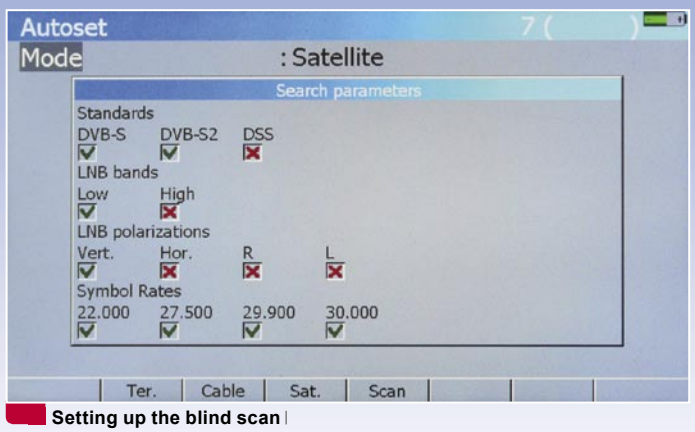
TELE-satellite World www.TELE-satellite.com/...

Download this report in other languages from the Internet:

Arabic	العربية	www.TELE-satellite.com/TELE-satellite-0909/ara/spaun.pdf
Indonesian	Indonesia	www.TELE-satellite.com/TELE-satellite-0909/bid/spaun.pdf
Bulgarian	Български	www.TELE-satellite.com/TELE-satellite-0909/bul/spaun.pdf
Czech	Česky	www.TELE-satellite.com/TELE-satellite-0909/ces/spaun.pdf
German	Deutsch	www.TELE-satellite.com/TELE-satellite-0909/deu/spaun.pdf
English	English	www.TELE-satellite.com/TELE-satellite-0909/eng/spaun.pdf
Spanish	Español	www.TELE-satellite.com/TELE-satellite-0909/esp/spaun.pdf
Farsi	فارسي	www.TELE-satellite.com/TELE-satellite-0909/far/spaun.pdf
French	Français	www.TELE-satellite.com/TELE-satellite-0909/fra/spaun.pdf
Greek	Ελληνικά	www.TELE-satellite.com/TELE-satellite-0909/hel/spaun.pdf
Croatian	Hrvatski	www.TELE-satellite.com/TELE-satellite-0909/hrv/spaun.pdf
Italian	Italiano	www.TELE-satellite.com/TELE-satellite-0909/ita/spaun.pdf
Hungarian	Magyar	www.TELE-satellite.com/TELE-satellite-0909/mag/spaun.pdf
Mandarin	中文	www.TELE-satellite.com/TELE-satellite-0909/man/spaun.pdf
Dutch	Nederlands	www.TELE-satellite.com/TELE-satellite-0909/ned/spaun.pdf
Polish	Polski	www.TELE-satellite.com/TELE-satellite-0909/pol/spaun.pdf
Portuguese	Português	www.TELE-satellite.com/TELE-satellite-0909/por/spaun.pdf
Romanian	Românesc	www.TELE-satellite.com/TELE-satellite-0909/rom/spaun.pdf
Russian	Русский	www.TELE-satellite.com/TELE-satellite-0909/rus/spaun.pdf
Swedish	Svenska	www.TELE-satellite.com/TELE-satellite-0909/sve/spaun.pdf
Turkish	Türkçe	www.TELE-satellite.com/TELE-satellite-0909/tur/spaun.pdf

Available online starting from 31 July 2009

Basic configuration |



Setting up the blind scan |

The meter is very light – only 2.1 kg (including internal battery). It comes in a clever protective bag with convenient openings for cable connections. The bag has two straps, so the installer can use the meter even in very difficult operating positions. The analyzer display is large (7 inch), bright and easy to read. As can be expected, its aspect ratio is 16:9. Right below the LCD, there are 8 smart keys. Their function description is shown at the bottom of the display. It changes depending on the current mode of operation. Thanks to that trick, SPAUN has saved quite a number of dedicated buttons.

Speaking of buttons, we have the ON/OFF pushbutton switch at the top row and 9 main function keys below it. In the top row, there are: Autoset, Parameters, Spectrum, TV-set, Measurements. The lower row consists of: LNB-DiSEqC, Configuration, Save-Recall and Measurement Map. Numeric keyboard is located in the left bottom corner and a very specific control element is located to the right. It is not only a set of cursor keys plus an OK button in the center. When you touch the "wheel" with your finger and stroke it clockwise or counterclockwise the meter will behave as if you turn the regular tuning knob!

