TAB 5 SAT

5 "
TFT 16:10

USER'S GUIDE

ROVER

www.roverinstruments.com

GET TO KNOW YOUR TAB 5 SAT

FRONT PANEL

NB: The MENU (functions and Graphics) an be change without advise.

• POWER

To turn on press the 'HOME' key.

To turn off press and hold the 'HOME' key

• WHEEL Use the wheel to navigate across the screen and adjust the values

Rotate to select a menu item or to change a value

Press to select a menu item or a numeric field,

Select a menu item, press and hold 2" to display the pop-up menu.

• RESET HARDWARE

With instrument ON, Keep the "HOME" key pressed for 10" and turn on again.

• RESET SOFTWARE

From instrument OFF, Switch on the meter, immediately after keep the "VOLUME" key pressed until a beep is heard.

SIDE PANELS

• LEFT SIDE

① P.S.U. 12V ⎓ 2A

② USB B

• RIGHT SIDE

③

• TOP SIDE

④ VIDEO IN

⑤ OFF / ON DC@RF IN

⑥ RF IN

⑦ OPTICAL IN

1. = USB B SW upgrades
2. = Power Supply input (12 V DC)
3. = Fan (opt.)
4. = Analog video IN (CVBS)

5. = Remote Power Supply switch DC at RF IN ON/OFF
6. = IF/RF IN "F" 75 Ω
7. = OPTIC IN: SC connector (max. input 5 dBm) (opt.)

HOME AND NAVIGATION

'HOME' SCREEN

Press the 'HOME' key to go to the home screen, then rotate the wheel to navigate on 'SAT' icon and press the wheel to select the measurement required.

Press the 'HOME' key at any time to return to the home screen
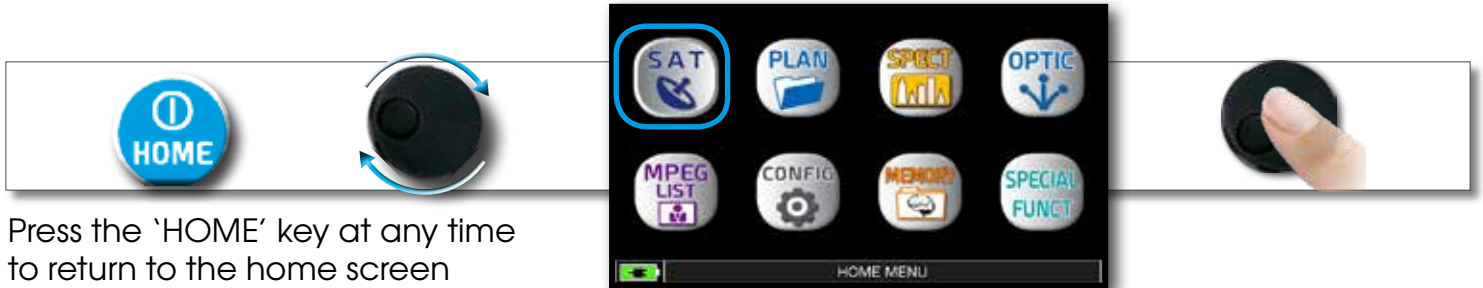
NAVIGATION

Use the touch screen and the wheel to navigate across the screen and to change values

DISPLAY ZONES

1. tuning parameters
2. live picture
3. measurements
4. channel info
5. transport stream info
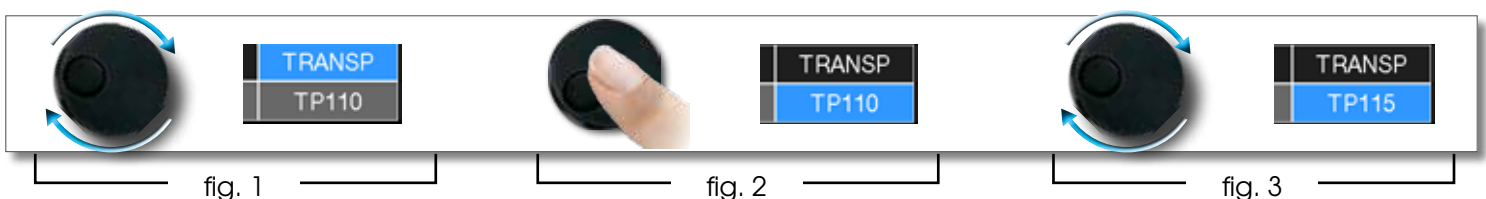6. context sensitive menu

NAVIGATION USING MECHANICAL COMMANDS

How to select from the menus and adjust the value:
- Rotate the wheel and select from the menu required (fig. 1)
- Press the wheel (fig. 2)
- Rotate the wheel to adjust the value (fig. 3)

Example of SATELLITE transponder selection (TP/TS):

fig. 1   fig. 2   fig. 3

How to select from the menus and change a value using the drop down menus:
- Rotate the wheel and select the menu required (fig. 1)
- Keep the wheel pressed for 2" to visualized the drop down menu (fig. 2)
- Rotate the wheel to adjust the value (fig. 3)
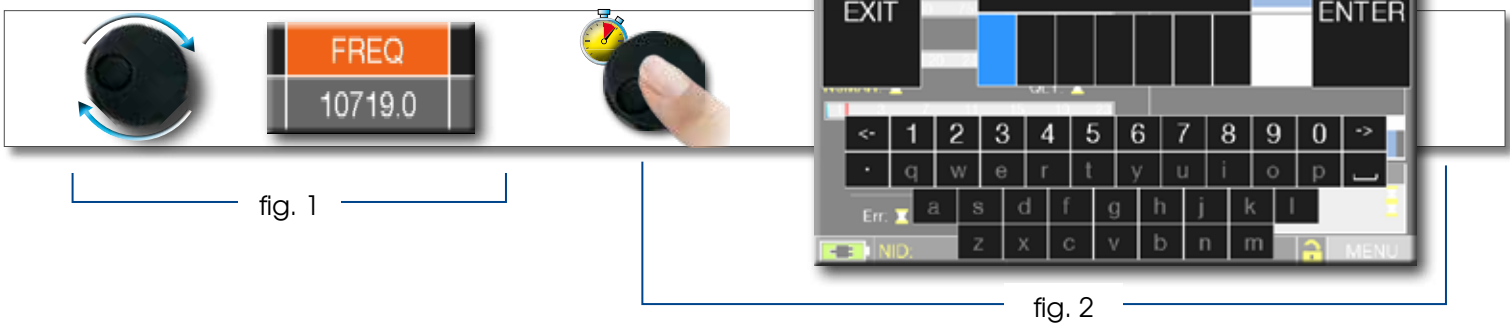- Press the wheel and confirm the selection (fig. 4)

Example of SATELLITE transponder selection (TP/TS):

fig. 1 — fig. 2 — fig. 3 — fig. 4
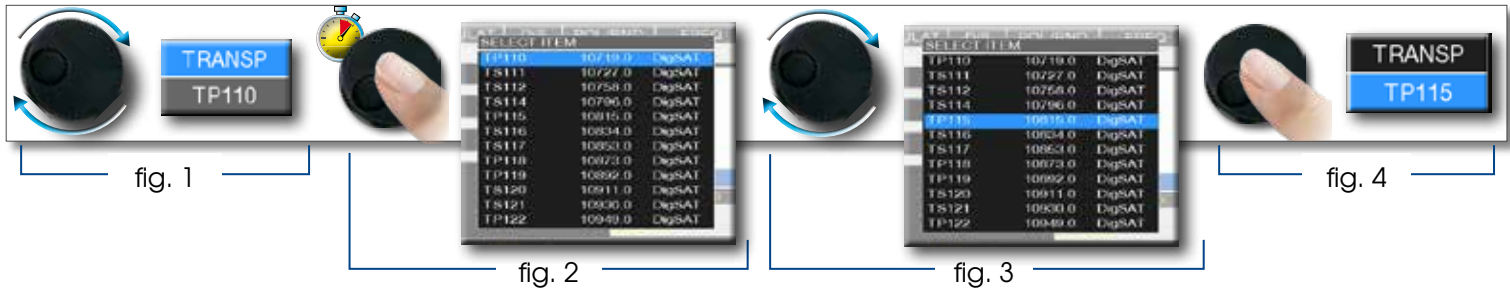
How to select the frequency and set the value using the numerical keyboard:
- Rotate the wheel and select frequency (FREQ) (fig. 1)
- Keep the wheel pressed for 2" to visualize the keyboard (fig. 2)
- Press the relative number keys to digit the frequency value required, rotate the wheel to navigate within the window (fig. 3)
- Finally rotate the wheel and select enter (fig. 4)
- Press the wheel and confirm the selection (fig. 5)

Example of manual frequency (FREQ) selection:

fig. 1 — fig. 2

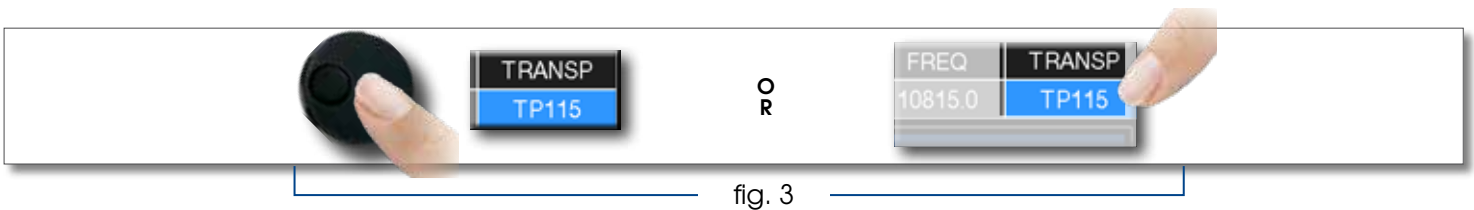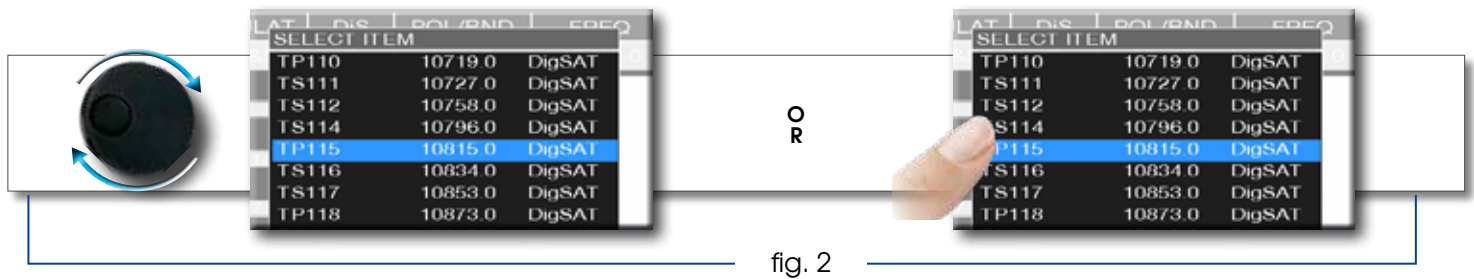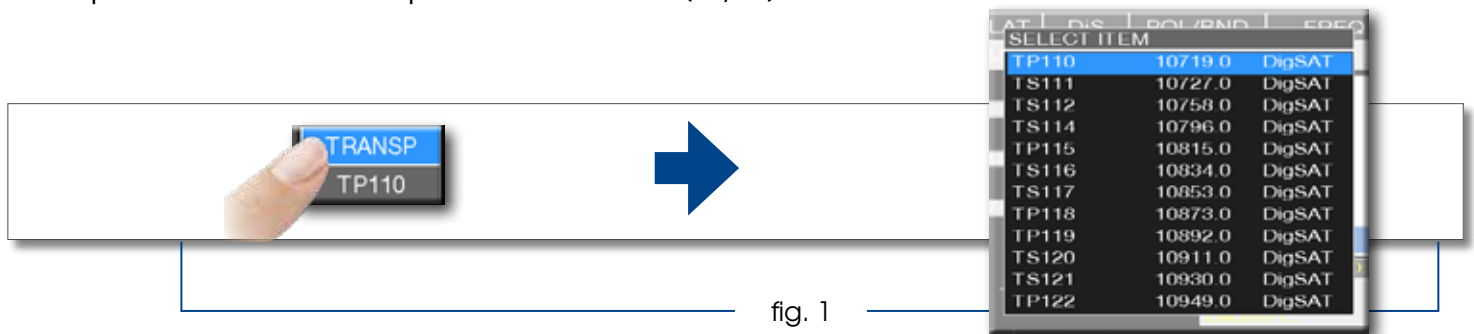
fig. 3

fig. 4 — fig. 5

NAVIGATION USING MIXED COMMANDS: MECHANICAL & TOUCH

- Touch a value in the menu (fig. 1)
- Rotate the wheel to adjust the value (fig. 3) or touch the value required (fig.2)
- Press the wheel and confirm the selection (fig.3)
  or touch the monitor outside the drop down menu (fig.3)

