HD TAB 9 PLUS

USER'S GUIDE

9"
TFT 16:9

ROVER
www.roverinstruments.com

GET TO KNOW YOUR HD TAB 9 PLUS

FRONT PANEL

- 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

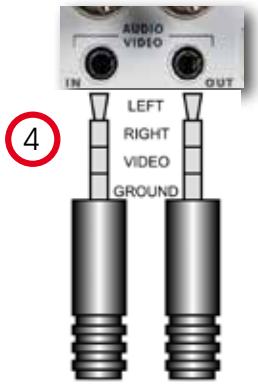
From instrument OFF, Switch on the meter, immediately after keep the "VOLUME" key pressed until a beep is heard.

SIDE PANELS

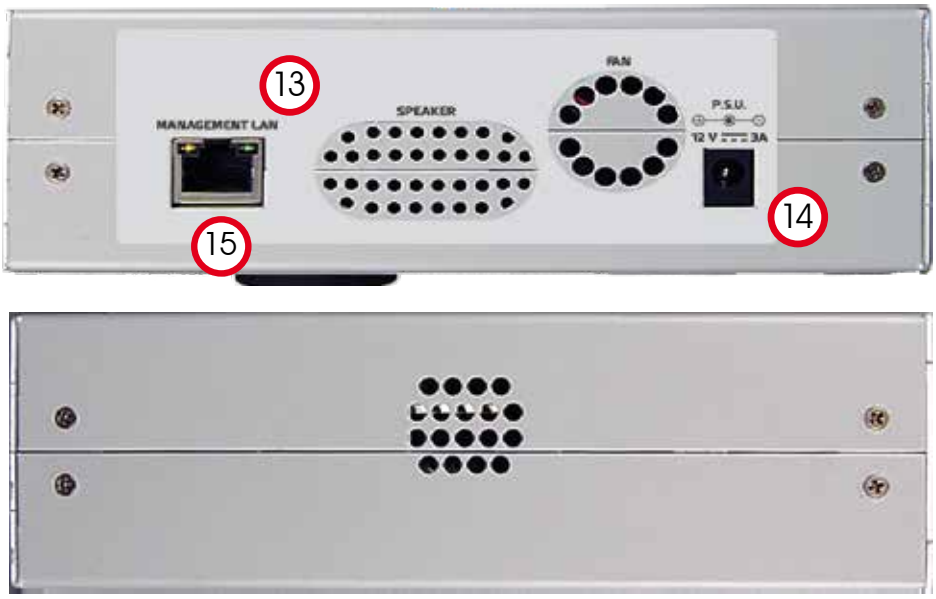
• TOP SIDE

1 = IF/RF IN "F" 75 Ω or "N" 50 Ω
2 = OPTIC IN: FC-ST-SC
3 = Remote Power Supply switch - DC at RF IN ON/OFF
4 = Analog Audio & Video IN/OUT
5 = USB A memory stick
6 = USB B SW/test drive (opt.) upgrades
7 = Common Interface Slot for CAM module
8 = HDMI Output
9 = 10 MHz Input (opt.)
10 = 1PPS Input (opt.)
11 = GPS antenna Input with SMB connector (opt.)
12 = ASI Transport Stream IN/OUT

IN/OUT
AUDIO-VIDEO
CONNECT. DIAGRAM



• RIGHT & LEFT SIDES



13 = TS over IP input (IP decapsulator opt.)
14 = Power Supply input (12 V DC - 3A)
15 = LAN Ethernet RJ45

MULTI-PURPOSE BAG

Make work easier by taking advantage of your multi-purpose bag.

1 Work safely and without restrictions with both hands free.

Connect the shoulder strap to the two hooks at the corners of the bag (top left and bottom right), so you can hang your meter around your neck leaving both hands free. **2**

3 The sunlight shield flap allows improved visibility of the high brightness display.

Secure your meter by connecting it to the antenna mast or in your car using the practical ring belt with quick attachment. **4**

5 If you change the configuration of the shoulder strap, you can easily carry the meter vertically by your side.

You can also carry your instrument using its practical handle. **6**

7 You can use the bag's convenient stand flap for operation on a counter.

HOME AND NAVIGATION

'HOME' SCREEN

Press the 'HOME' key to go to the home screen, then rotate the wheel to navigate on 'SAT', 'TV' or 'CATV' icons and press the wheel to select the measurement mode 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)
- Press the wheel and confirm the selection (fig. 4)

Example of TV/CATV channel selection:

fig. 1 fig. 2 fig. 3

Example of SATELLITE transponder selection (TP/TS):

fig. 1 fig. 2 fig. 3

Example of remote TV-CATV power supply selection (DC&RF):

fig. 1 fig. 2 fig. 3 fig. 4

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 TV/CATV channel selection:

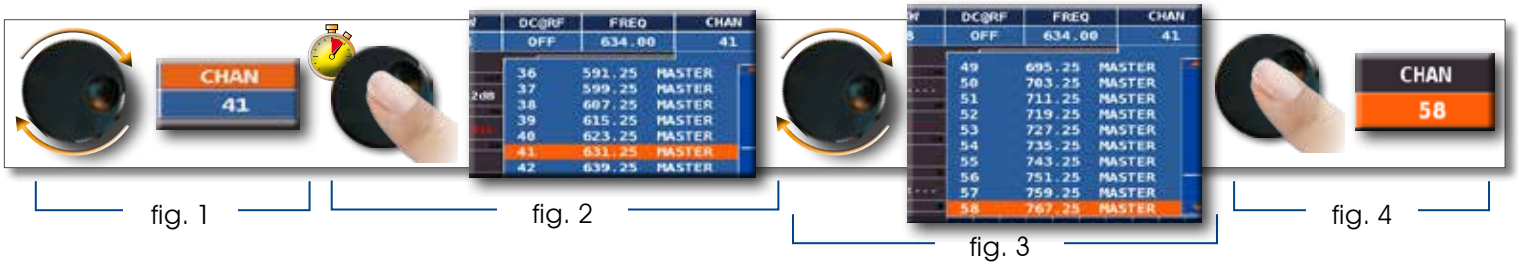


fig. 1 fig. 2 fig. 3 fig. 4

Example of SATELLITE transponder selection (TP/TS):

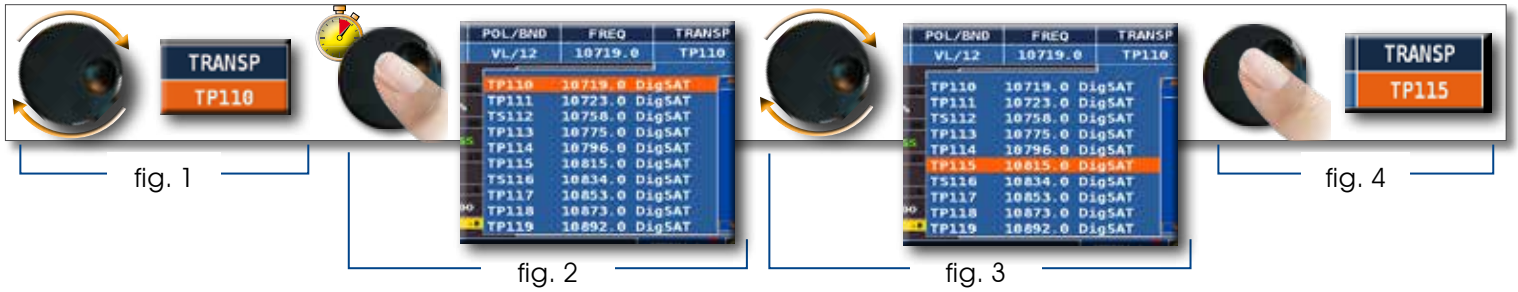


fig. 1 fig. 2 fig. 3 fig. 4

Example of TV- CATV remote power supply selection (DC & RF):

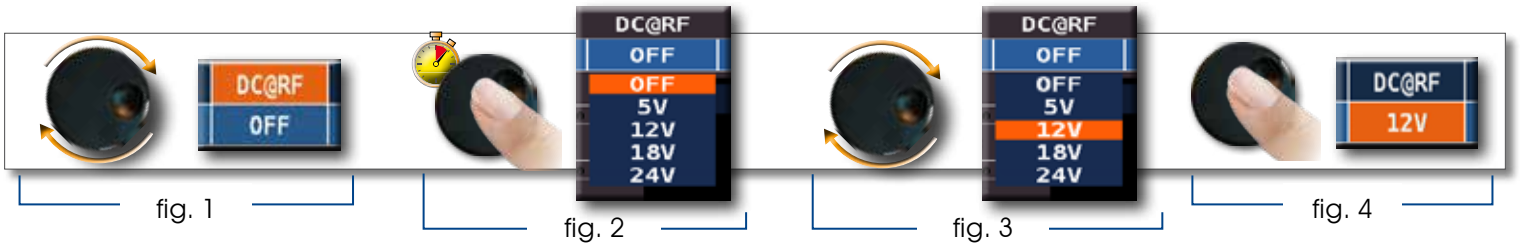


fig. 1 fig. 2 fig. 3 fig. 4

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

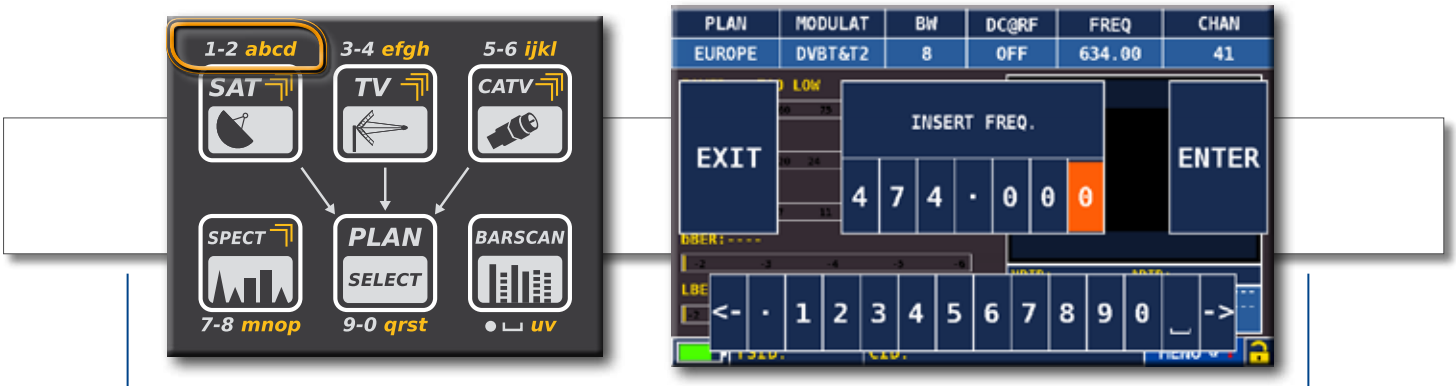


fig. 3

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)