The top panel contains all the sockets and connectors: signal input (BNC connector – we need to use one of the included adapters), power supply input, USB port, mini USB, Ethernet port and RCA sockets with TV video and audio in- and outputs. Descriptions on the panel suggest that we may expect in the future 2 additional connectors: asynchronous serial interface (ASI) with transport stream output and PCIMCIA for CAM. The meter is delivered with an external battery charger, connector adapters (F-to-BNC and IEC-to-BNC), USB cable and a USB pendrive containing PC software. Everything is manufactured with attention to detail.

Quick start

SPAROS 609 was so new that its English manual was not ready at the moment it was delivered. Should we wait for it? No way! We just had to start immediately. To our great pleasure, user interface was so intuitive that in a couple of minutes we felt quite comfortable with the basic functions. And not only with the basic ones like: viewing the spectrum, measuring selected transponder

Measuring HDTV

DVB-S/S2 SAT

or watching TV channel. We managed to do a blind scan of a satellite, automatically measure all its transponders and save the results on a pendrive hooked up to its USB port. All this based only on a few pages of a product brochure in English. That's what we call "exploratory testing".

Basic functions

With an analyzer as complex as SPAROS 609, it would take rather long to discover all its possibilities and modes. We asked for a manual in English and after a few days, we got a draft version. Only then, we realized how much this meter can do!

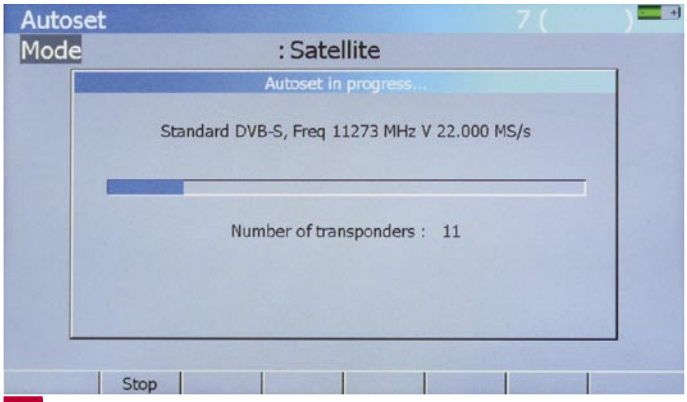
SPAROS 609 can practically measure any TV signal. All analog and digital modes: satellite, cable and terrestrial. It is compatible with the following satellite standards: PAL, SECAM, NTSC, DVB-S, DVB-S2 and DSS (this one is used in USA). Its spectrum analyzer covers continuously the band from 45 MHz to 2150 MHz. So it is obvious that this meters can do much more than just show IF satellite signal at the output of an LNB (950-2150 MHz).

SPAROS measures the following parameters of the DVB-S signal: channel power, C/N, LNB voltage, LNB current, channel bit error rate (CBER), Viterbi bit error rate (VBER), number of uncorrected packet (UNC) and modulation error ratio (MER). Additional it displays: transponder frequency, band/polarization, standard, symbol rate, modulation and FEC. Nothing is missing! DVB-S2 has slightly different error rate related parameters: LDPC, BCH and PER that replace more familiar CBER, VBER and UNC. We will not describe all DVB-C and DVB-T parameters but, believe us, those signals are measured as extensively as satellite ones.

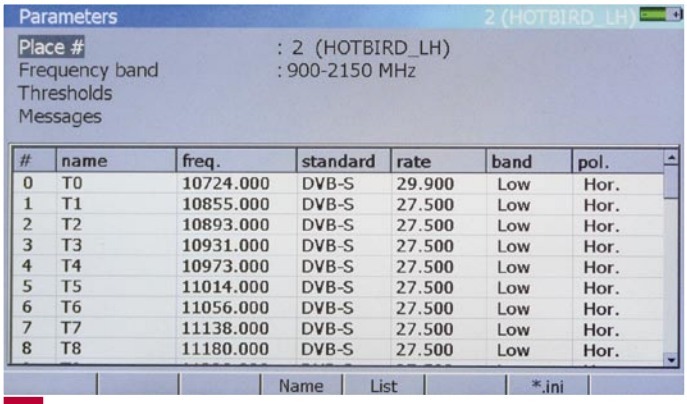
Satellite alignment

Perhaps one of the most interesting characteristics of such instrument is its use-