Select from the menus and adjust the value using the drop down menu:
- Touch a value in the menu to visualize the drop down menu (fig. 1)
- Rotate the wheel to adjust the value (fig. 2) or touch the value required (fig. 2)
- Press the wheel and confirm the selection (fig. 3), or touch the monitor outside the drop down menu (fig. 3)
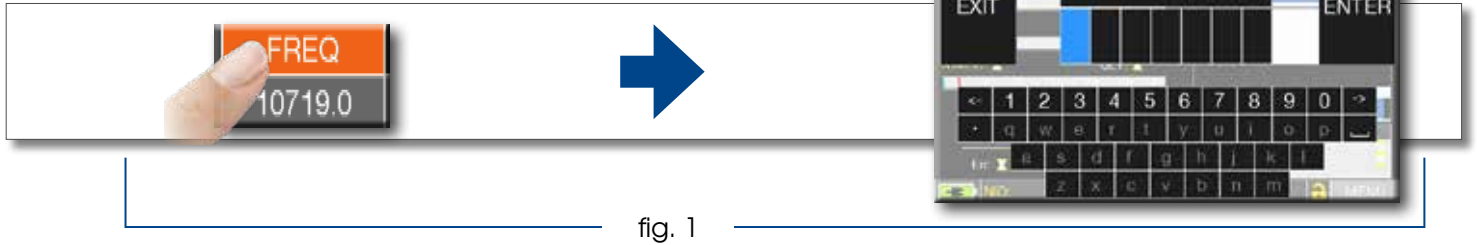

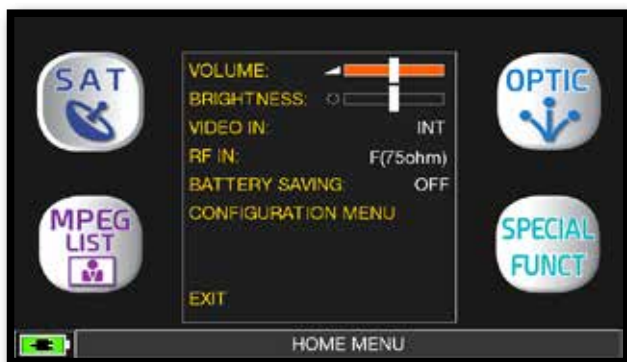Example of SATELLITE transponder selection (TP/TS):

fig. 1

fig. 2

fig. 3

Select the frequency and set the value using the numerical keyboard:
- Touch FREQ to show the menu "INSERT FREQ" (fig. 1)
- Touch the numbers to digit the required frequency value (fig. 2)
- Finally touch enter and confirm the selection (fig. 3)

Example of manual frequency selection (FREQ):

fig. 1

fig. 2

fig. 3

CONFIGURATION

Volume selection is immediately active, press "ENTER" for the Display configuration and other important settings

VIDEO IN

- "VIDEO IN" (connector 4): Select "EXT" to visualize an external video source.

BATTERY SAVING AND TIMER OFF

Settings for battery save mode.

Choose "BATTERY SAVING" from the volume screen. In ON mode, if no key is pressed, after 30 seconds, the display brightness is reduced and after 5 minutes the meter automatically turns off. press any key to temporarily reset the battery save mode.
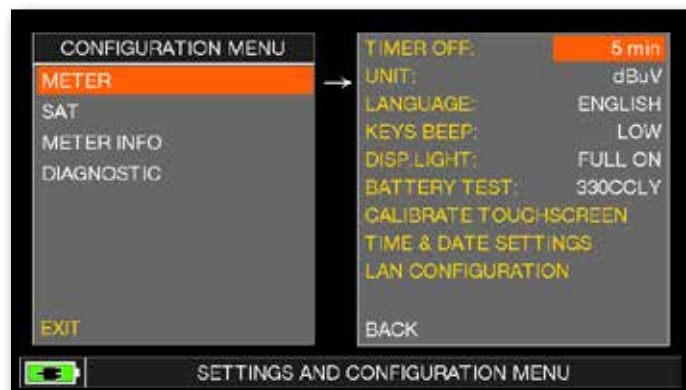
Touch "CONFIGURATION MENU" then "METER" in the volume screen and set the "TIMER OFF" value required. The meter will turn off after 5, 10, 15 or 30 minutes of inactivity. Press any key to interrupt the automatic turn-off.

TOUCHSCREEN CALIBRATION ————————————

if the touchscreen does not respond to the commands, it may be necessary to calibrate:
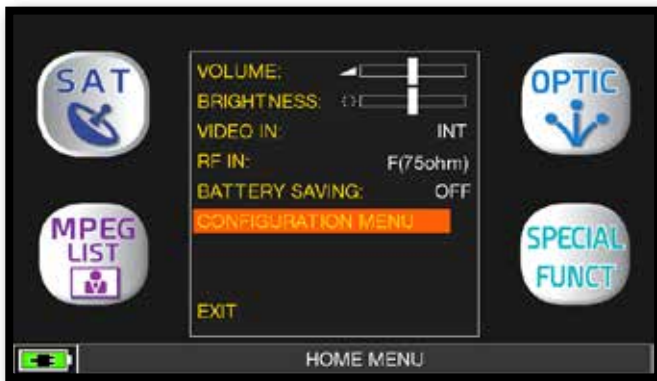
Touch "CONFIGURATION MENU"
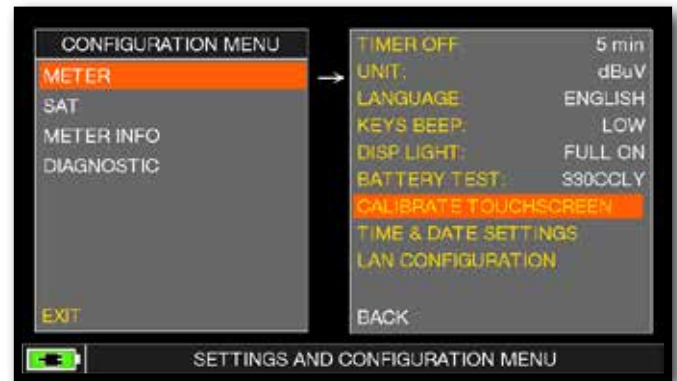from the volume window;

Touch "METER"
then "CALIBRATE TOUCHSCREEN";

1:TOUCH THE SQUARE

Touch the center of the squares that appear
in the corners of the screen,
repeat four times for every squares.
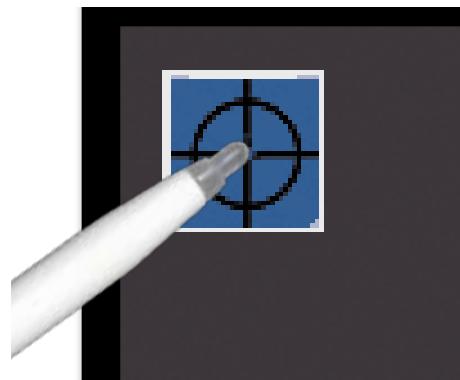
NOTE: use the pen and touch the the screen
exactly in the center of the circle. if you do not
carry out this procedure correctly the touch
commands may be inaccurate.

HEVC MENU

The HEVC menu allows you to deactivate / activate the HEVC module for viewing only the images transmitted in HEVC MAIN 10.
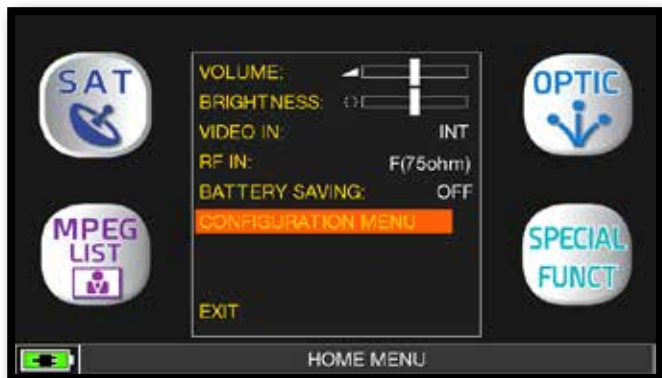
Touch 'CONFIGURATION MENU'
from the volume screen.
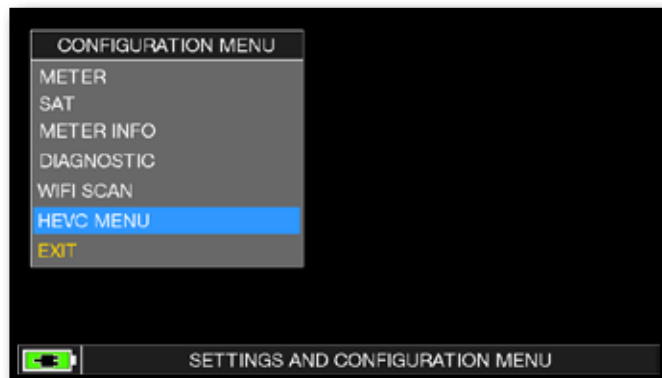
Touch "HEVC MENU".
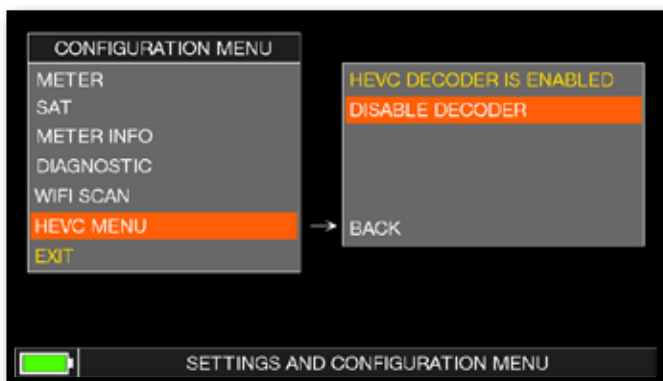
Touch "DISABLE DECODER"
for disable the HEVC module.
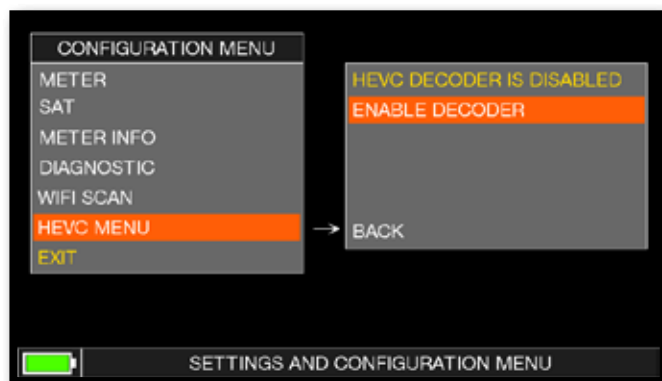
Touch "ENABLE DECODER"
for enable the HEVC module.

NOTE: With the HEVC module deactivated, the autonomy of the instrument improves.

SAT MEASUREMENTS

Press the "HOME" key.

or

Touch "SAT", and then "PLAN" or use the encoder to obtain the Satellite list.
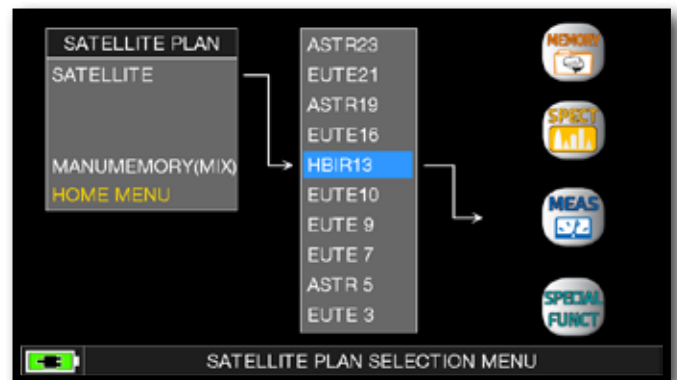
Touch directly the desided satellite, or use the encoder. At the end touch "MEAS" to make the measure or "SPECT" for visualize the spectrum.

NOTE:

The chosen Satellite and Transponder will remain in memory also if you switch off the meter.

DVB-S E DVB-S2 SAT MEASURES

Press the "HOME" key.

Touch "SAT" and then "MEAS & PICT" or use the encoder.