Eg. TV/CATV channel selection:

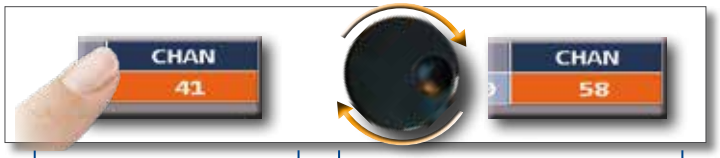


fig. 1 fig. 2

Eg. SATELLITE transponder selection (TP/TS):

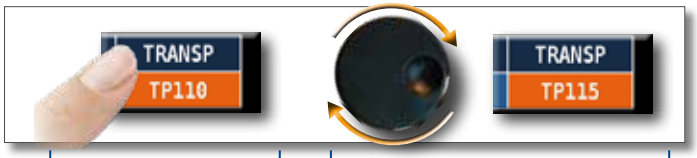


fig. 1 fig. 2

Example of TV- CATV remote power supply selection (DC & RF):

fig. 1 fig. 2 fig. 3

Select from the menus and adjust the value using the drop down menu:

- Touch a value in the menu (fig. 1)
- Touch again to visualize the drop down menu (fig. 2)
- Rotate the wheel to adjust the value (fig. 3) or touch the value required (fig. 3)
- Press the wheel and confirm the selection (fig. 4), or touch the monitor outside the drop down menu (fig. 4)

Example of TV channel selection:

fig. 1 fig. 2

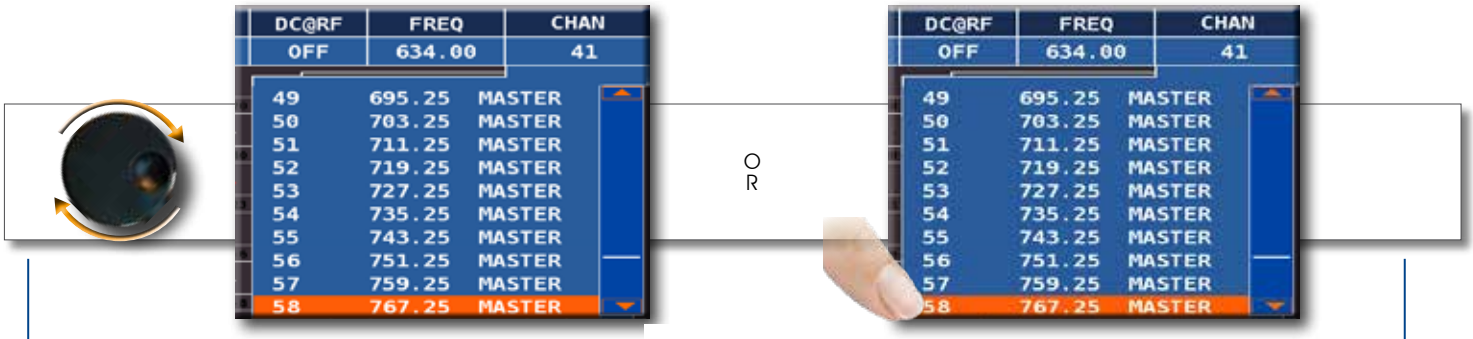


fig. 3

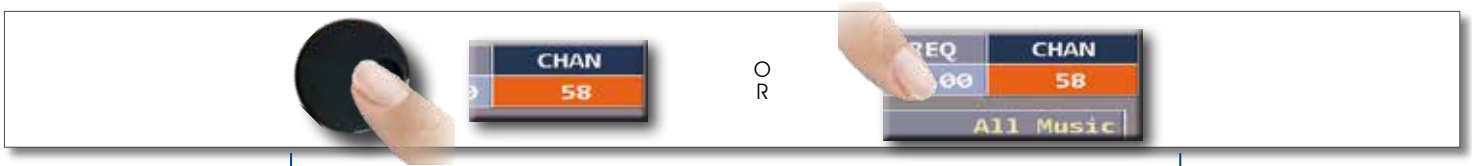


fig. 4

Example of SATELLITE transponder selection (TP/TS):

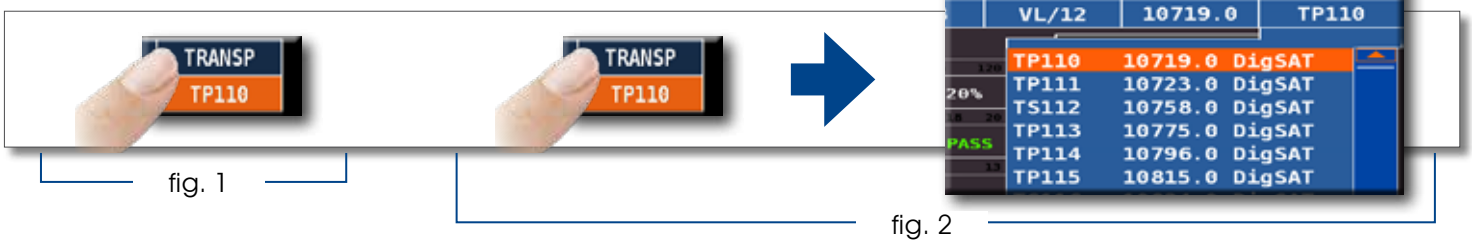


fig. 1 fig. 2

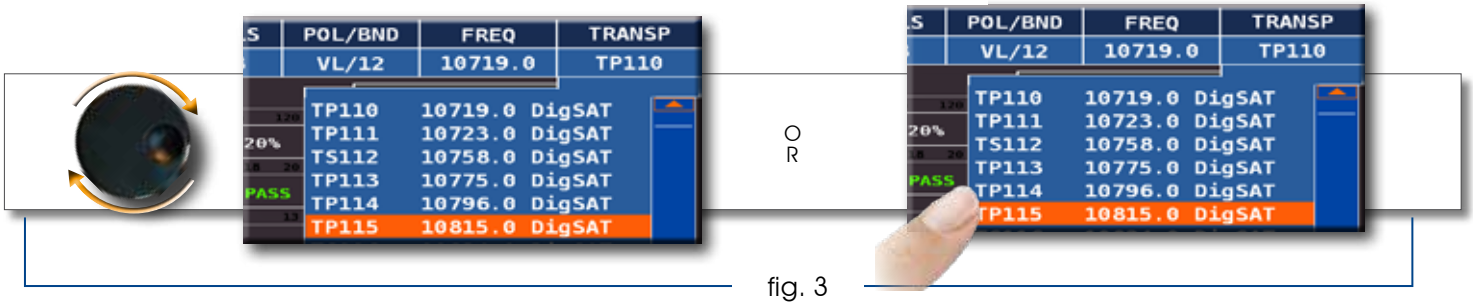


fig. 3

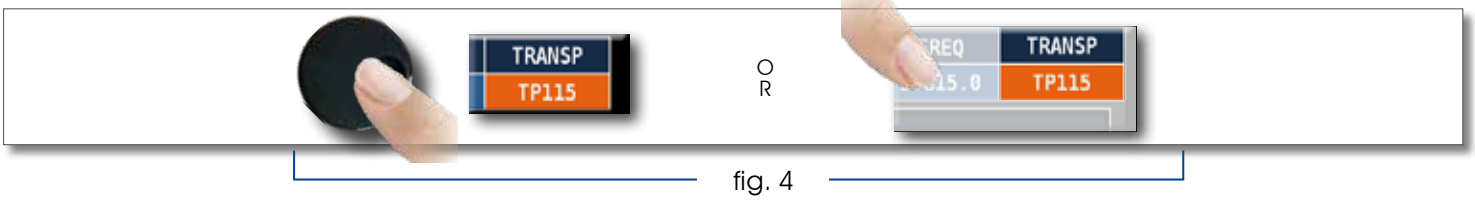


fig. 4

Example of remote TV - CATV power supply selection (DC & RF):

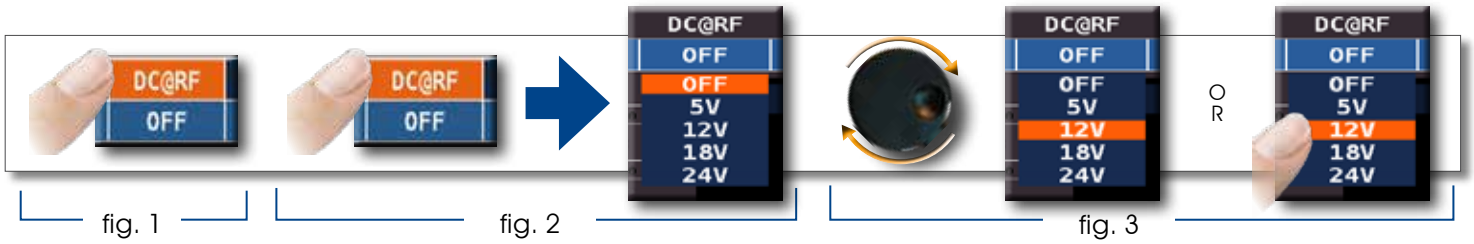


fig. 1 fig. 2 fig. 3

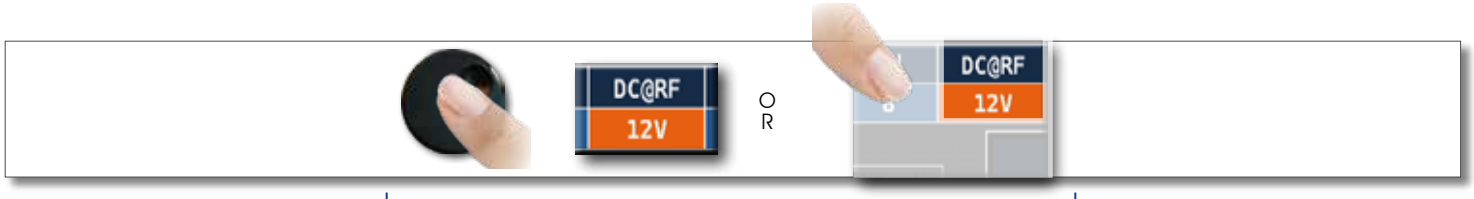


fig. 4

Select the frequency and set the value using the numerical keyboard:

- Touch FREQ (fig. 1)
- Touch again to show the menu "INSERT FREQ" (fig. 2)
- Touch the numbers to digit the required frequency value (fig. 3)
- Finally touch enter and confirm the selection (fig. 4)

Example of manual frequency selection (FREQ):

fig. 1 fig. 2

fig. 3 fig. 4

VOLUME & CONFIGURATION

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

HDMI OUT

- "HDMI OUT" (connector 8): Connect an HDMI cable to automatically send the TFT monitor pictures to a TV or video projector. The video will only be available on an external display;

VIDEO IN & VIDEO OUT

- "VIDEO IN" (connector 4): Select "EXT" to visualize an external video source.
- "VIDEO OUT" (connector 4): Select "ON" to send the pictures of the TFT monitor to a TV or Video projector. Video will be available on an external display.

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

enable - disable touchscreen:

Touch "CONFIGURATION MENU"
from the volume window;

Touch "METER"
then "TOUCHSCREEN" to
enable - disable the touchscreen.

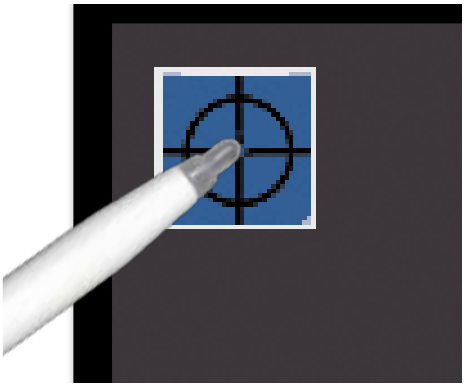
TOUCHSCREEN CALIBRATION

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";

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.

DISCOVERY

Identifies the modulation of a tuned TV channel in the TV master PLAN

Touch the "CONFIGURATION MENU"
in the VOLUME window

TV MODE

Touch "TV" and then "DISCOVERY"
and set the identification mode:
- TERR ONLY
- TERR & CABLE

CATV (CABLE) MODE

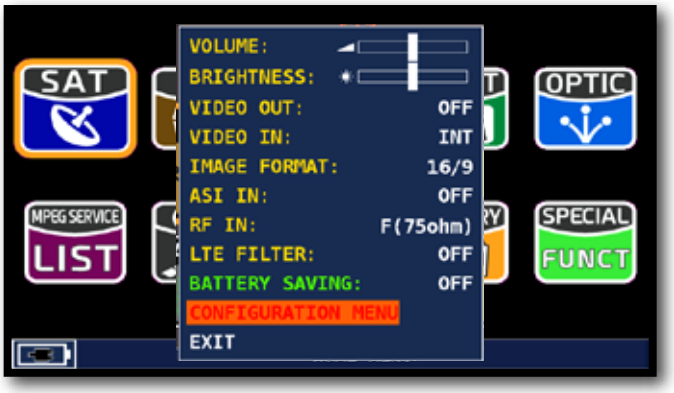
Touch "CATV" and then "DISCOVERY"
and set the identification mode:
- CABLE ONLY
- TERR & CABLE

NOTES:

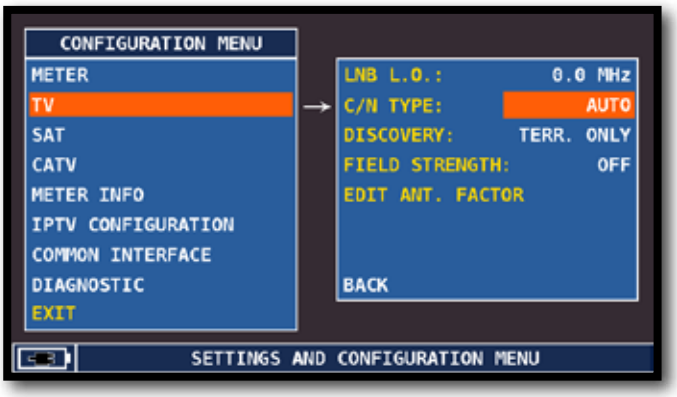
- DISCOVERY mode is active only if the antenna cable is connected to the instrument
- DISCOVERY mode is not active if you use a manual (ManuMemory Mix) or automatic memory plan (Automemory tv)

C/N TYPE

Set the measurement mode of the carrier noise ratio "C/N" (in band-out band)



Touch 'configuration menu' from the volume screen

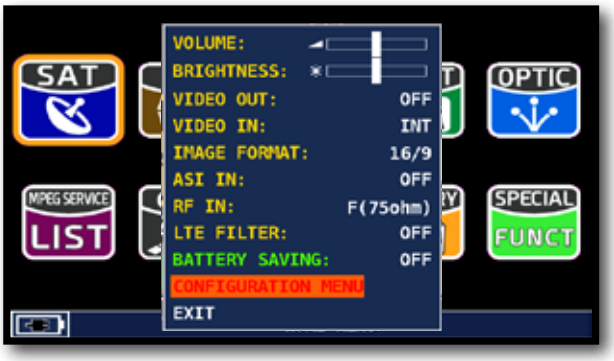


Touch "TV" then "C/N TYPE"

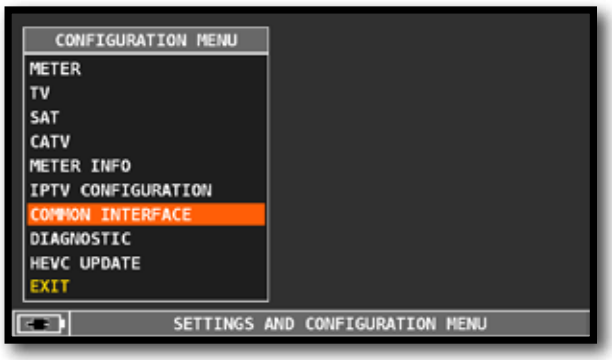
C/N measurement mode "IN BAND": The signal/noise ratio is measured between the signal level of the video carrier (signal/carrier, red marker) and the noise level, estimated in the band between the coloured subcarrier and the audio carrier (white marker)

C/N measurement mode "OUTSIDE THE BAND": The signal/noise ratio is measured between the signal level of the video carrier (signal/carrier, red marker) and the noise level estimated in the guard band (-1.250 MHz from the video carrier, white marker)

COMMON INTERFACE MENU & BISS PARAMETERS

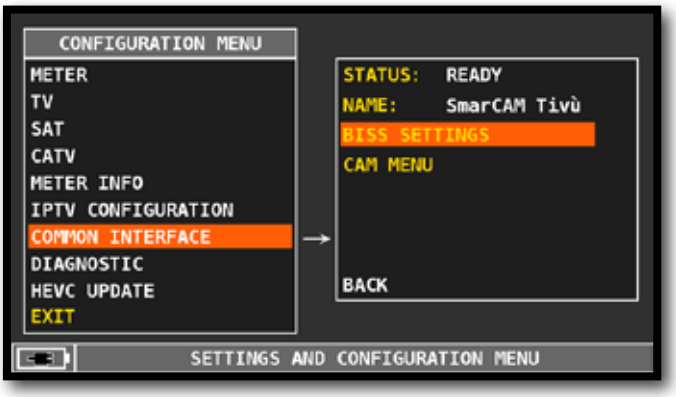


Touch "CONFIGURATION MENU" from Volume screen



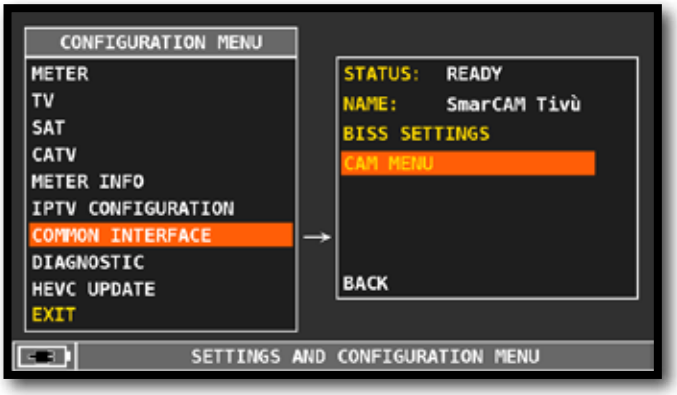
Then touch "COMMON INTERFACE"

BISS PARAMETERS SETTING



Touch "BISS SETTINGS" to access the configuration menu for the BISS coding parameters.

CAM MENU



Touch "CAM MENU" to access the CAM configuration menu*.

CAM Menu example*.

NOTES *:

- The inserted CAM Menu varies depending on the CAM model.
- The Menu items and the relative navigation (see Example) depend on the implementation carried out by the CAM manufacturer.

SCREEN SHOT

The "SCREEN SHOT" function allows you to directly save the TFT monitor screens in an external memory.

- Connect an external memory source (not provided) to the USB A socket.
- Set the instrument on the screen to be saved: Spectrum, Measurements, Constellaton, Echoes etc.
- Press the SCR SHOT keys and wait for file to be saved: The instrument will make a series of beeps.
- Digit the file name and touch ENTER.

N.B.:

- If the memory is not inserted correctly, or is not recognised, the following message will be shown: "PLEASE INSERT USB MASS STORAGE DEVICE".
- Full screen picture zooms can not be saved.
- The ENTER command is not active If the file name is already present in the external memory source.
- The files are saved in .bmp (bitmap) format.