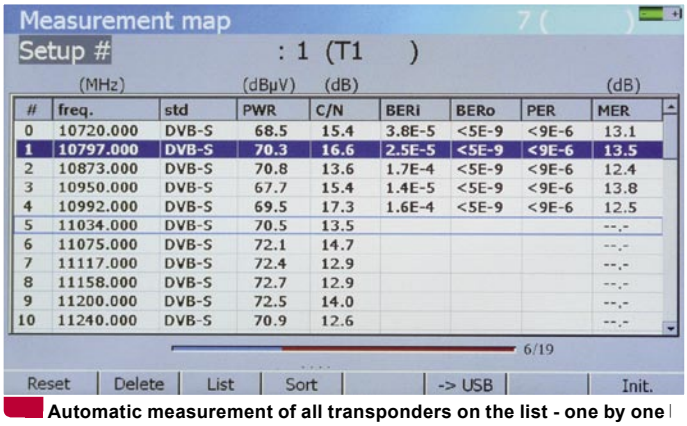
fulness when aligning satellite antenna. We recommend using it in the following way. Switch to spectrum analyzer mode and rotate and tilt your dish until you see some peaks in the spectrum. Try to maximize them. Then, press Autoset button (magic wand) and the meter will search the



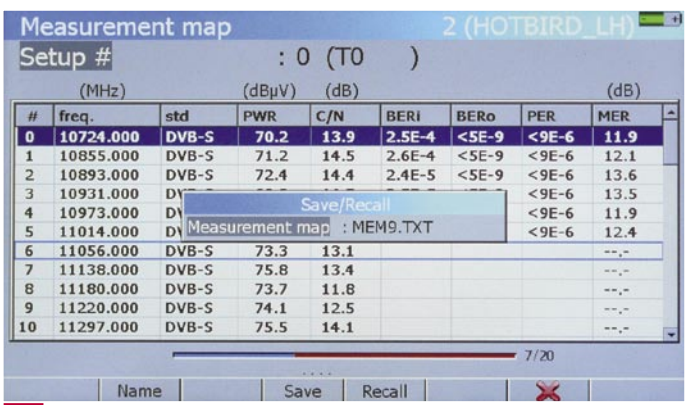
11 transponders found so far in a blind scan



Such a list of transponders can be a result of a blind scan or transfered form a PC



Automatic measurement of all transponders on the list - one by one



Measurements results can be stored in an onboard memory

Viewing TV channel

satellite name/position in the NIT of the transponder that is under the cursor. Sometimes it works, sometimes - not. That's because not every transponder NIT contains proper information. Other meters offer another method. They recognize a satellite based on the possibility to lock to a chosen transponder. Such meter keeps in its memory tuning parameters of one transponder per every satellite. Such transponder parameters need to be unique so that only when the antenna is aimed at the right satellite the meter can lock to the signal.

Do we have something like that also in SPAROS 609? Even more! SPAROS checks not one but four transponders per satellite. You can see the status of all four transponders at the same time (their signal level and quality bars and percentages). Ten most popular European satellites are pre-programmed by SPAUN. We can add another ten if we like. To do this we just have to install and use the included PC software. In the same way, we can edit the existing satellites - in case there are changes in transponder parameters.

After activating the "Check sat" mode, the last used satellite is shown with its four transponders. If you do not have the lock, just press left/right button to change the satellite. After seconds, you will find the satellite that your antenna is currently aimed at. It is piece of cake now because thanks to SPAROS you know if your antenna is looking too much to the West or the East.

You can use the same screen to finetune your antenna. Just turn it or tilt it a bit and observe one quality bar. Personally, I prefer to switch to the meter mode and observe MER reading. It is at the same time sensitive and stable. It is really easy to find optimum azimuth, elevation and LNB skew when maximizing MER reading.

Aligning Monoblock LNB

Monoblock LNB's are not

■ Bag cover can be open or close and the cable is attached all the time

■ Small flap enbles hooking up a cable

so easy to align. Usually, you first align the antenna to get the best reception from the central LNB, than change the DiSEqC setting and check the off-center LNB. Usually its signal is too low. You turn the antenna to make it higher. Then, you return to the first LNB to see if you have not spoiled its performance too much. If you do that on the roof, you are probably not the happiest person in the world. Can it be simpler? Yes! That's another surprise SPAUN have prepared for us.

You can display level/quality bars for four transponders of satellite A and next to them another four transponders of satellite B. Start turning your antenna now. Don't care about DiSEqC setting change. SPAROS does everything automatically. It refreshes the readings for every transponder that fast that you are almost certain that it measures all 8 transponders from 2 different satellites simultaneously! It can not be simpler and more comfortable.