Main measures and image.

RELATED FUNCTIONS

Press repeatedly to navigate into SAT measures screens: Measures, Constellation.

Press to enter in the spectrum.

VISUALIZE NIT _____

Touch "MENU&?" from the "MAIN MEASUREMENTS & PICTURES".

Touch "VISUALIZE NIT".

Example 1:

"NIT INFO VISUALIZATION" referring to an HOTBIRD 13° East transponder

CHANNEL MONITOR

The weekly application of SW CHANNEL MONITOR allow you to controland register the trend of the main parameters of a digital signal over time (from 30 minutes to one week). This application is indicated to resolv the reception problems which occur occasionally, it allow you also to measure, memorize and visualize (local) the digital signals parameters tested: DVB-S = Power, MER, ERROR, bBer; DVB-S2 = Power, MER, ERROR, aBer, Lber, PER, LDCP.
Every registered parameters is graphically represented on the display using differents colours for a easy identification.

Touch "MENU" from MAIN MEASURES & IMAGES screen.

Touch "CHANNEL LOGGER".
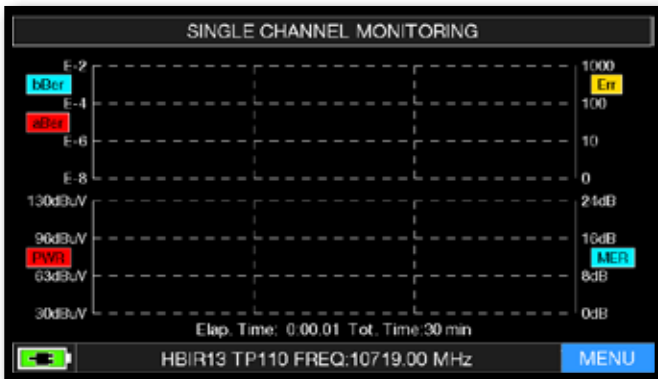
Touch "MENU".
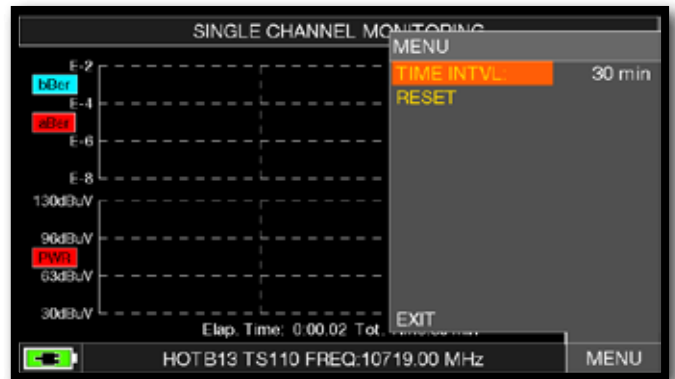
Select the time interval (TIME INTVL) .

Example 1:
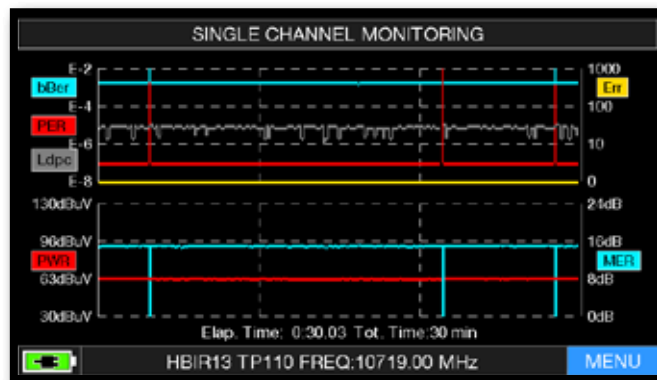
SINGLE CHANNEL MONITORING: 30 minutes.
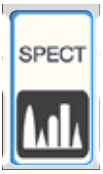
SPECTRUM ANALYZER

Press the "HOME" key.

Touch "SAT" and then "SPECT"or use the encoder.
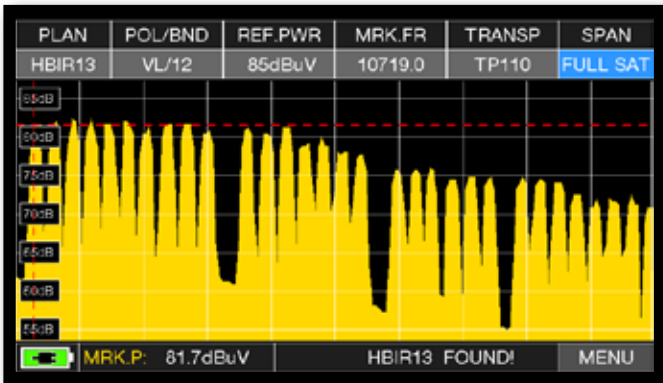
SAT SPAN FULL SAT Spectrum
(from 930 to 2250 MHz).
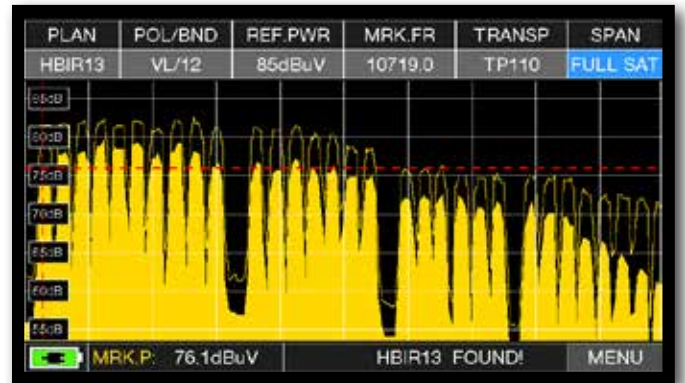
Press again the SPECT key to activate the "MAX HOLD" function.

Touch "SPAN" and rotate the encoder to select the SPAN value desired:
10-20-50-100-200-500-FULL SAT-FULL EXT

Example:
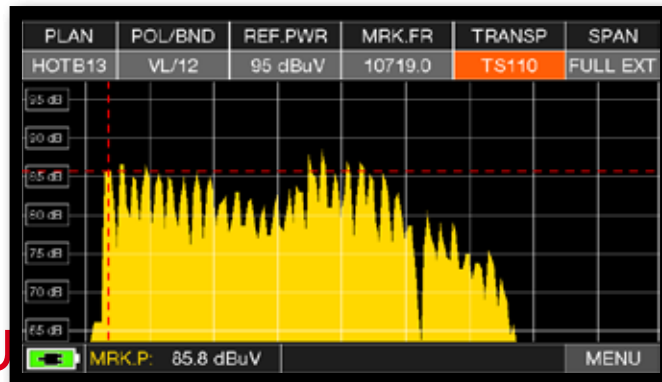
RELATED FU

"SAT" spectrum SPAN FULL EXT
(from 700 to 2700 MHz) with universal LNB.

SAT EXPERT

The SATEXPERT SW function (guided satellite tracking function), is a valuable aid for a fast satellite antenna pointing to a wanted satellite.

Through text messages, which appear from time to time on the screen, the measuring instrument will indicate in which direction to move the satellite dish, to the east or to the west, until you reach the wanted satellite.
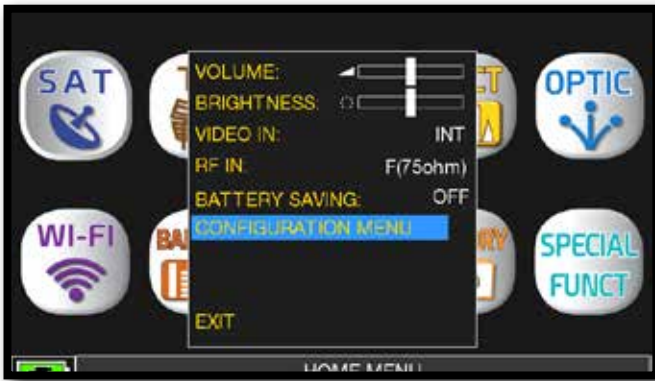
Touch "CONFIGURATION MENU"
from the VOLUME screen
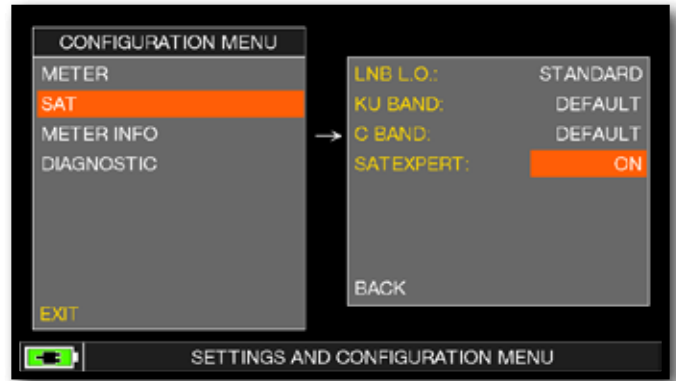
Touch "SAT", then in "SAT EXPERT"
and select "ON"

In SAT mode, press the PLAN key and select the satellite to be pointed, for example HBIR 13. Press the SPECT key, touch "SPAN" and select "Satxprt".

Here you can find some examples:

EXAMPLE 1:   **EXAMPLE 2:**
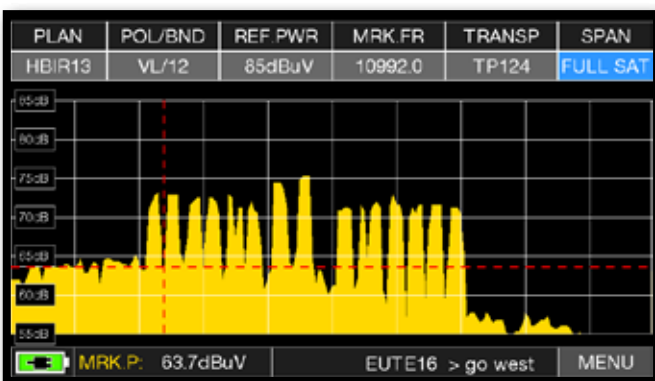
The satellite you have pointed is not correct.
the lower part of the display shows the
following information:
EUTE 16 > GO WEST
(move the satellite dish west).
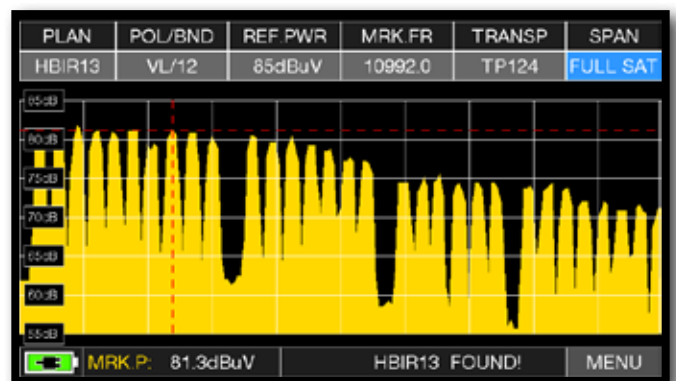
Satellite found.
the lower part of the display shows the
following information:
HBIR13 FOUND!
(the satellite that has been pointed is correct)

EXAMPLE 3:

SAT to be found

PLAN	POL/BND	REF.PWR	MRK.FR	TRANSP	SPAN
HBIR13	VL/12	80dBuV	10992.0	TP124	FULL SAT

MRK.P: 63.3dBuV   EUTE 7 < go east   MENU

SAT detected
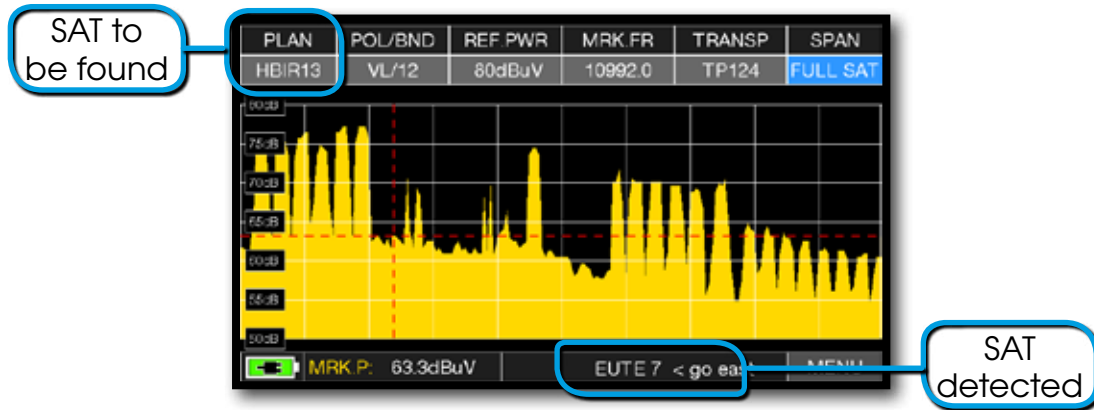
The pointed Salellite is not the correct one.
The lower part of the display shows the following information:
EUTE7 < GO EAST (move the satellite dish EAST).