SAT ANALYZE SATELLITE TELEVISION SIGNALS

SWITCH TO SAT MODE

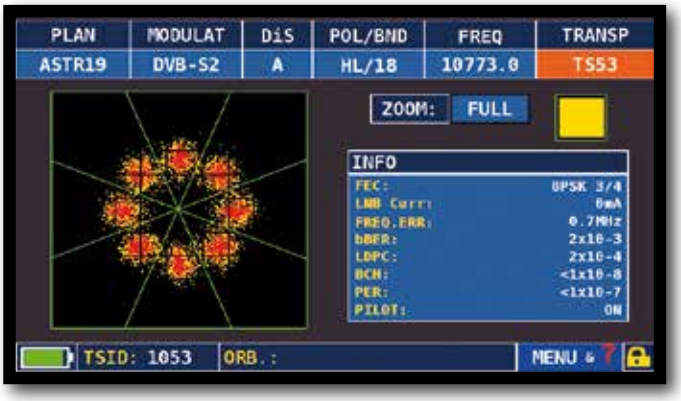
SAT channel plan screen selection

"Satellite information (mux data) is provided in cooperation with LyngSat www.lyngsat.com"

DIGITAL SAT MEASUREMENT DISPLAYS DVB-S, DVB-S2 & S2M

Main measurements & live picture

Touch the picture to zoom, touch again to return to the measurement



8PSK Constellation

Press repeatedly to navigate in the SAT measurement screens

Touch "ZOOM" and select the constellation square window to enlarge

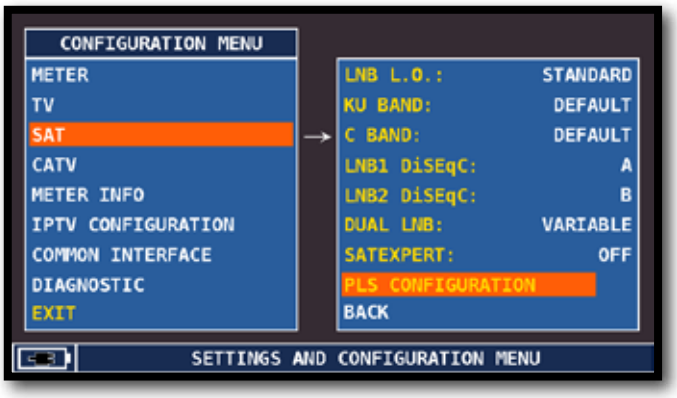
DVB-S2M SIGNAL: ISI SELECTION

Touch "MENU" on the main measurements and picture screen

Touch "ISI #" and select the ISI (Transport Stream) required

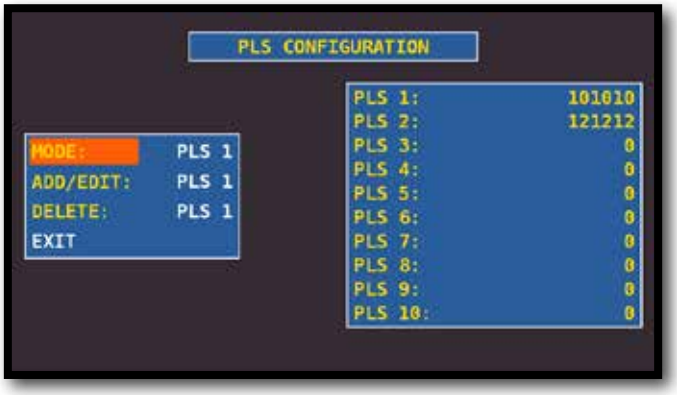
PLS CONFIGURATION

Touch "CONFIGURATION MENU" in the volume window



Touch "SAT" and select "PLS CONFIGURATION"

Example 1:



Select the PLS required and set the parameters

TS STREAMING

The TS STREAMING function allows you to save the Transport Stream signal's in an external memory source or send it to a LAN port.

Touch "MENU" on the main measurements and picture screen

TS STREAMING VIA LAN

Touch "TSstreaming" and select "LAN" to send the stream to the LAN port, (connector 8) on the instrument.

EXAMPLE 1:

Set the IP address of recipient (IP DEST) and the port number (PORT). Select the services to be analyzed and touch START

TS STREAMING VIA USB

Touch "TSstreaming" and select "USB" to store the stream in the external memory (connector 6)

EXAMPLE 2:

Set the file name (FILE NAME), the maximum file size (SIZE), select the services to be analyzed and touch "START" to start memorizing.

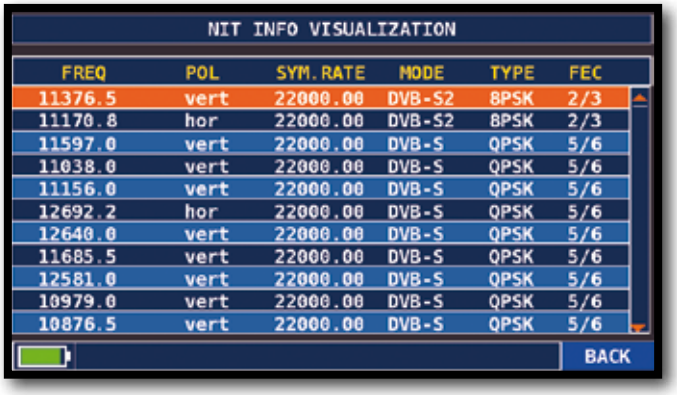
N.B.: TS STREAMING is also available in TV and CATV mode.

VISUALIZE NIT

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

Touch "VISUALIZE NIT".

Example 1:



"NIT INFO VISUALIZATION" referring to an ASTRA 19 East transponder

NOTE:

- The function VISUALIZE NIT is available also in TV & CATV mode.

RELATED FUNCTIONS

SAT Spectrum Analyzer

SAT Channel Plan Selection

MPEG service list

SWITCH TO TV MODE (All channels received at the Antenna)

Tv channel plan

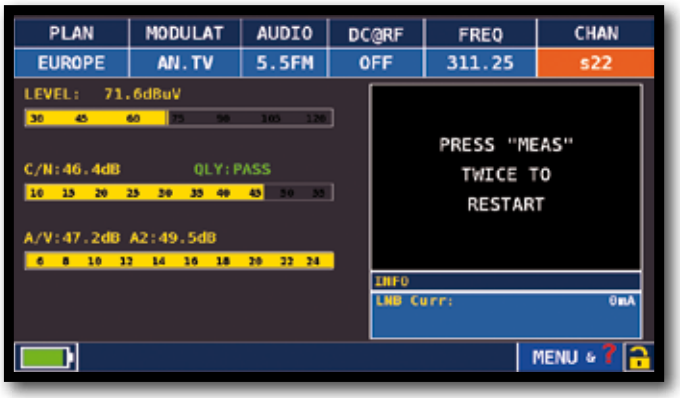
ANALOG RADIO MEASUREMENT DISPLAY

Touch "CHAN" & select "FMH" or "FML",
Touch "MODULAT" & select "FM Radio",
Touch "FREQ" and select the frequency required.

ANALOG TV MEASUREMENT DISPLAY

Touch "CHAN" and select the channel required. If it is analog you will see the following displays:

Level measurement and picture



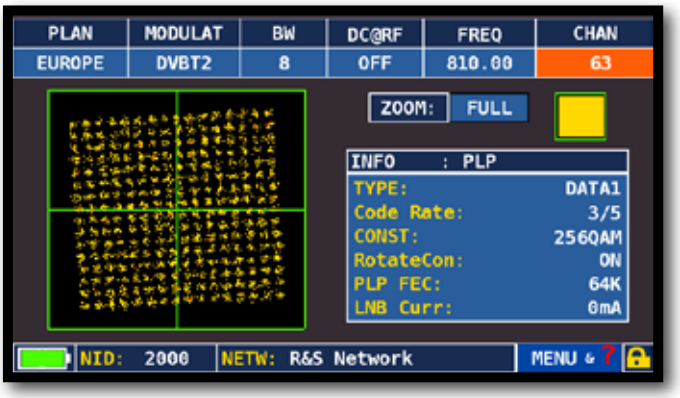
Other measurements

Press repeatedly to navigate in the TV measurement screens

DIGITAL TV MEASUREMENT DISPLAYS DVB-T & DVB-T2 M-PLP

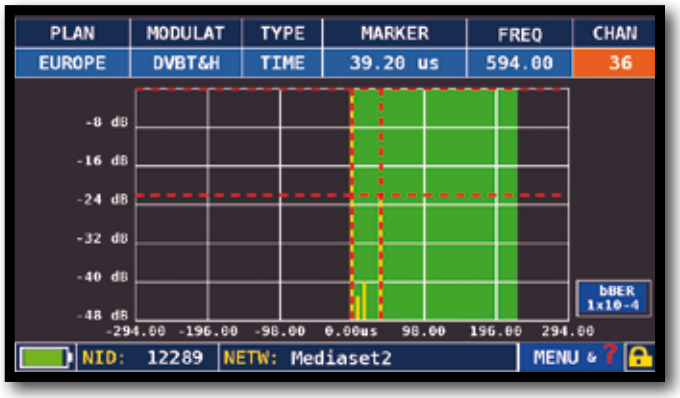
Touch "CHAN" and select the channel required. If it is digital you will see the following displays:

Main measurements and picture



DVB-T2 constellation

Touch "ZOOM" and select the constellation square window to enlarge



Impulse response screen (echo)

Press repeatedly to navigate in the TV measurement screens

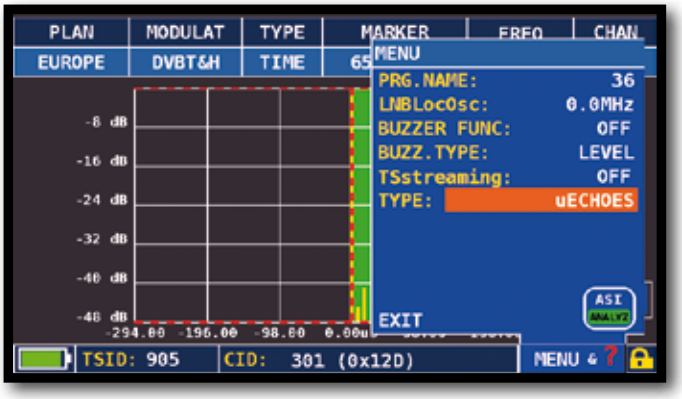
Touch "TYPE"