Measurement maps

Another unique feature of SPAROS 609 is its capability to blind scan any satellite and create a list of its transponders. After such scan, we can automatically measure transponder signal one after another and create a map of all transponders with their measurement results. But that's not all. The meter measures the transponders in the list in a loop - from the first one to the last one and again. You can save the measurements results either to internal memory of the meter or to external pendrive.

If you leave the meter for hours, you will collect a whole database of measurements: all transponders versus time. You can then open the file with Excel and, for example, create various graphs that will show you how the reception system worked over time. Such map can contain up to 100 transponders.

■ Top panel view

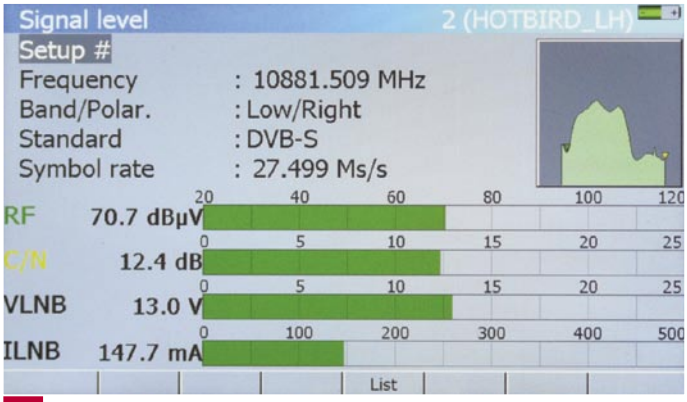
Instead of scanning the satellite, you may prefer to prepare the transponder list yourself or download it from the Internet. Everything is explained very clearly in the user manual.

User interface

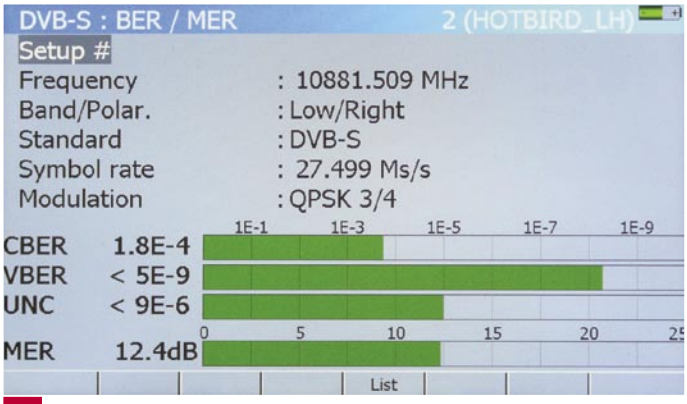
It was really a fun to learn this instrument. The idea to use smart keys was great. All screens are very readable – we have to thank SPAUN that they did not try to put too much information on one screen.

For example, the signal measurements are divided into 2 screens. Thanks to that you do not need to take a magnifying glass with you when operating the meter in the field. You can even put it on the ground and still see the results. The results are refreshed very fast. We never had an impression that we were waiting for the machine. Sounds incredible for PC users? That's true.

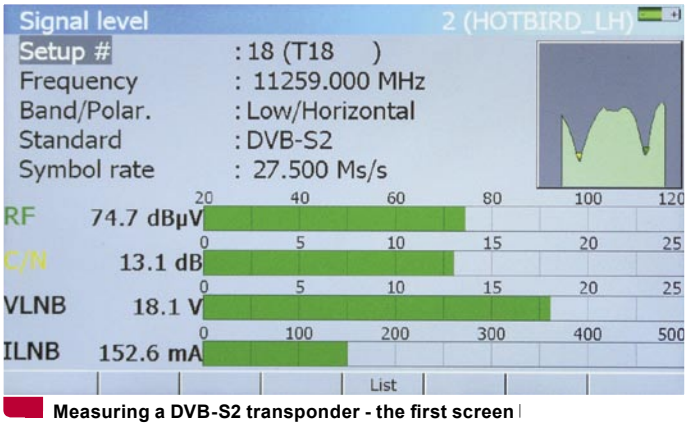
We also liked the idea to transfer the files via a pendrive. No cables, no software installations and the results are on your PC in no time. You can use pendrive to upgrade the firmware as well. The only thing we could wish is a kind of sun shade. The bag is already very ergonomic but if it had an adjustable sun shade, it would be just perfect.