IMPORTANT:

- The text messages that from time to time will appear on the screen of the instrument when moving the satellite dish to east or west, are bounded to the diameter of the used antenna: 60-80-90 cm etc.

- Using antennas with a small diameter, the messages related to some satellites may not be reported.

- The correctness of the information reported depends on the correct updating of the Memory plans.

- Outdated and incomplete Memory Plans can give rise to incorrect information.
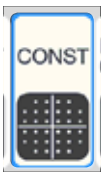
CONSTELLATION ANALYSIS

Press the "HOME" key.

OR

Touch "SAT" and then "CONST" or use the encoder.

Example 1:

QPSK constellation.

Example 2:
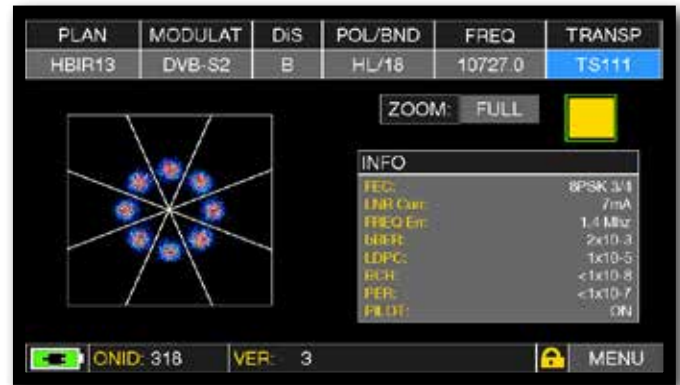
8PSK constellation.

FULL

Touch "FULL and select the zone of constellation to elnarge.

RELATED FUNCTIONS

Press repeatedly to navigate into SAT measures screens: Measures, Constellation.

Press to enter in the spectrum.

SAT FINDER

The SAT FINDER function allow you to check the quality of 4 transponders simultaneity and to check the operation of the 4 LNB polarities.

Press the "HOME" key.

Touch "SAT" and then "SAT FINDER" or use the encoder.

Satellite locked.

Touch "PARAM" to modify the transponders list.
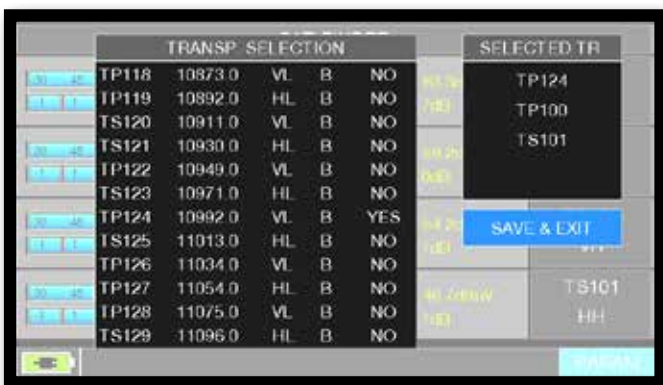
Touch the selected transponder, touch YES/NO to added or delete from list.
Touch "SAVE & EXIT" to save and exit.

Satellite locked.

If the chosen satellite is found the buzzer will start, if this does not happen, continue looking for the right satellite. Optimize the dish alignment and skew to obtain the maximum NsMAR value (noise margin).

NOTE: For a proper use of the "SAT FINDER" function, verify the tuning parameters for all three transponders (frequency, polarity, band, and symbol rate) and the type of lnb you are using (universal or quatro)
Go to the **www.lyngsat.com** site for more information

Press "HOME" key.

Touch "SAT" and then "AZ/EL".
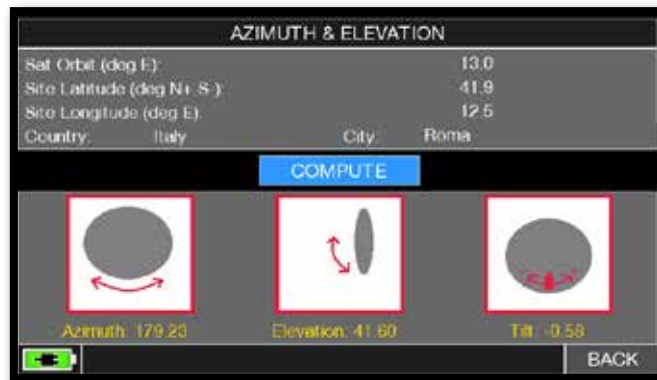
Calculation of the pointing data:

- Touch "SAT ORBIT" and set up the orbit position of the desired satellite, for example 13,0 EAST.

- Touch "COUNTRY" and select your Nation, for example Italy.

- Touch "CITY" and select your city, for example Roma.

- Touch "COMPUTE" to obtain the automatic calculation of pointing parameters: Azimuth, Elevation & Tilt.

Touch the "HOME" key.

Touch "SAT" and then "SCR dCSS"
or use the encoder.
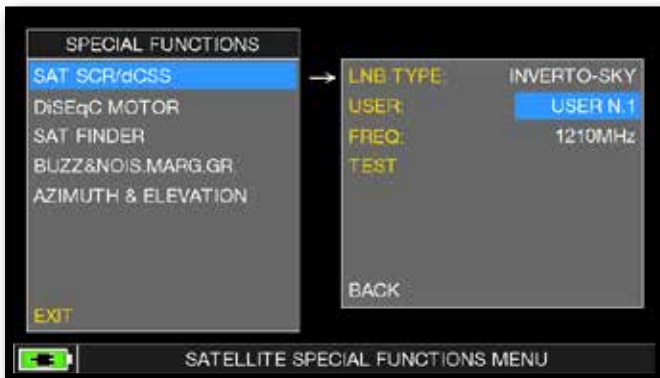
- Touch "LNB TYPE" and select the installed LNB/multiswitch model (see NOTE).

- Touch "USER" and select the user's number to test (user 1-4).

- Press "SPECT" to visualize the spectrum or "SAT" to make the measure.

SCR measures.
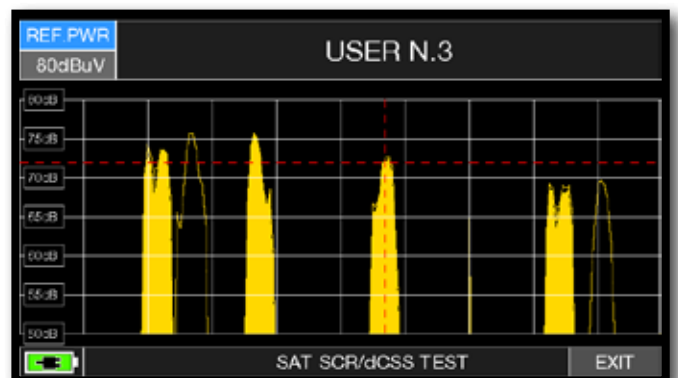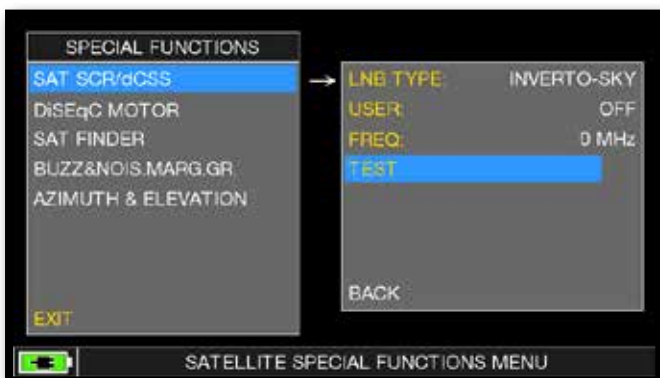
Or touch "TEST", in Spectrum mode,
to perform a verify of the 4 exit frequencies
(user 1-4) from LNB/multiswitch.

SCR test.

LNB/MULTISWITCH dCSS MEASURES

Press the "HOME" key.
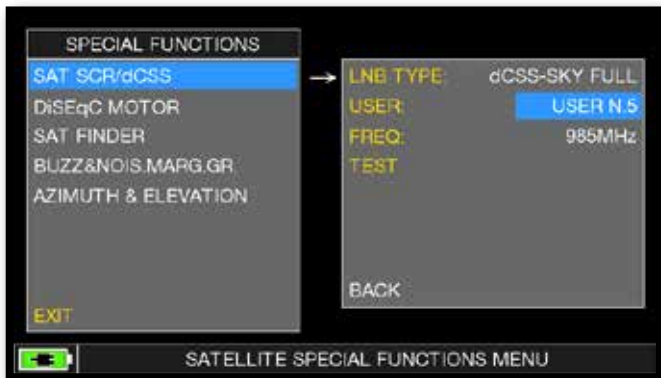
Touch "SAT" and then "SCR dCSS" or use the encoder.

- Touch "LNB TYPE" and select the installed LNB/multiswitch model (see NOTE).

- Touch "USER" and select the user's number to test (user 5-16).

- Press "SPECT" to visualize the spectrum or "SAT" to make the measure.

dCSS measures.
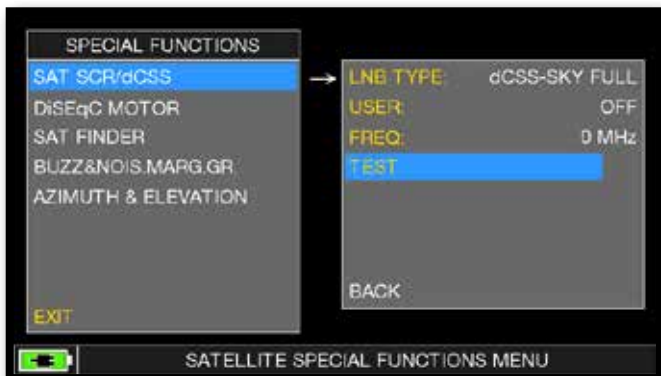
Or touch "TEST", in Spectrum mode, to perform a verify of the 12 exit frequencies (user 5-16) from LNB/multiswitch.
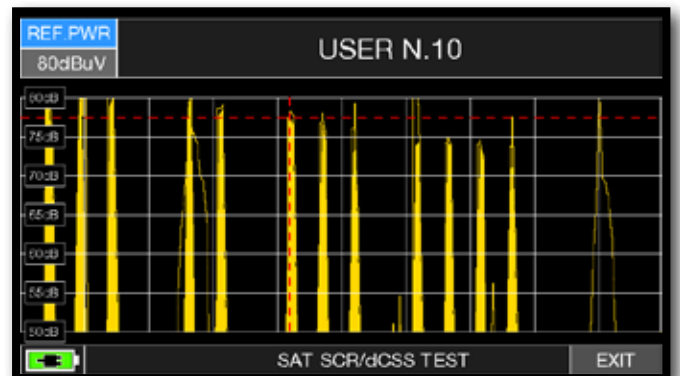
dCSS test.

IMAGES VISUALIZATION & SERVICE CHOICE

Press "HOME" key.

Touch "SAT" and then "MPEG"
or use the encoder.
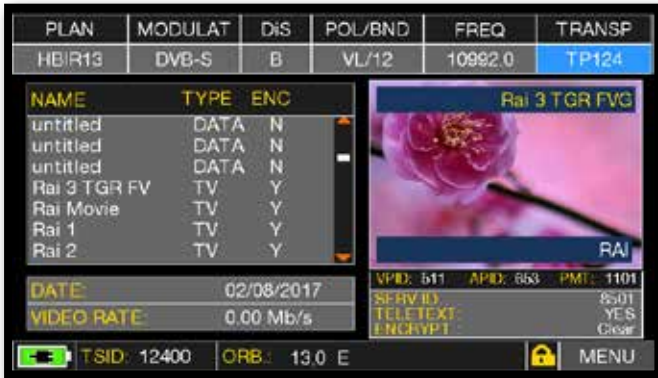
Images and MPEG service list.