Select the echo visualization mode:

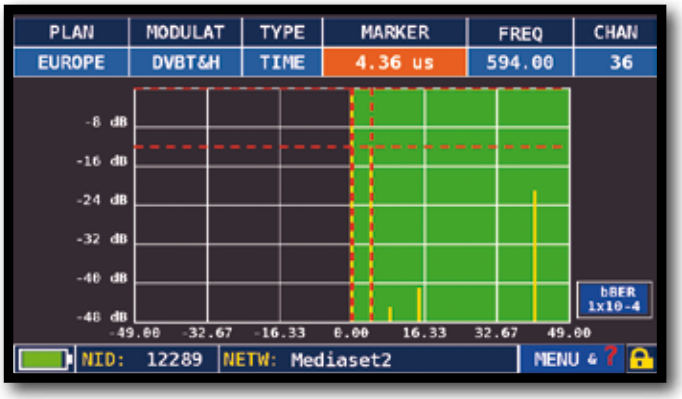
DISTANCE or

TIME

MICROECHOES VISUALIZATION



Touch "MENU" on the ECHOES screen, than "TYPE" and select "μECHOES"



MicroEchoes visualization

NOTE: Other echo visualization modes are available in the "TYPE" menus

ECHO & MICROECHO MEASUREMENT in "SFN" TV NETWORKS

HOW TO REDUCE INTERFERENCES IN "SFN" NETWORKS

The analogue TV switch off is finish in Europe. Some countries, such as Spain and Italy, have decided to install digital TV "SFN" (Single Frequency Networks), in other words a national television broadcaster has the same frequency/channel all over the country. This provides a fantastic opportunity, but also means that in areas between two cells, it is possible to receive the same signals from more than one transmitter.

If the "SFN" network has been designed well, the SFN signals' slight propagation delay (which we will call "echoes"), coming from the different distances in which the transmitters are situated, becomes absorbed in the invaluable GUARD INTERVAL function, present in the DVB-T & T2 (COFDM) modulation and consequently there will not be any reception problems. In any case, experience over the last few years has shown us that reality is different to theory, especially when there are many local television networks that could generate many interferences.

You could therefore encounter the unpleasant experience of receiving a signal with good power, but that cannot show any pictures and not be able to establish the cause of the fault. In this case it is indispensible to measure the IMPULSE RESPONSE in real time, to measure the echo's delay or advance compared to the main signal. When changing direction and position of the antenna it is possible to optimize reception intuitively, by maximising the power of the main signal and minimize the power of interference echoes, also at the expense of the channel power.

Once again Rover Instruments is the first company to supply meters for TV installers, that can measure up to 16 ECHOES and PRE-ECHOES in real time. ROVER meters allow you to see ECHOES, measure the power and the delay in uS and the distance of the interfering broadcaster in Km. There are currently very few meters that allow you to measure ECHOES and PRE-ECHOES, in real time and at a distance of up to 75 Km, higher than the maximum amplitude possible with the GUARD INTERVAL and above all that can highlight, using the green mask, the useful reception area, in other words within the guard interval.

The width of the GUARD INTERVAL varies according to the modulation parameters: consult the table below to find the width of the GUARD INTERVAL and all the possible DVB-T configurations.

Fig. 1:
OPTIMUM RECEPTION:*
no ECHO present either outside or inside the guard interval mask (green area).

Fig. 2:
GOOD RECEPTION:* *2 ECHOES present, but within the guard interval mask (green area) coming from a distance of: 1st echo: 24,50 Km, the same as a 81,67 µs delay.*

Fig. 3:
MARGINAL RECEPTION (or IMPOSSIBLE):*
2 ECHOES present outside the guard interval mask (green area), coming from a distance of: 1st echo: 70,56 Km, the same as a 235,20 µs delay.

N.B.* Valid examples for a DVB-T OFDM 8k signal with an 8 MHz Bandwidth and a 1/8 Guard Interval, this data is shown on ROVER meters to the right of the Constellation, see below Fig. 4.

Fig. 4:
DVB-T-64Q CONSTELLATION:
The table to the right shows all the received modulation parameters

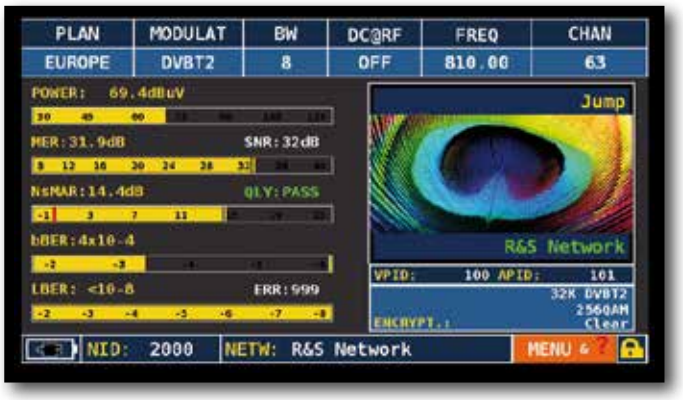
TEMPORAL GUARD INTERVAL WIDTH

(already automatically highlighted by the GREEN mask)

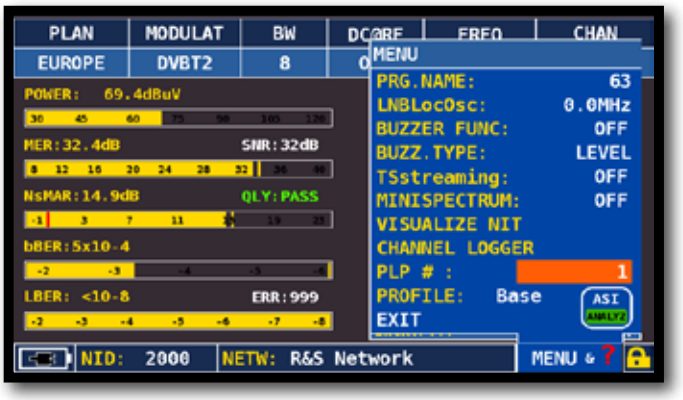
DVB-T 2.000 carriers (2K DVB-T)				
GUARD INTERVAL	1/4	1/8	1/16	1/32
max time (microsecondi)	56	28	14	7
max distance (Km)	16.8	8.4	4.2	2.1

DVB-T 8.000 carriers (8K DVB-T)				
GUARD INTERVAL	1/4	1/8	1/16	1/32
max time (microsecondi)	224	112	56	28
max distance (Km)	67.2	33.6	16.8	8.4

DVB-T2 SIGNAL: PLP SELECTION

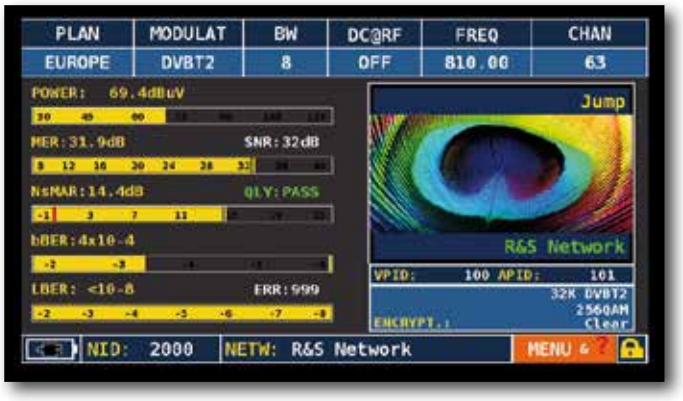


Touch "MENU" on the main measurements and picture screen

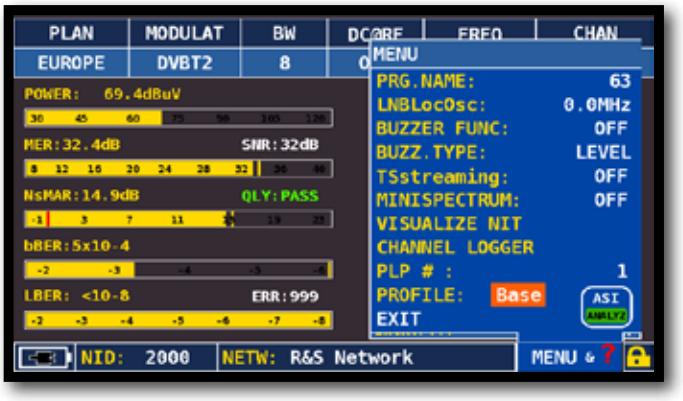


Touch "PLP #" and select the PLP (transport Stream) required

DVB-T2 SIGNAL: PROFILE SELECTION (OPT.)



Touch "MENU" on the main measurements and picture screen

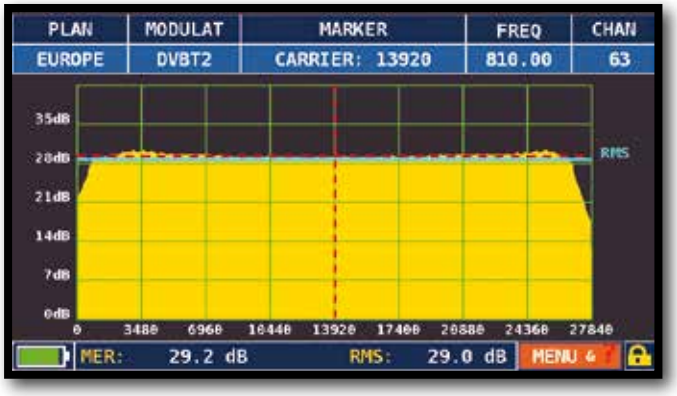


Touch "PROFILE" and select the PROFILE required: "BASE" or "LITE"

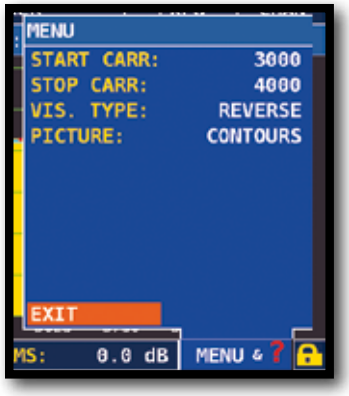
MER VS CARRIER MEASUREMENT

The meter has a MER measurement for carriers, this allows you to carry out an analysis of the MER for single COFDM carriers in a DVB-T or DVB-T2 signal.