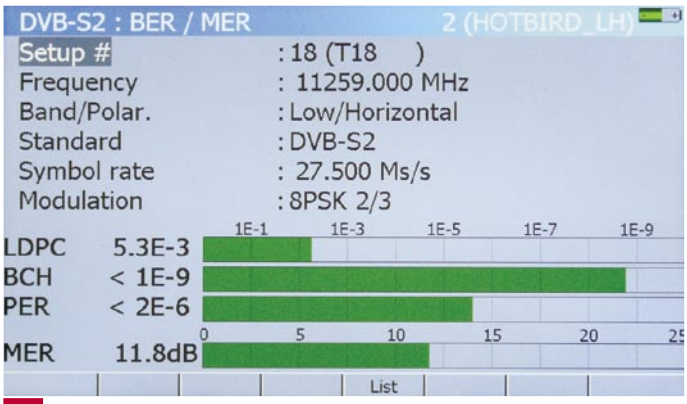
Measuring DVB-S transponder - basic results



DVB-S transponder - extended measurement results



Measuring a DVB-S2 transponder - the first screen



Measuring a DVB-S2 transponder - the second screen

Anayzer in a protective bag

Performance

That was about the usability but what about the accuracy of the instrument? We compared SPAROS 609 with another analyzer of the same class. We first scanned Eurobird 1 & Astra 2A/2B/2D at 28.2° East (11,224 – 12691 MHz) and then HOTBIRD at 13° East (10,797 – 11,624 MHz).

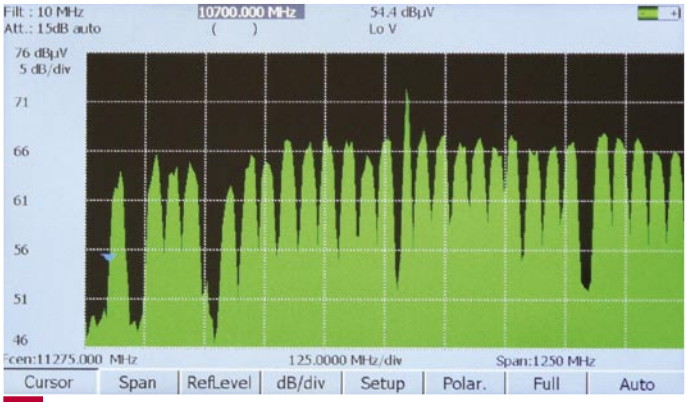
In most cases, SPAROS measured better noise performance. It looks that it had lower internal noise at the input than its competitor. What is even more interesting, there were 5 transponders at which the competitor was unable to measure MER. The reading was <3 dB. SPAROS had no problem at all! Its front end must be really exceptional!

We checked the analyzer with cable signal (analog and 256QAM) and terrestrial (PAL and DVB-T). Everything worked flawlessly. The only thing missing was no TV channel picture if MPEG4 was used for compression.

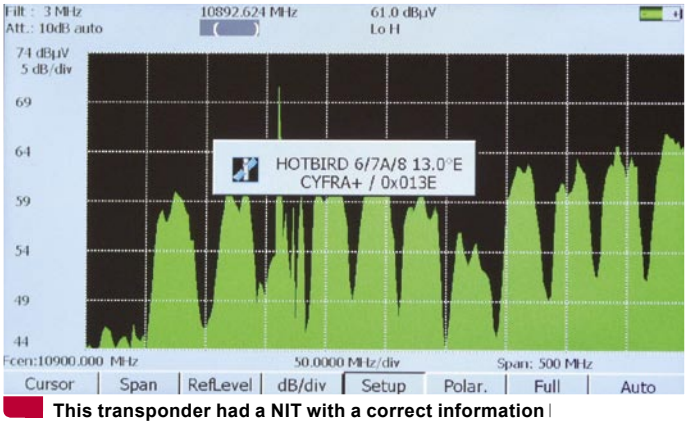
The SPAROS 609 is state of

the art: it is showing what can be produced nowadays when using the most sophisticated components, matched with intelligent software.

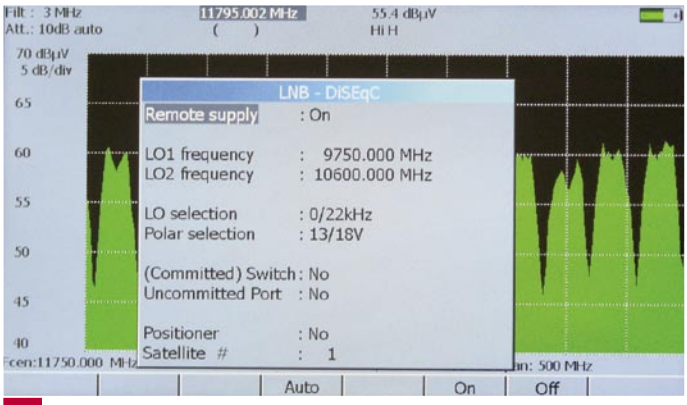
SPAROS 609 is clearly a reference signal analyzer, giving superbly accurate readings.