Touch directly the RADIO/TV desired
service or use the encoder.
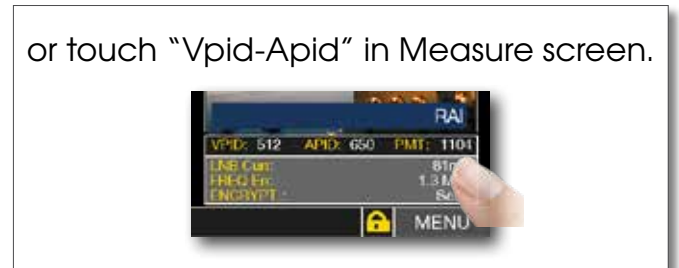
or touch "Vpid-Apid" in Measure screen.

RADIO & TV service selection.

Touch the image to enlarge.
Touch again to come back at the service list.

RELATED FUNCTIONS

Press repeatedly to navigate into
SAT measures screens: Measures,
Constellation.

Press to enter
in the spectrum.

SPECTRUM ANALYSIS

After selecting the desired Operation Mode SAT, you can directly access
the Spectrum Analyzer by touching the "SPECT" icon from the "HOME" menu
or by pressing the "SPECT" button directly.

SAT SPECTRUM

Press the "HOME" key.

SAT spectrum.

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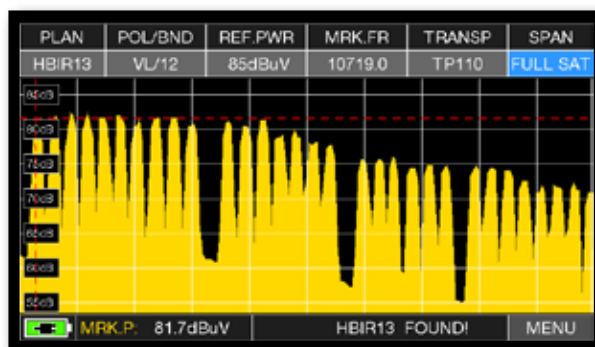
OPTICAL MEASUREMENTS (OPZ.)

The instrument, equipped with an internal optical converter, allows you to perform POWER and OPTICAL ATTENUATION measurements as well as perform RF measurements from optical inputs, decode services, and display Spectrum.

NOTE: Maximum optical input power 5 dBm

OPTICAL POWER & ATTENUATION MEASURES

Press the "HOME" key.

Touch "OPTIC" and then "PWR METER" or use the encoder.
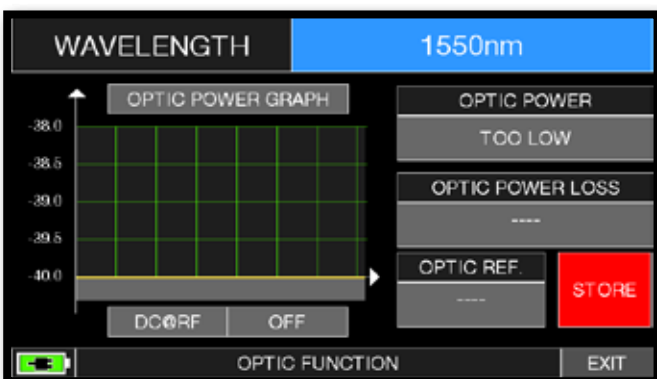
Touch "WAVELENGHT"
and select the Wave length desired:
for Example 1550 nm.
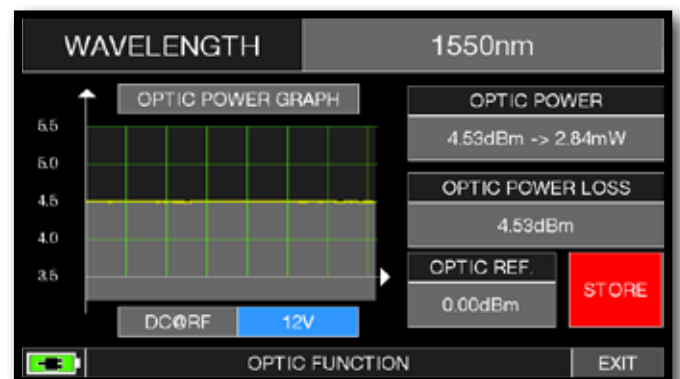
Touch "DC@RF" and, if required,
select the power supply voltage:
for Example 12V.
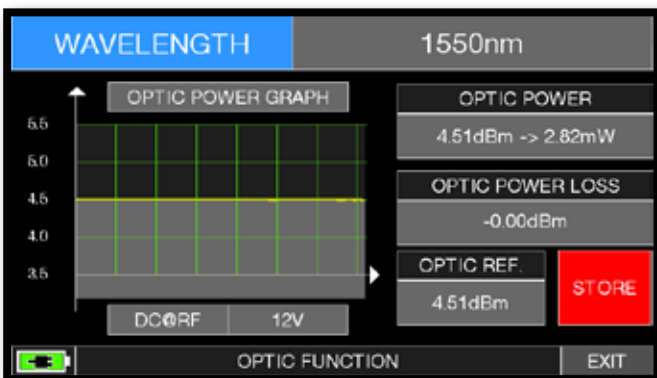
Touch "STORE" and memorizes the measured optical power value (Optic Ref.):
for Example 4,51 dBm.
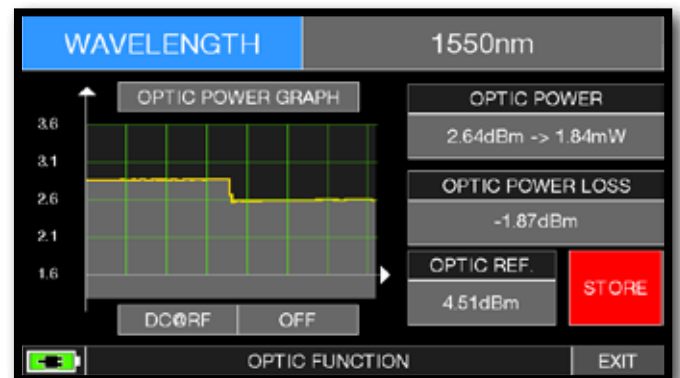
In the "OPTIC POWER LOSS" field, the optical attenuation value is displayed with respect to the stored value (Optic REF):
for Example - 1.87 dBm.

OPTICAL INPUT RF MEASURES

After selecting the desired Operation SAT, press the "HOME" key.

Touch "OPTIC" and then "MEAS & PICT" or use the encoder.

Main measures and image of a SAT signal.

NOTE:

- In optical mode, you can measure the spectrum and measure just on Low Band Vertical.
- It is possible to manually switch the input of the RF IN: F (75 ohm) or OPTICAL signal. Press the VOLUME button, select "RF IN" and choose the desired mode.

Example 1:   *Example 2:*

F 75 ohm ingress selected.
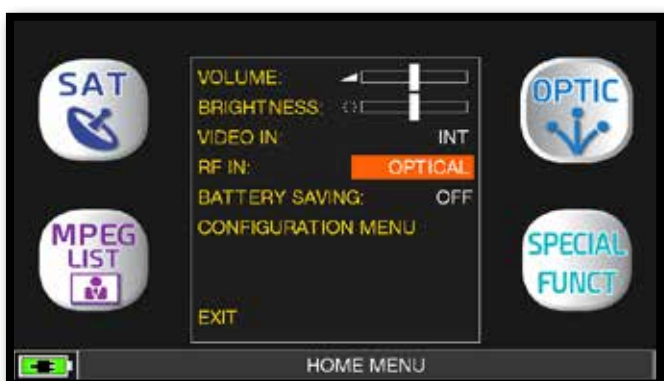
OPTIC ingress selected.

RF SPECTRUM FORM OPTIC INGRESS

After selecting the desired Operation SAT, press the "HOME" key.

Touch "OPTIC" and then "SPECT" or use the encoder.
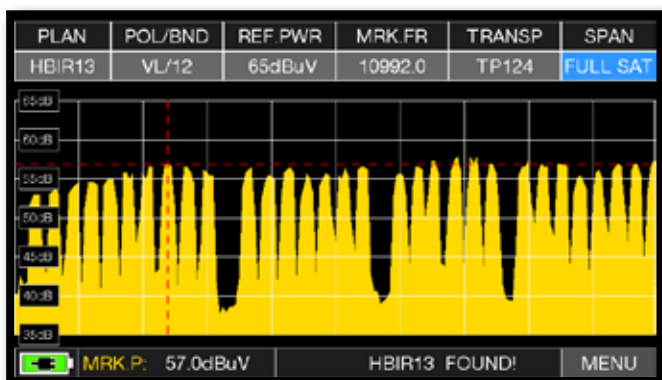
SAT spectrum SPAN "Full SAT" (from 930 to 2250 MHz).
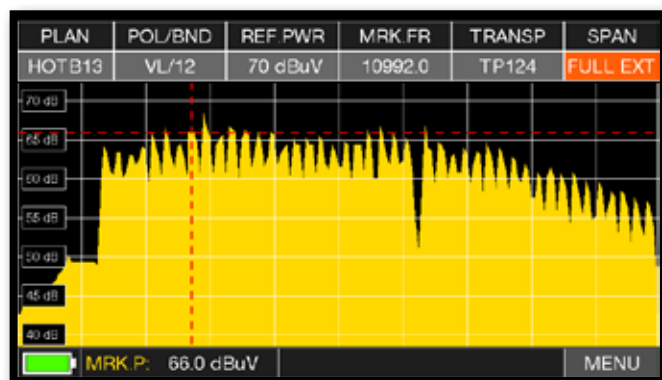
SAT spectrum SPAN "Full EXT" (from 700 to 2700 MHz).

NOTE: In OPTIC mode it is possible to analyze the spectrum and measure only vertical/low band (VL) SAT transponders.

FIBER OPTIC AND REMOTE POWER SUPPLY CABLE CONNECTION

Optic FIBER

DC
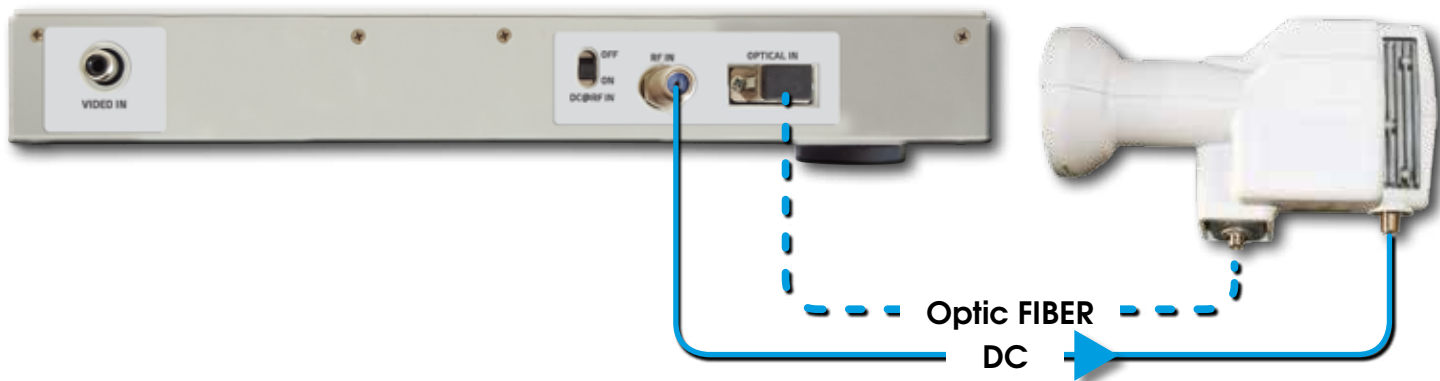
WI-FI ANALYZER (opt.)

The instrument, equipped with an WI-FI analyzer, allows you to analyze the WI-FI networks present in the building in the 2.4 and 5 GHz frequency range, check the power of the received Signal and display the List of Networks.

or

Press the "HOME" key.
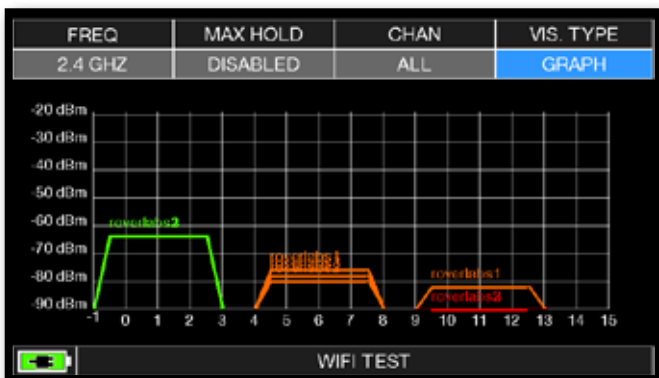
Touch "WI-FI" to visualize the received WI-FI networks.

Touch "VIS. TYPE" to access to the received WI-FI network list.