To visualize this window, repeatedly press the "TV" key. It is shown after the echoes window:

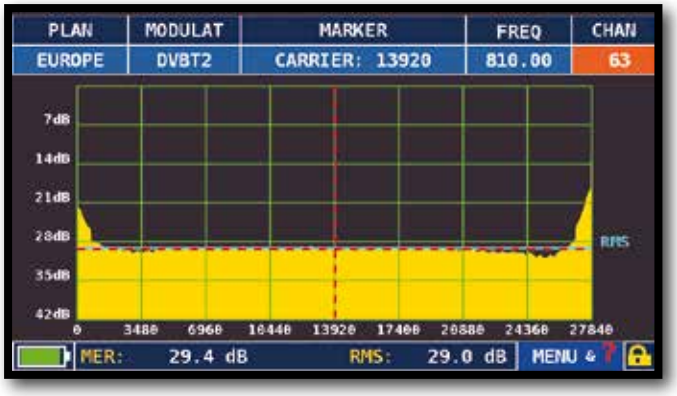


MER vs CARRIER:
Visualization mode
"VIS. TYPE: NORMAL"
and "PICTURE: FULL"



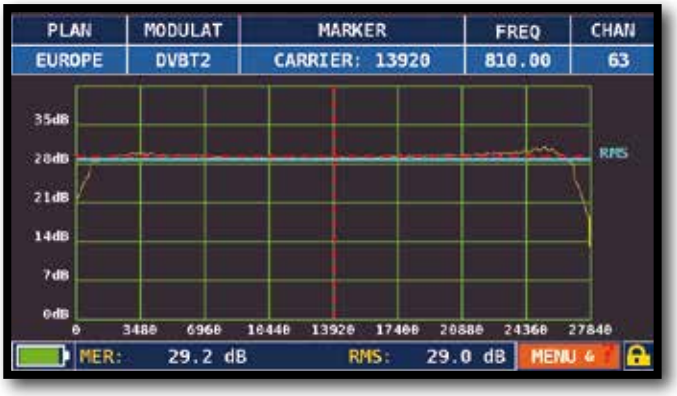
Touch "MENU & ?" to obtain
different visualization modes

Example 1:



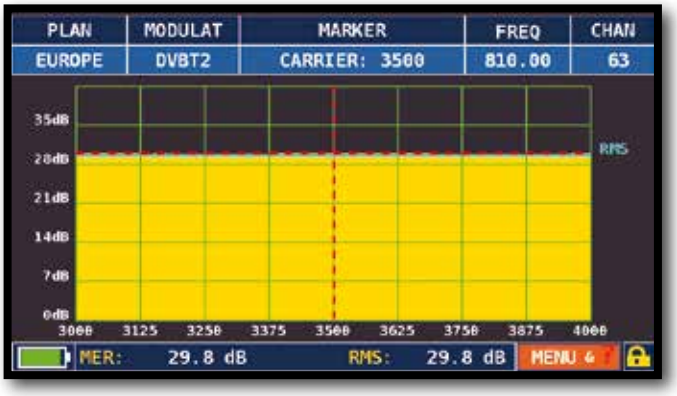
MER vs CARRIER :
Visualization mode
"VIS. TYPE: REVERSE"
and "PICTURE: FULL"

Example 2:



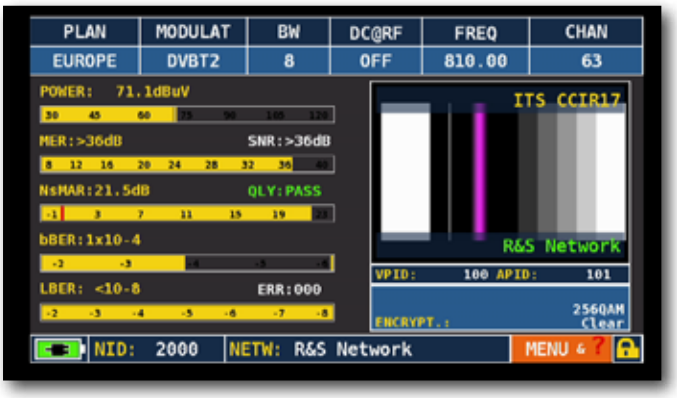
MER vs CARRIER :
Visualization mode
"VIS. TYPE: NORMAL"
and "PICTURE: CONTOURS".

Example 3:

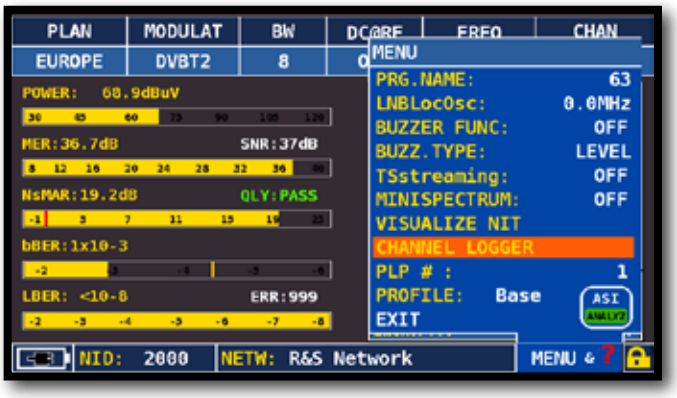


MER vs CARRIER:
Visualization mode
"VIS. TYPE: NORMAL", "PICTURE: FULL" and
"START/STOP CARR from 3000 to 4000".

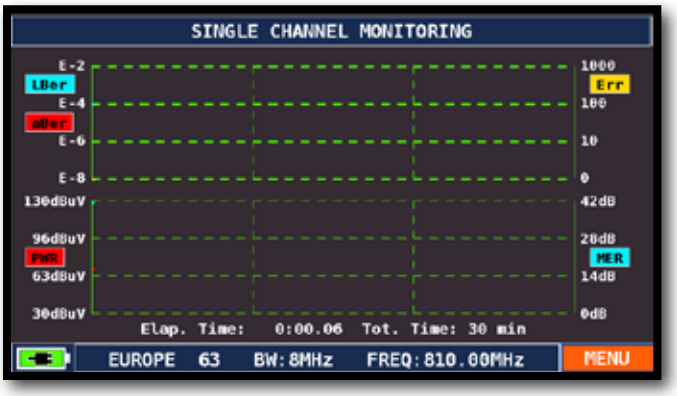
CHANNEL LOGGER



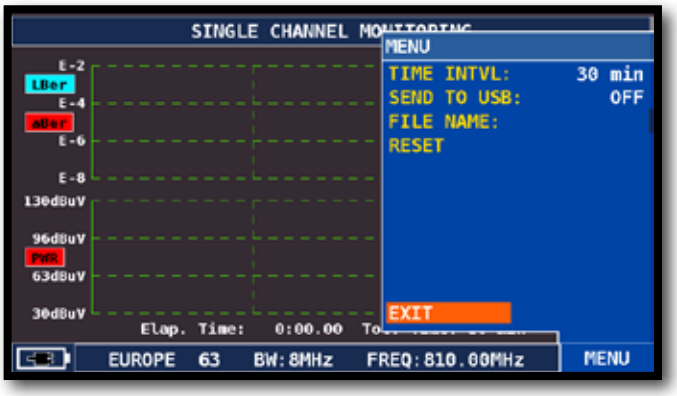
Touch "MENU" on the main measurements and picture screen



Touch "CHANNEL LOGGER"

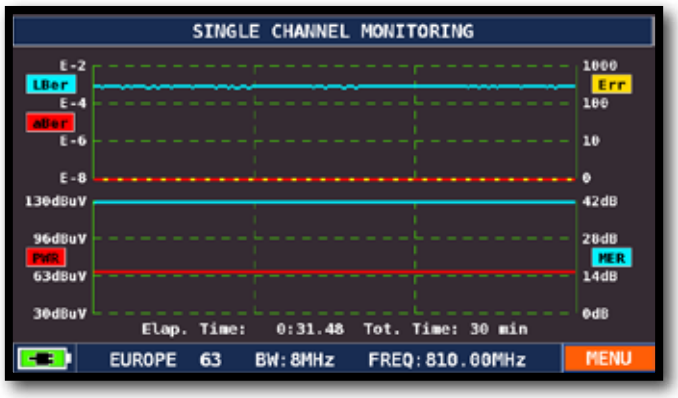


Touch "MENU"



Select the time interval (TIME INTVL) and where you want to store the file, either in the meter's memory, or in the USB memory stick (send to USB-ON), with the relative file name (File name)

EXAMPLE 1:

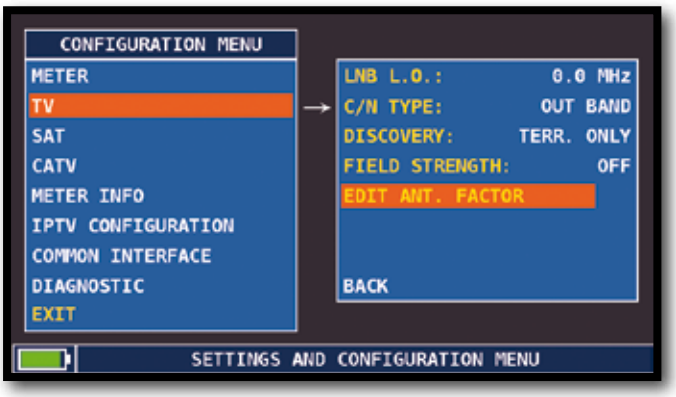


SINGLE CHANNEL MONITORING:
30 Minutes

NOTE: Channel Logger function is also available in CATV and SAT mode.