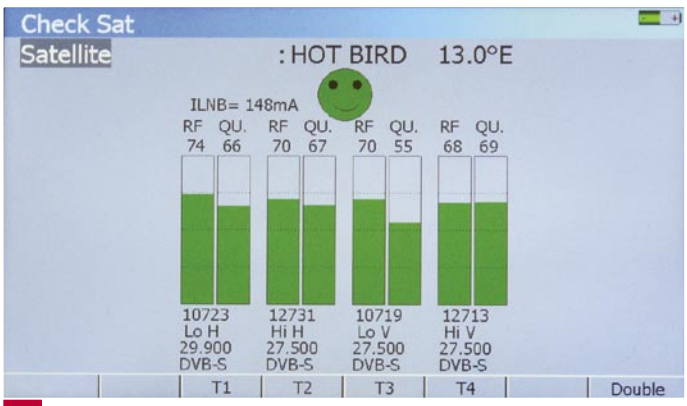
Spectrum display (low band, vertical polarization)



This transponder had a NIT with a correct information



Analyzer is compatible with DiSEqC protocols



Satellite identified based on 4 pre-defined transponders

Expert Opinion

Jacek Pawlowski
TELE-satellite
Test Center
Poland

+

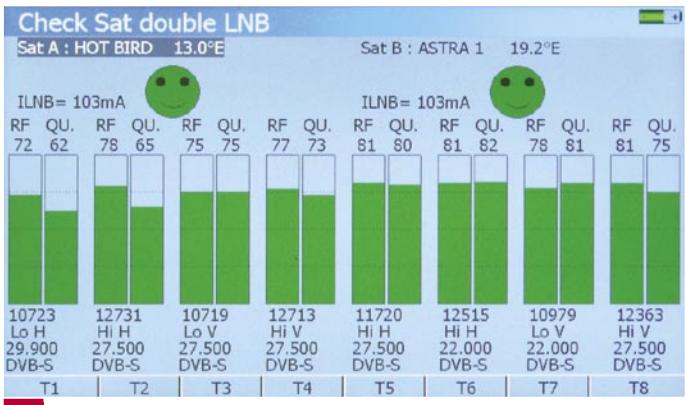
Extremely versatile TV signal analyzer with all modes and standards that a professional installer may need. Unique features: monitoring both LNB's of a monoblock at the same time, identifying satellite by its four transponders or received NIT. Very easy automatic recording of large number of transponders over time. File transfer to PC either via pendrive, USB cable or Ethernet cable.

-

No sun shade. No MPEG4 decoding.

TECHNIC

DATA	
Manufacturer	SPAUN Electronic, Singen, Germany
Fax	+49 (0) 7731 – 8673-17
E-mail	info@spaun.de
Model	SPAROS 609
Function	TV Signal Analyzer
Frequency range	45-865 MHz (terr.), 950-2150 MHz (sat.)
Level measurement range	20 ... 120 dBµV (terr.), 30 ... 110 dBµV (sat.)
Unit of level measurement	dBµV, dBmV, dBm, V
Accuracy of level measurement	+ 2 dB + 0,05 dB/C° (terr.), + 3 dB + 0,05 dB/C° (sat.)
TV Standards	BG, D, K, I, L, M, N, FM, carrier, C-OFDM, QAM PAL, SECAM, NTSC, DVB-S, DVB-S2, DSS
DiSEqC	1.0 / 1.1 / 1.2, 22 kHz, MiniDiSEqC, ToneBurst (Unicable available by request)
Digital measurements	C-OFDM, QAM, DVB-S, DVB-S2
Video decoding	MPEG 2
Power supply	110 - 240 VAC, 15 V / 4,5 A Output
Battery	Li-Ion 10,8 V / 6,5 Ah (Autonomy: 3 hours typical)
Battery charger	1 hour for up to 80 %
Operating temperature	0 C° ... 40 C°
Dimensions	Width= 215 mm, Hight= 300 mm, Depth=100 mm
Weight	2,1 Kg (incl. battery and carrying bag)



Special mode for aligning monoblocks

List of services (channels) available from the current transponders