- Touch "FREQ" to switch WI-FI band from 2,4 to 5 GHz.

- Touch "MAX HOLD" to enable/disable the maximum level of the received signal memorized.

- Touch "CHAN" to select channels reception modalities, all or from 1 to 13 (for 2,4 GHz networks) and from 36 to 165 (for 5 GHz networks).

NOTE: for more information about the "APP"s, contact your distributor or send an e-mail to: wecare@roverinstruments.com

LOGGER SAVE (SAT)

Press the "HOME" key.

Touch "MEMORY" and then "SAVE DATALOGGER"

Set the parameters required. Touch "START SAVE" to create a new log file.
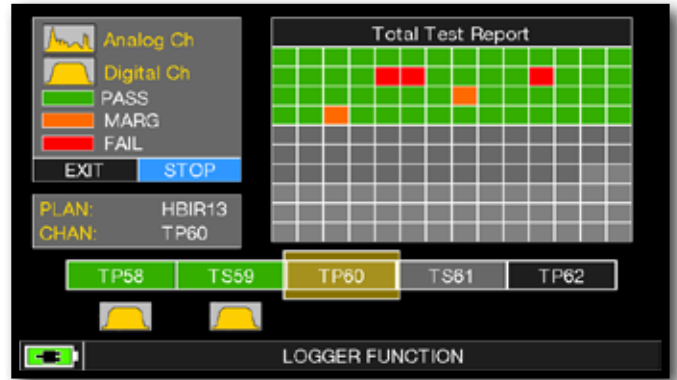
DATA LOGGER run.

Touch "RECALL" to recall the Logger or "EXIT" to exit.

Example of saved measured in the Log file. Touch the screen to browse through measurements.

LOGGER RECALL (SAT)

Press the "HOME" key.

Touch "MEMORY"
and then "RECALL DATALOGGER".
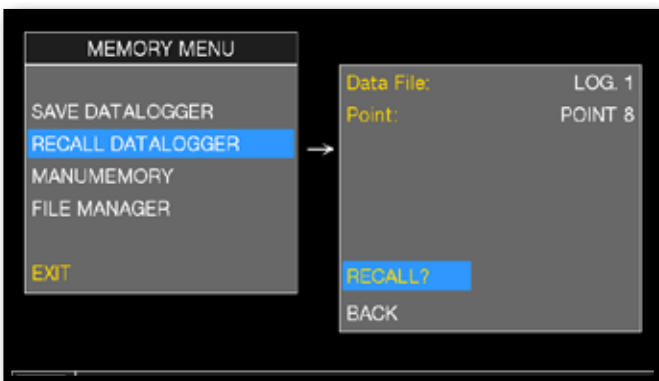
Set the LOG file parameters.
Touch "RECALL?" to see them.

Example of saved measured in the Log file.
Touch the screen to browse through
measurements.

SAT SPECIAL FUNCTIONS

BUZZER & NOISE MARGIN GRAPH _____

After selected the Satellite and Transponder desired press the "HOME" key.
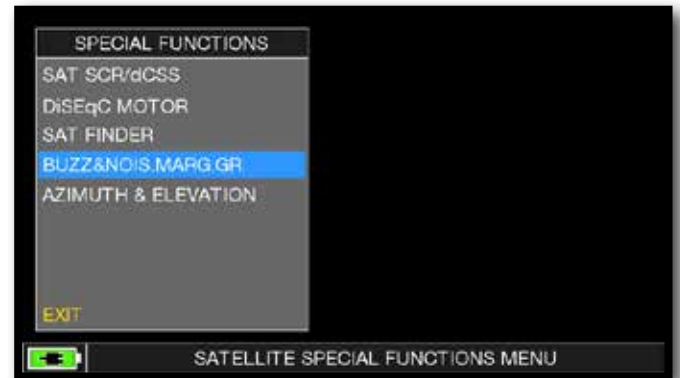
Touch "SPECIAL FUNCT", and then touch "BUZZ & NOIS MARGIN".
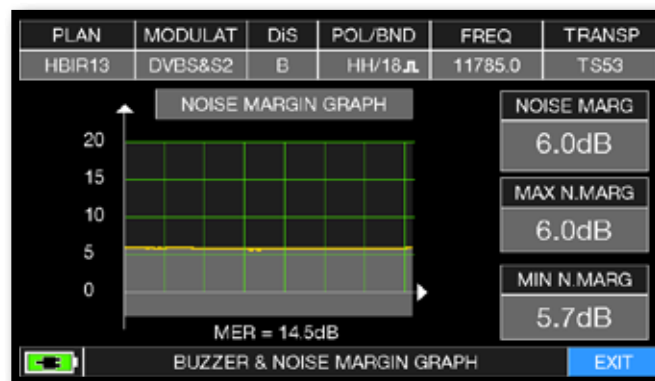
Buzzer & Graphic of the progress of the NOISE MARGIN of the tuned Sat Transponder according to time.

high tones	=	the BEST Noise Margin level
deep tones	=	the WORST noise margin level
Noise Marg	=	real time noise margin
Max n.marg	=	maximum stored noise margin
MER	=	MER in real time.

SERVICE AND SUPPORT WEB REGISTRATION AND SOFTWARE UPGRADES

FREE SW UPGRADE and NEWSLETTER SERVICE:

- ROVER offers you the possibility of carrying out Free Software and Memory Plan Upgrades on your Meters, by simply REGISTERING your data in the Update SW Area;

- Once you have registered, you can download the ROVER S.M.A.R.T. program free of charge, which is necessary for the installation of SW and/or Memory Plan upgrades;

- ROVER also offers you the possibility of registering to our Newsletter service, which allows you to receive, by email and free of charge, information regarding: New SW upgrades, Technical Communications, Training Courses, Technical Articles, Product News, Invitations to exhibitions and roadshows and much more besides.

UPDATE SW AREA REGISTRATION:

If you have not already registered, click on the words "Update SW" in the menu in the top, right-hand corner of your screen:

- Click on "Register Now (First Access)" in the dropdown menu to access the Update SW Area;

- Fill in the electronic form with all your Personal Information and the Username of your choice;

- After you have completed the form, confirm by pressing the black "Send" key at the bottom of the page;

- Once sent, a page will be shown with a summary of your Registration Data, where you can modify your data by clicking on the **BLUE "Change Data"** key, print it by clicking on the **BLACK "Print Data"** key or directly access the Update SW Area by clicking on the **RED "Access SW Upgrade Area"** key;

- You will also receive an **e-mail** message, reminding you of your chosen User Name and the Password assigned by ROVER. Keep it in a safe place for future access to the Update SW Area and so that you can download new SW upgrades and/or Memory Plans;

- If you **lose** your User Name or your Password assigned by ROVER, click on the function **"Forgot User Name or Password? Click here"** in the drop down menu in the **"Update SW"**.

S.M.A.R.T. PROGRAM

The S.M.A.R.T. program was created by ROVER to enable you to interface your Meter with a PC.

After you have accessed the Update SW Area, download and install the ROVER S.M.A.R.T. program on your PC for SW upgrades and upload Memory Plans (.mem).

The S.M.A.R.T. program allows you to continuously update your Meter's SW and to create mixed SAT-TV-CATV Memory Plans, download Data Loggers and manage your Meter's Memory.

SOFTWARE UPGRADES

SOFTWARE UPGRADES:

Once you have identified and downloaded the correct **ROVER S.M.A.R.T.** program on your **PC** (for more information, read the respective S.M.A.R.T. page in this user guide) install it on your **PC** in order to upgrade your Meter's **Software (SW)**. Then proceed as follows:

- In the **Update SW Area** identify the exact **Name/Model** of your Meter and click on the corresponding picture;
- Then click on the corresponding **"SW Upgrade"** file and download it on your PC;
- If you want to see more detailed information about the SW upgrade contents, click on the blue **"i"** icon.

WARNING:

- Before carrying out your Meter's SW upgrades, we suggest you **close all the applications that are active on your PC**: e-mail messages, Internet, management programs, etc.
- Also check that the Meter's batteries are charged and that the Meter is connected to the mains. Most importantly do not turn off or disconnect the Meter from the mains during the upgrade. The Meter will automatically turn off once the SW upgrade has been completed.

N.B. If the graphic of your PC bar shows that the upgrade advancement is blocked, do not interrupt the procedure because the SW download is still taking place even if the PC monitor does not correctly show the advancement in sequence.

PROCEDURE:

1. Connect your Meter to the mains and turn it on;
2. Wait for the Start-Up phase of the Meter to finish correctly;
3. Connect the **USB** cable, **first** to the Meter and **then** to the **PC**;
4. Start up the **ROVER S.M.A.R.T.** program in your PC;
5. In the ROVER S.M.A.R.T. program window, click on **"Instrument"** followed by **"Upgrade Firmware"**;
6. In the **Open** window, select the **"SW Upgrade (.rvr)"** downloaded from the Update SW Area;
7. Click on **"Open"** and confirm the selection;
8. **The SW upgrade procedure will automatically start up;**
9. If this does not happen, the **Upgrade Firmware** window will open, select the exact model of your Meter and click on **"Upgrade"** to carry out the Upgrade manually;
10. Wait a few minutes, the ROVER S.M.A.R.T. program will load the new SW in your Meter;
11. Once the download has been completed, the following message on the PC will appear: **Power on the meter to activate FW **PROGRAM SUCCESFUL****;
12. If the Meter did not automatically turn off, turn it back on again and check, in the Start-Up or Self-Test window (METER INFO - INFO ABOUT), the SW version number.

WARNING:

In the case the update is interrupted or is not successful, check the USB cable connection and repeat the procedure from the beginning.

If the procedure described in this paragraph continues to fail, contact the ROVER After Sales and Service Department:

- e-mail: wecare@roverinstruments.com
- Fax: +39 030 990 68 94

It is possible to download the Software Upgrade Procedure directly from the ROVER website at the following address: www.roverinstruments.com. Please refer to the "F.A.Q." section.

TV & SAT MEMORY PLAN UPGRADES

MEM PLANS UPGRADES:

Once you have identified and downloaded the correct ROVER S.M.A.R.T. PRO program on your PC (for more information, read the respective S.M.A.R.T. page in this user guide), install it on your PC in order to load the Memory Plans in your Meter. The proceed as follows:

- Once you have accessed the Update SW Area, identify the exact Model/Name of your Meter and click on the corresponding picture;
- Click on the relative file: "Plans and Satellites" and download it on your PC.

WARNINGS:

- Before carrying out your Meter's Memory Plan upgrades, we suggest you close all the applications that are active on your computer: e-mail messages, internet, management programs, etc.
- Also check that the Meter's batteries are charged and that the Meter is connected to the mains. Most importantly do not turn off or disconnect the Meter from the mains during the upgrade.

N.B. If the graphic bar showing the upgrade advancement blocks, do not interrupt the procedure because the Memory Plan Upgrade is still taking place even if the PC monitor does not correctly show the advancement in sequence.

PROCEDURE:

1. Connect your Meter to the mains and turn it on;
2. Wait for the Start Up phase of the Meter to finish correctly;
3. Connect the USB cable, first to the Meter and then to the PC;
4. Make sure that you have installed the PRO Version and start up the ROVER S.M.A.R.T. program in your PC;
5. In the ROVER S.M.A.R.T. PRO program window, click on "Instrument" followed by "Connect Instrument";
6. Click on "Tools", then "Mem" e and then "Open Mem" In the ROVER S.M.A.R.T. PRO program window;
7. In the Open window, select the "Memory Plan (.mem)" downloaded from the Update SW Area;
8. Click on "Open" and confirm the selection;
9. Click on "Tools", then "Mem" and then "Write Mem to Instruments";
10. The following message will appear: WARNING: This operation will delete all the previous plans stored in the meter;
11. Click on "OK" and confirm to start the upgrade;
12. Wait a few minutes, the ROVER S.M.A.R.T. PRO program will load the new Memory Plans in your Meter;
13. Once the download has been completed, the following message will appear: Plan Memory download succesfully !.

WARNING:

In the case the update is interrupted or is not successful, check the USB cable connection and repeat the procedure from the beginning.

If the procedure described in this paragraph continues to fail, contact the ROVER After Sales and Service Department:

- e-mail: wecare@roverinstruments.com
- Fax: +39 030 990 68 94

It is possible to download the Software Upgrade Procedure directly from the ROVER website at the following address: www.roverinstruments.com. Please refer to the section "F.A.Q.".

FORMAT HARD DISK PROCEDURE

ROVER meters, using the latest technology where the hardware is looking more and more like a computer. For this reason, in the event of loss of TV & SAT memory plans, should be performed **"FORMAT HARD DISK"** to clean the memories, before reloading the TV & SAT memory plans.