FIELD STRENGTH

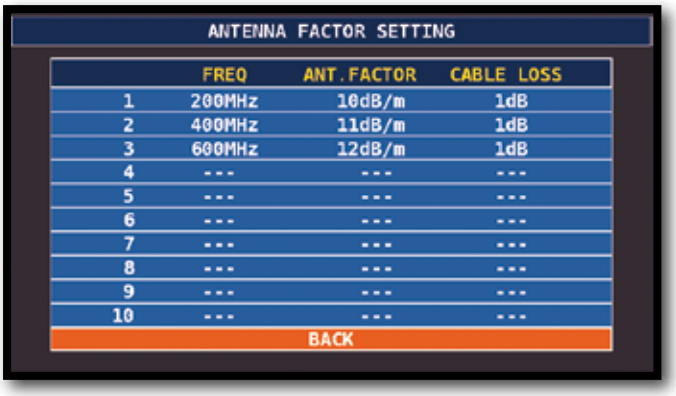
Touch "CONFIGURATION MENU" from the VOLUME screen



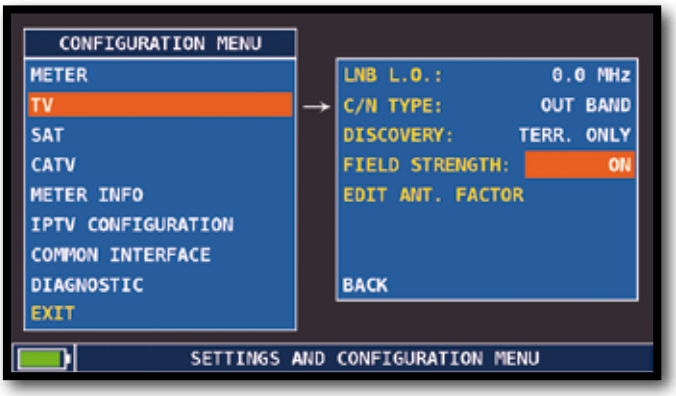
Touch "EDIT ANT FACTOR"

Set the antenna parameters:
- Frequency value (FREQ:)
- Antenna gain (ANT. FACTOR:)
- Cable attenuation (CABLE LOSS:)

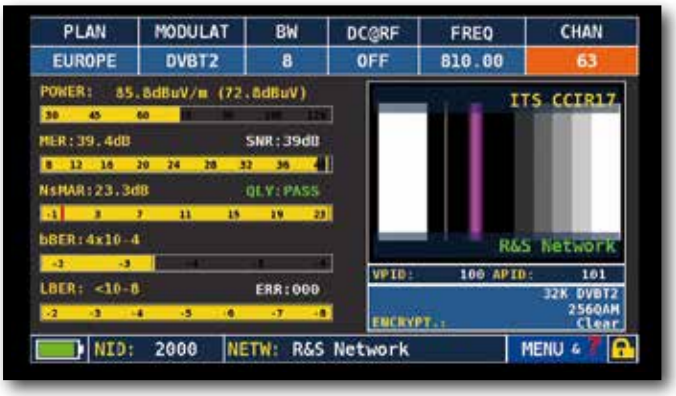
EXAMPLE 1:



Complete the insertion of the parameters for the various frequencies.

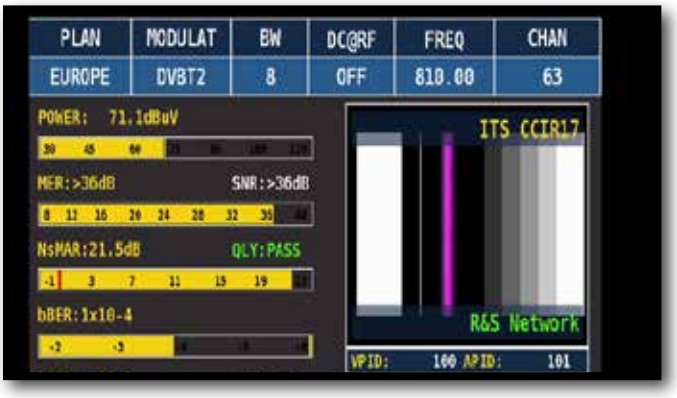


Touch "Field Strength" and select "ON"

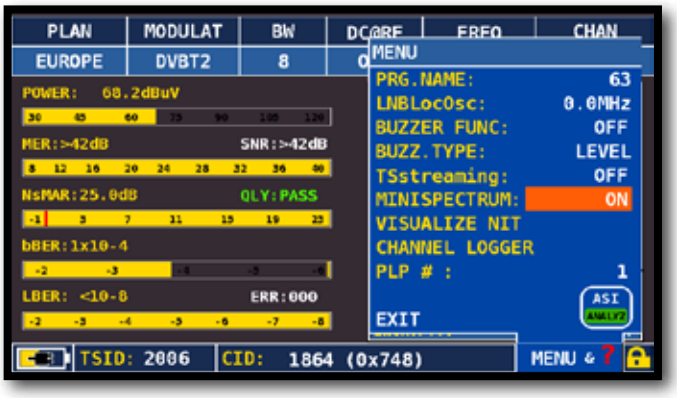


Press the TV key:
The field strength is shown on the right of the "POWER" measurement"

"APP" MINI SPECTRUM



Touch "MENU" on the main measurements and picture screen



Touch "MINI SPECTRUM" and select "ON"

TV Mini spectrum

NOTE:

- The mini spectrum function is also available in CATV mode.
- For more information about the "APP"s, contact your distributor or send an e-mail to: wecare@roverinstruments.com

RELATED FUNCTIONS

TV SPECT

TV Channel Plan Selection

Barscan

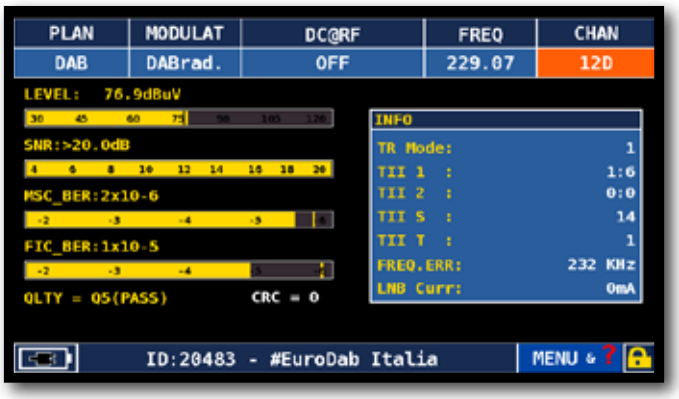
MPEG service list

SWITCH TO DAB MODE

DAB channel plan selection

DIGITAL RADIO MEASUREMENT DISPLAY

Touch "CHAN" & select the channel desired



Main DAB measures

DAB SERVICE LIST

Touch "INFO" and select the desired service

DAB service list

RELATED FUNCTIONS

TV SPECT

TV Channel Plan Selection

MPEG service list

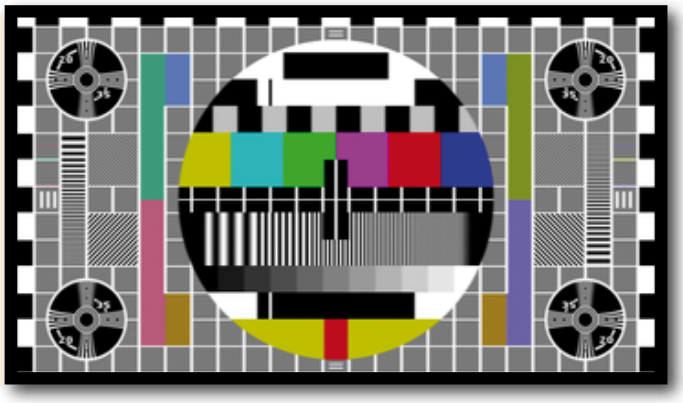
CATV ANALYZE CABLE TELEVISION SIGNALS

SWITCH TO CATV MODE (All Antenna and S band channels)

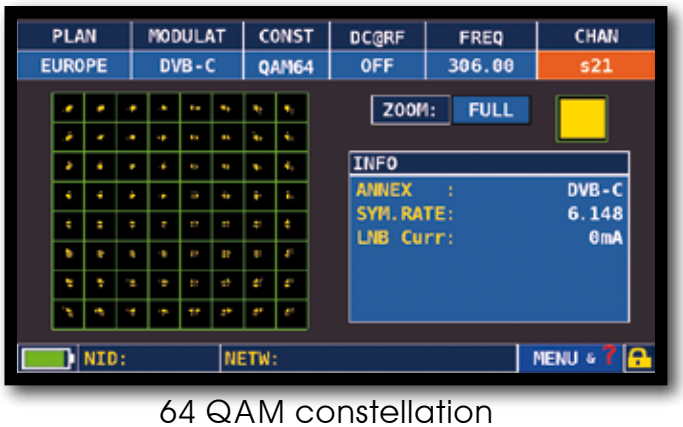
CATV channel plan selection

DIGITAL CATV DVB-C MEASUREMENT DISPLAY

Main measurements & live picture



Touch the picture to enlarge,
Touch again to return to the measurements



64 QAM constellation

Touch "ZOOM" and select the constellation square to enlarge

Press repeatedly to navigate in the CATV measurement screens

RELATED FUNCTIONS

CATV SPECT

CATV Channel Plan Selection

Barscan

MPEG service list

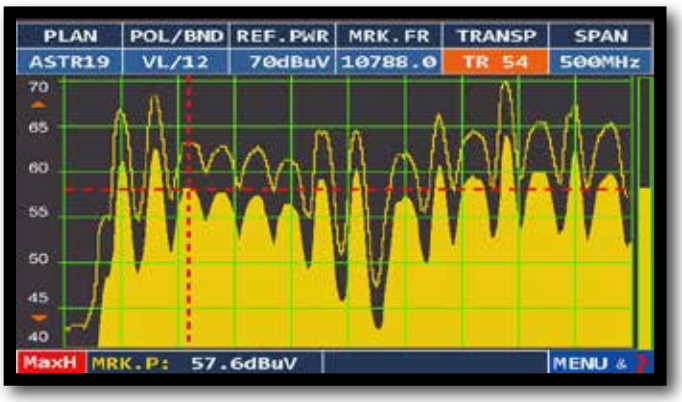
SWITCH TO SPECT MODE

Or

SPECTRUM ANALYZER SCREENS

Fast spectrum

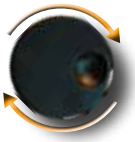
Press the spectrum key again to activate the "MAX HOLD" function