<div align="center">

PREREQUISITES:

</div>

Before carrying out the procedure **"FORMAT HARD DISK"**, make sure you have accomplished all the following points:

1. Visit www.roverinstruments.com;

2. Register to access the area **"SW UPDATE"**;

   For more information read the "F.A.Q.": How do I register myself in the SW UPDATE area to download the ROVER S.M.A.R.T. interface program, the SW and the TV and SAT memory plans of the instrument ?"

3. If you are already registered, run directly the **"Login"** typing your **"Username"** and **"Password"**;

4. Download in the desktop of your PC, the **ROVER S.M.A.R.T.** interface program;

   NOTE: The interface program for PC **ROVER S.M.A.R.T.** it is compatible only with **PC WINDOWS** and is not supported by the **MAC** operating system.

5. Install the **ROVER S.M.A.R.T.** interface program in your PC (only the first time);

   NOTE: If the **ROVER S.M.A.R.T.** interface program is already installed in your PC, check that it is the **LATEST version** and always delete the old one;

   For more information read the "F.A.Q.": How I see if I have the latest version of ROVER S.M.A.R.T. interface program installed in my PC ?;

6. Select the **exact model** of your Instrument and click on the **"GO"** button;
   - Download on the desktop of your PC the "ROVER xxx DVB meter SW" file;
   - Download on the desktop of your PC the "ROVER xxx TV and SAT memory plans" file.

FORMAT HARD DISK

WARNING: *The following procedure erases the memory of the instrument. At the end, you will have to reload the Instruments Software and TV and SAT memory plans.*

1. Switch-on the instrument (press once the red POWER ON button to display on the screen the main HOME MENU);

2. **Press and HOLD for at least 10 seconds SIMULTANEOUSLY the 3 mechanical buttons, SPECT, PLAN and VOLUME** and wait until on the instrument appears the menu shown in Figure 1;
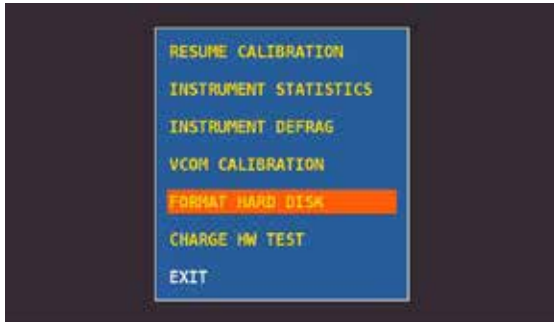
Figure 1: Menu selection
"FORMAT HARD DISK"
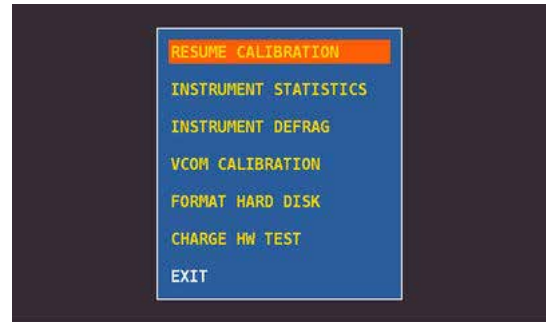
Figure 2: Menu selection
"RESUME CALIBRATION"

3. Select **"FORMAT HARD DISK"** (figure 1), press the encoder (ENTER) and wait for the execution of the process;

4. Select **"RESUME CALIBRATION"** (figure 2), press the encoder (ENTER) and wait for the execution of the process;

5. When the process is completed switch-off the instrument;

6. Press the HOME button to switch the instrument back on and immediately afterwards press and hold the VOLUME button until the "START-UP" phase is completed, a red square will appear on the lower right-hand screen (not all models) , at the end release the VOLUME button;

7. Load the SW (previously saved on the desktop of your PC);
   For more information read "F.A.Q.": How can I upgrade the software in my instrument ?;

8. Switch-off the instrument;

9. Press the HOME button to switch the instrument back on and immediately afterwards press and hold the **VOLUME** button until the "START-UP" phase is completed, a red square will appear on the lower right-hand screen (not all models) , at the end release the **VOLUME** button;

10. Load the TV and SAT memory plans (previously saved on the desktop of your PC);
    For more information read "F.A.Q.": How do I update the TV and SAT memory plans of my measurement instrument ?;

11. When finished, switch-off the instrument and switch-on again after 10 seconds to verify proper operation.

    NOTE: The MENUS (written and graphic) of the figures represented in the "F.A.Q." may vary from model to model and / or depending on the various SW updates.

LI-ION POLIMER BATTERIES

IMPORTANT:

- **DO NOT LEAVE THE BATTERIES DISCHARGED FOR LONG PERIODS;**
- **ALWAYS CHARGE THE BATTERIES AT NIGHT, EVEN IF THEY ARE NOT COMPLETELY DISCHARGED.**

USEFUL INFORMATION:

1. The batteries supplied are high quality and tested individually, the autonomy depending on the following conditions:
   - the LNB power consumption: Single, Dual or Quadruple;
   - the external temperature: with temperatures of less than 10°C, 20% of the capacity is lost;
   - the age of the batteries: a 10% loss in efficiency each year;
   - Remember that the TIMER OFF function, that automatically turns off the Meter after 5 o 10 minutes of inactivity saves up to 30%.
2. The battery indicator has a tolerance (like all battery powered electronic devices) according to the following factors:
   - the battery's charging percentage;
   - external temperatures;
   - battery wear and tear;
   - +/- 2 %

ICONS SHOWING THE BATTERY CHARGE STATUS:
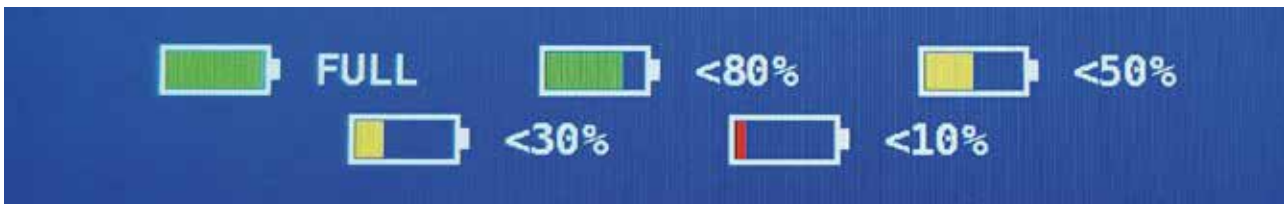
BATTERY AUTONOMY:
The battery autonomy is up to 3 hours maximum.

WARNINGS

RECHARGEABLE BATTERY

This device contains a built-in Li-PO (Lithium polimer) battery that can be recharged many times.

The battery contains chemicals that might wear with time even if not used. Please dispose of batteries properly.

Do not take the battery pack apart or expose it to extreme temperatures (over 50°C). If the device has been exposed to very low or high temperatures let it rest at room temperature before use.

RECHARGING THE BATTERY

The Battery must be recharged at room temperature (about 20°C) with the device turned off.

To avoid premature failure of the battery never leave the device with an empty battery for prolonged periods.

BATTERY TEST
& BATTERY REGENERATION

THIS PROCEDURE EXPLAINS HOW TO REGENERATE/CHECK YOUR BATTERIES AND CALIBRATE THE BATTERY CHARGE INDICATOR

USEFUL ADVICE:
- Charge the batteries every night after use, even if they are not completely discharged;
- Always use the "battery save" & "timer off" functions to increase your meter's autonomy;
- The maximum capacity of the batteries and battery charge indicator's accuracy improves by up to 20% if you carry out many battery test cycles;
- Do not replace the batteries: first carry out 3 to 5 battery test cycles until you recover the maximum capacity of the batteries.

"BATTERY TEST" INSTRUCTIONS & PROCEDURE:
1. Before carrying out the test connect the meter to the original battery charger:
    - Turn on the meter;
    - Press the volume key and select "configuration menu" (fig. 1);
    - Select the word "meter" and press "ENTER" (fig. 2) & press "ENTER" to confirm;
    - Select "battery test" and select "on" (fig. 2);
    - Press "enter" to confirm;
    - Carefully read the various screens, pressing "enter" in succession;
    - In the last instructions window, select "start" and press "enter" to start the test.

WARNING: the procedure will be cancelled if you select "exit" on any screen.
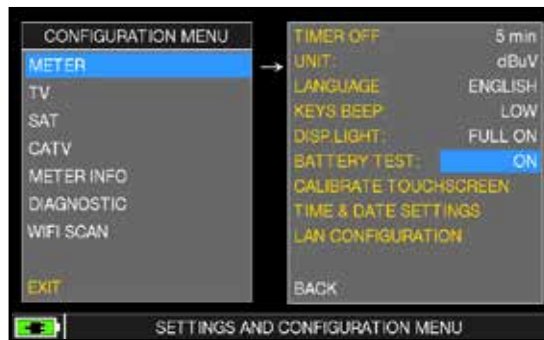
| FIG. 1* | FIG. 2* | FIG. 3 |

IMPORTANT ADVICE:
- Do not connect any type of load to the "F" input connector (LNB, TV head-end, amplifiers, etc.).
- Extract the conditional access module (CAM), if it is present in your meter.
2. The battery test takes approx. 12/18 Hours according to the model (charging/discharging/recharging activities and measurement of the battery autonomy), during this time the meter must not be used. At the end of the test the meter will turn off automatically. In order to make sure that the test has been carried out correctly, all the meter's commands are blocked except for the reset function, which remains active so that the meter can be turned off if necessary.
3. the batteries will be completely charged at the end of the test.
4. To check the battery test results, enter once again into "meter" in the "configuration menu" and read the results (Fig. 3):
    - **for example 265BFEY (fig.3) = 265 minutes.**
    The "Y" of YES confirms that the battery is still good enough, whereas an "N" for NO indicates that it could be faulty, too deteriorated or that the cycle was interrupted.

IMPORTANT NOTES:
If the test is interrupted using "reset", the battery charge indicator may provide incorrect indications, therefore repeat the battery test procedure.

* The displays shown in this guide may change according to the model and are subject to change without notice. If you connect your meter, using the s.M.A.R.T. Pro program, from the usb port to the pc, you can download the screens shown above.

POWER SUPPLY (MAINS) AND BATTERY CHARGE (CHRG) LED STATUS

INSTRUMENT	CONNECTED TO THE MAINS POWER SUPPLY	▼ LED MAINS	▼ LED BATT CHRG	NOTES
ON	NO	ON	OFF	Instrument ON or in power up
OFF	YES	ON	Flashing 0.5 SECONDS OFF 0.5 SECONDS ON	Abnormal battery temperature. The recharge cycle has been suspended temporarily and will automatically reset.
OFF	YES	ON	ON	Batteries in charge
OFF	YES	ON	OFF	Battery charge completed
OFF	WITH A POWER SUPPLY NOT COMPLIANCE	Flashing 0.5 SECONDS OFF 0.5 SECONDS ON	OFF	The meter does not turn on. Check the mains power adapter, it must be 12 Vdc and not 18 Vdc

METER MAINTENANCE

CLEANING THE METER

Cleaning the meter from dust and dirt is easy and helps mantaining it in optimal work conditions through the years. The cleaning procedure is simple and quick and requires only minor attention.

Never use chemical aggressive products (diluent) and/or abrasive or rough clothes which may damage plastics and displays.

Always use a soft cloth, damped with a simple water and alcohol solution or a de-greasing not abrasive liquid soap.

Keyboard and display should be gently cleaned. Rubbing the keyboard and/or the display(s) may seriously damage their functions.

MAINTENANCE AND CARE OF THE METER

This meter has been designed to withstand severe conditions of use. Even so, its life may be prolonged by respecting some simple and effective rules:

- The meter has not been designed to withstand high temperatures (over 60°C or 140° F). Those temperatures can be easily reached when the meter is left in a car, especially behind the windshield, or in the trunk. The LCD display and/or other details may easily be damaged by the extreme temperature.
- The internal battery may rapidly loose its efficiency if exposed to high or low temperatures. This will result in reduced autonomy of the meter when powered by internal battery.
- When recharging the internal battery, do allow a good air circulation around the meter and the adapter: do not cover it with clothes and do not recharge the battery when the meter is contained in its transport case
- The meter is not waterproof, even if it is protected against incidental water drops. In case of contact with water, electronic circuits may be damaged, allow the meter to dry thoroughly before trying to turn it on. Do not use hairdryer or other strong heating sources, but just leave the meter in quiet air. If possible, contact Rover Laboratories S.p.A. Technical Assistance.

SERVICE NOTES and GUARANTEE REGULATIONS
(CEE and EXTRA CEE)

ROVER Laboratories. S.p.A. has a standard guarante period of 12 months.

This is extended to 24 months for countries within the European Community, and in any case, in accordance with the laws and/or possible regulations applied in your country.

GUARANTEE REGULATIONS:

1. IMPORTANT: the guarantee is valid only upon the presentation of invoice or receipt to ROVER Laboratories S.p.A. The purchase date must be clearly indicated on the invoice/receipt.

2. The guarantee covers the replacement free of charge of parts only, when malfunctioning is solely due to manufacturing faults. The faults must be indentified and defined by ROVER personnel only.

3. The guarantee is void if:

   a. the equipment is tampered with or repaired by non-authorized personnel

   b. damage is found, caused by the incorrect use of the equipment, without following the advice   explained in the User's Guide accompanying the equipment.

   c. damage is found caused by the use of the equipment in unsuitable working environments.

4. The following parts are not covered by the guarantee:

   a. Parts subject to wear, such as aesthetic ones, keyboard, plastic chassis, etc.

   b. Batteries: 3 months from the date of purchase, if original.

   c. Bags and carrying cases, including shoulder straps.

5. The equipment can not be replaced and the guarantee is extended after the repair of a fault.

SERVICE NOTES AND PROCEDURES:

6. The equipment can only be repaired by the manufacturer or by an authorized ROVER Laboratories service center:

   a. *Before returning the meter for repair, always contact the distributor where you purchased the unit or an authorized service center if present in your area to obtain the return procedure for your analyzer. If no authorised ROVER service centers are available in your area, please contact ROVER Laboratories S.p.A. directly at the following data:*

   - **wecare@roverinstruments.com**
   - **+39 030 990 6894   Fax number**

   b. *Important: please take note that non-authorised returns for repair to ROVER Laboratories S.p.A. will be rejected.*

   c. *When returning the meter, always send it with the following documentation attached:*
      - *the fully-compiled FAULT IDENTIFICATION FORM*
      - *transport document*
      - *the eventual request for an estimate of repair costs*

   d. *Please note that the request for an estimate of repair costs must be submitted upon return of the analyzer with a written note. If the repair cost estimate is not accepted, ROVER Laboratories reserves the right to charge the customer for the estimate costs analysis.*

7. Risks and costs for transport to ROVER Laboratories S.p.A. must be sustained by the buyer. After repair, if the equipment is under guarantee, ROVER Laboratories S.p.A. will pay for the transport returning the goods to the customer. If the instrument is not under guarantee, after repair, the equipment will be returned by courier service with the amount to be paid by the customer shown on the invoice.

8. The guarantee does not cover compensation for direct or indirect damages of any kind to people or goods caused by the use of the equipment and/or compensation caused by the suspension of use due to eventual repairs.

9. ROVER Laboratories. S.p.A. is not responsible for eventual tampering and/or modifications that may cause the goods to no longer adhere to the European "CE" regulations, especially regarding EMC and safety.

10. ROVER Laboratories instruments is recognised and is fully compliant with DVB regulations and specifications (ETS 300 421–12/94) and is consequently marked with the DVB logo.

DISPOSAL OF ELECTRONIC EQUIPMENT

Disposal of electric/electronic equipment (applicable in all CEE countries and whereever separate waste collection system is applied).

This symbol on the packaging indicates that the product should not be considered as domestic waste. The product, at the moment of disposal, should be brought to a waste collection point with the proper facilities to manage electrical/electronic appliances.
Electric/electronical appliances, if not disposed of correctly, may have negative consequences on your health and enivironment.
Furthermore, a proper recycling procedure helps mantaining natural resources.
For more information about the correct disposal of this product, please refer to your local waste management offices or the shop where this product was bought.
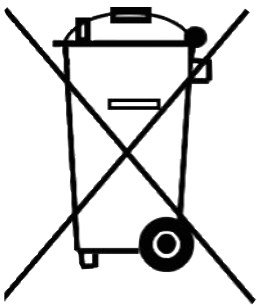
FAULT IDENTIFICATION FORM (RMA)

To: ROVER INSTRUMENTS SERVICE DEPARTMENT • **Fax: +39.030.9906894**

E-mail: wecare@roverinstruments.com • **Subject: FAULT Identification Form**

PLEASE FILL IN ALL AREAS. CUSTOMER INFORMATION:

- Date .... Company: ....
- Name and surname of the holder * : ....
- Company address * : ....
  City * : ....ZIP code * : ....
- Address delivery/pickup, a subsidiary of * : ....
  City * : ....ZIP code * : ....
- VAT * : ....
- Tax code * : ....
- Telephone: ....
- E-mail * : ....
- Reference person: ....
- Bank support * : ....
- IBAN code * : ....

* Fields NOT required for official ROVER dealers (required for any end customer).
N.B. Please enter the TAX CODE even if it the same as your VAT number. In the case of sole proprietorship, please communicate the name and surname of the owner.

METER INFORMATION:

- Meter Model: ....
- Purchase date: ....
- Copy and invoice number (if under warranty): ....
- Bought from: ....
- Software Version (SW): ....(optional)
- Hardware Version (HW): ....(optional)
- Serial Number (S.NO): ....

NOTE: the information relevant to: model, serial number, firmware/hardware version are shown on the first display after you switch on (start up), or on the meter's information display in the configuration menu. If the meter does not switch on, you can find the meter's serial number on the label placed on the back of the meter.

DETAILED and ACCURATE DESCRIPTION OF FAULT:

Please describe and attach the fault, especially if OCCASIONAL, or if it occurs ONLY under certain conditions: for example "cool instrument" or "warm instrument", after no. minutes of operation, etc.
We suggest you provide photographs of the damaged parts or attach a movie that shows the problem on the display. If descriptions of the fault are incomplete and we are unable to reproduce the fault in our laboratories, we may have to resend you the instrument unrepaired.

....
....
....
....
....
....

(*) add lines if more space is needed for your description.

TIMING OF REPAIRS: The applicable Repair times are 10 working days (barring unforeseen circumstances).
WARRANTY REPAIRS: Repairs are guaranteed for 3 months on the same intervention.

DO NOT SEND ROVER YOUR INSTRUMENT UNTIL YOU HAVE REQUESTED AND RECEIVED OUR "RMA" AND BAR CODE, WITH SHIPMENT INSTRUCTIONS, OTHERWISE THE INSTRUMENT **WILL BE REJECTED ON ARRIVAL AT ROVER.**

To receive information regarding the status of your authorization, write to: wecare@roverinstruments.com quoting your "RMA" number

SUGGESTED VALUES

This table shows the suggested measurements at a user's socket for the main digital modulations.

✂ -

SUGGESTED VALUE TO: SUBSCRIBER SOCKET, KUNDEN ANTENNEN DOSE, PRESA UTENTE, PRISE DE L'ABONNE', TOMA FINAL DE USARIO, АБОНЕНТСКИЙ РАЗЪЕМ

DVB-S QPSK

PARAM.	MIN	TYP.
AVG PWR	40 dBµV	50 dBµV
NOISE MARG.	3 dB	6 dB
aBER post Viterbi	2×10^{-6}	2×10^{-8}
MER QPSK 2/3 FEC	9 dB	12 dB
MER QPSK 3/4 FEC	10 dB	13 dB
MER QPSK 5/6 FEC	11 dB	14 dB

DVB-S2 8PSK

PARAM.	MIN	TYP.
AVG PWR	40 dBµV	50 dBµV
NOISE MARG.	3 dB	6 dB
PER 8PSK	$<1 \times 10^{-7}$	$<1 \times 10^{-8}$
MER 8PSK 2/3 FEC	11 dB	14 dB
MER 8PSK 3/4 FEC	12 dB	15 dB
MER 8PSK 5/6 FEC	13 dB	16 dB

DVB-T-H & GB COFDM

PARAM.	MIN	TYP.
AVG PWR	40 dBµV	50 dBµV
NOISE MARG.	6 dB	9 dB
aBER post Viterbi	2×10^{-6}	2×10^{-8}
MER 64 QAM 2/3 FEC	25 dB	28 dB
MER 16 QAM 2/3 FEC	20 dB	23 dB
MER QPSK 2/3 FEC	14 dB	17 dB

DVB-T2 & GB COFDM

PARAM.	MIN	TYP.
AVG PWR	40 dBµV	50 dBµV
NOISE MARG.	6 dB	9 dB
PER	1×10^{-7}	1×10^{-8}
MER 256 QAM 2/3 FEC	25 dB	28 dB
MER 256 QAM 3/4 FEC	26,5 dB	29,5 dB
MER 256 QAM 5/6 FEC	28,5 dB	31,5 dB

ATSC (USA) 8VSB

PARAM.	MIN	TYP.
AVG PWR	-15 dBmV	-5 dBmV
NOISE MARG.	2 dB	9 dB
bBER pre Trellis	1×10^{-3}	$<1 \times 10^{-6}$
bBER post Trellis	3×10^{-6}	$<1 \times 10^{-8}$
aBER pre R.S.	3×10^{-6}	$<1 \times 10^{-8}$
MER	16 dB	23 dB

ROVER
INSTRUMENTS
made in Italy

ACCESSORIES SUPPLIED

LIST OF PROVIDED ACCESSORIES:

- Soft BAG, Shoulder strap included
- USB 2.0 cable for PC connection
- Battery charger power supply 12 VDC
- User guide (CD or USB)
- F Female - F Female connector

NOTE: This list of accessories is subject to change without notice and depends on the meter's configuration.

ABBREVIATIONS & TECHNICAL TERMS

- **APID (Audio Packet Identifier):** Audio reception parameters in the MPEG data stream.
- **aBER (Bit Error Rate after Viterbi):** Ratio of the transmitted bits to the erroneous bits after Reed Solomon (Viterbi).
- **BCH (Bose Chaudhuri Hocquenghem):** External error protection decoder.
- **BER (Bit Error Rate):** The bit error rate shows the quality of the DVB signals. It displays the number of erroneous bits in relation to all the transmitted bits.
- **bBER (Bit Error Rate before Viterbi):** Ratio of the received bits relative to bits that have errors before Reed Solomon (Viterbi).
- **CBR (Constant Bit Rate):** Is used for MPTS measurements, cf. VBR.
- **C/N (Carrier to Noise):** Difference between the carrier signal and noise level in dB; see also S/N.
- **EVM (Error Vector Magnitude):** Measures deviation of the transmitted symbols to the ideal constellation, measured in dB.
- **FEC (Forward Error Correction):** Forward Error Correction, e.g. in case of the code rate ¾, ¾ of the information is user data, ¼ of the data come from the Viterbi correction.
- **Guard Interval:** Guard interval by extending the symbol through a gap. Due to this, good reception is possible even in case of strong reflections.
- **LCN (Logical Channel Numbering):** Logical channel sorting performed by the provider.
- **LDPC (Low Density Parity Check):** A new error protection method applied in DBV-S2 (Gallager codes). Inner error protection; code rates from 1/2 to 9/10.
- **MER (Modulation Error Rate):** MER is the ratio of the average signal power to the average error power in dB. It is a kind of a C/N measurement which gives information whether the receiver is able to demodulate the received signal.
- **MPTS (Multiple Program Transport Stream).**
- **NID (Network Identification):** Network ID or channel identification number between 0 and 8191.
- **NIT (Network Information Table):** Contains, for example, information about all available transponders, PIDs, downlink frequency, polarisation, next transponder for the scan; transmitted in the multiplexer transport stream.
- **NsMargin (Noise Margin):** Signal to Noise Ratio margin.
- **OMI (Optical modulation index).**
- **PER (Packet Error Ratio):** The Packet Error Ratio displays the number of incorrectly received data packets relative to the total number of transmitted packets (after Viterbi).
- **QEF (Quasi Error Free):** Bit error rate equals 2.00e-4.
- **Noise Level:** Sum of noise factor and thermal noise floors. Noise is created by physically caused molecular motion in electrical conductors.
- **RMS (Root Mean Square):** Method of a square mean value determination.
- **S/N (Signal to Noise):** Difference between the wanted signal and the noise level in dB; S/N ≈ C/N + 1,5; see also C/N.
- **SPTS (Single Program Transport Stream).**
- **TSID (Transport Stream ID):** Transponder/multiplex ID.
- **VBR (Variable Bit Rate):** Is used for MPTS measurements, cf. CBR.
- **VPID (Video Packet Identifier):** Video reception parameters in the MPEG data stream.

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CUSTOMER SUPPORT

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