Fast spectrum with peak memory "Max HOLD"

Touch "SPAN" to modify the value or directly select the active span value

Or



Rotate to Navigate

Enter to confirm

Press to cycle through spectrum analyzer screens

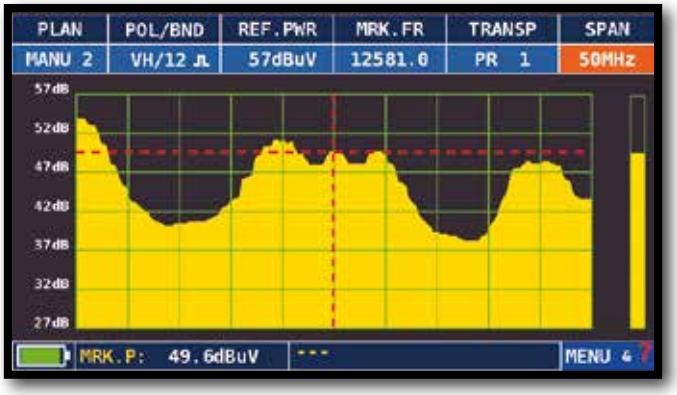
RBW FILTER

The RBW (Resolution Bandwidth) filter function determines the bandwidth of the bandpass filter, which is used to generate the spectrum of the input signal (IF).

This bandpass filter works like a window: the smaller the bandwidth, the more detailed is the representation of the spectrum. However, a smaller value RBW provides a slower refresh rate of the spectrum

You can choose (high resolution, slower refresh rate) between the RBW filter between a bandwidth of 1 MHz or 5 MHz (lower resolution, fast refresh rate).

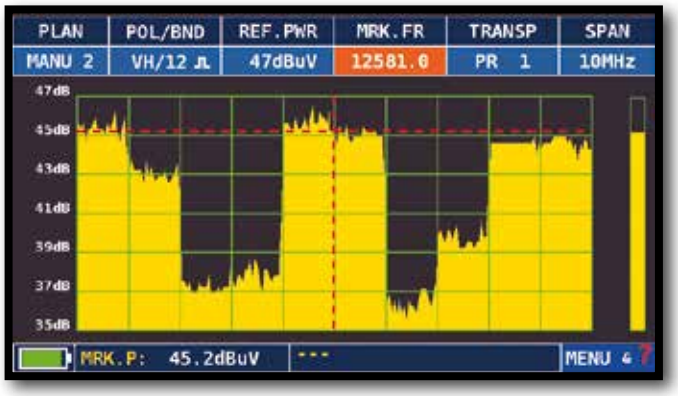
EXAMPLE 1:



Visualization of an SCPC transponder
With settings:
"RBW FILTER 5 MHz" and "dB DIV 5dB" (Span 50 MHz)

EXAMPLE 2:

Touch "MENU&?" from the SAT SPECTRUM screen, select "dB DIV 2dB" and "RBW FILTER 1 MHz".



Visualization of a SAT SCPC transponder (SPAN 10 MHz).

NOTE: You can only select RBW filter in SAT mode.

RELATED FUNCTIONS

Touch "MENU" to visualize the additional spectrum functions

Finds the tuning parameters of a digital signal

"APP" 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.

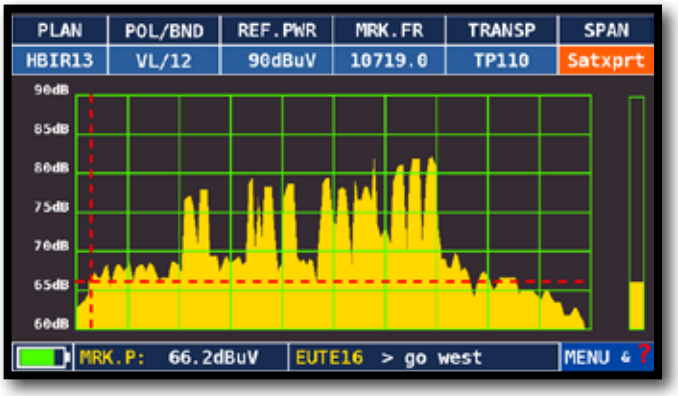
Touch "CONFIGURATION MENU"
From the VOLUME screen

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".

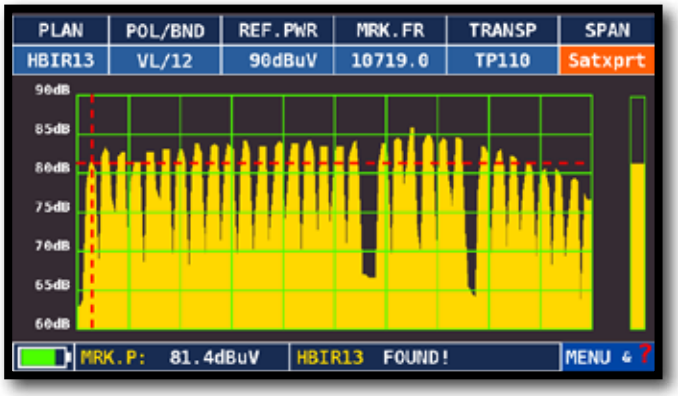
Here you can find some examples:

EXAMPLE 1:



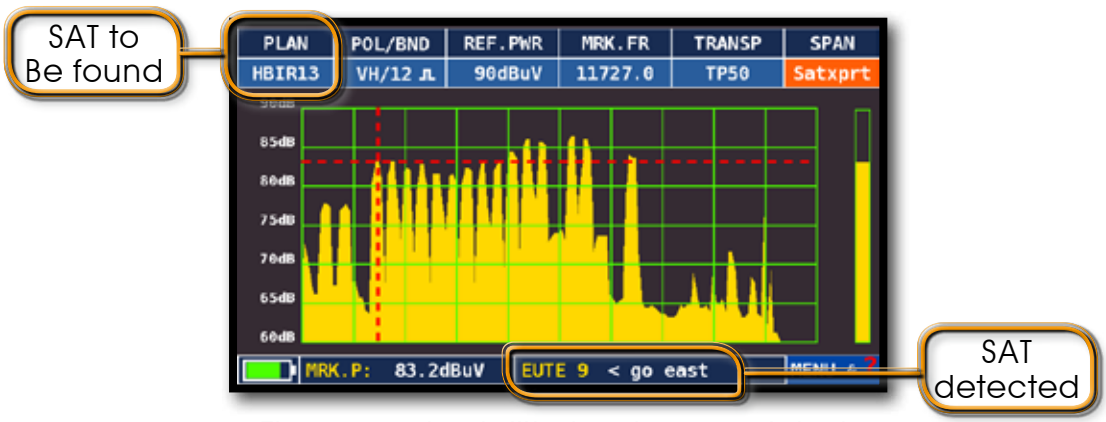
The satellite you have pointed is not correct.
the lower part of the display shows the following information:
EUTE 16 > GO WEST
(move the satellite dish west).

EXAMPLE 2:



Satellite found.
the lower part of the display shows the following information:
HBIR13 FOUND!
(The satellite that has been pointed is correct)

EXAMPLE 3:



The correct satellite has been pointed.
The lower part of the display shows the following information: EBIR9 < G0 EAST
(move the satellite dish EAST).

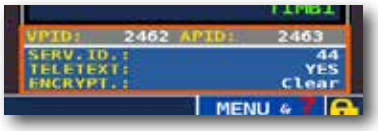
IMPORTANT: The text messages that from time to time will appear on the screen of the instrument when moving the satellite dish to east or west, are bounded to the diameter of the used antenna: 60-80-90 cm etc.
Therefore, using antennas with a small diameter, the messages related to some satellites may not be reported.

NOTE:

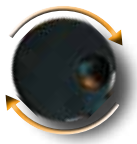
For more information about the "APP"s, contact your distributor or send an e-mail to: wecare@roverinstruments.com

LIST MPEG SERVICE — SHOW AND SELECT AVAILABLE MPEG TS SERVICES

Or touch Vpid - Apid in the measurement windows TV-CATV-SAT



MPEG service list



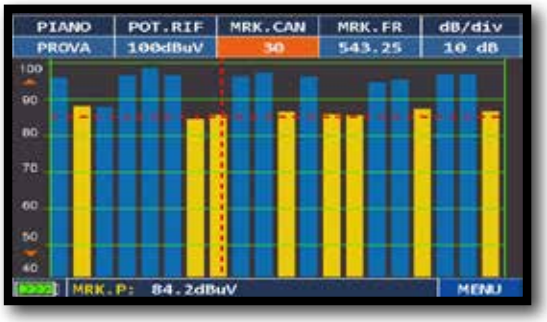
Press ENTER & rotate to navigate, or touch the service required

Press ENTER, navigate in Vpid - Apid & press ENTER to return to the measurements, or press the SAT/TV/CATV measurement key

BARSCAN — LEVEL GRAPH — CHECK ALL CHANNELS LEVEL/POWER

In the TV standard canalization the meter displays the level/power of all channels.
In AUTOMEMORY or MANUMEMORY PLAN the meter displays the memorized channels and distinguishes Analog and Digital signals using 2 different colours

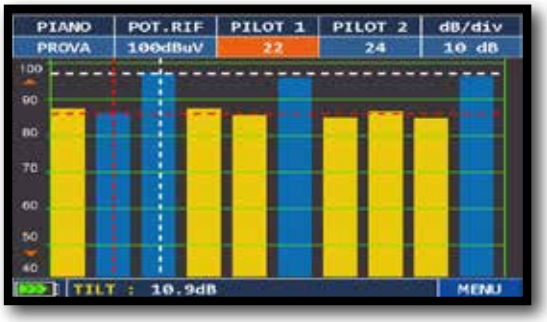
Or



Barscan (graphic LEVEL)

ANALOG CHANNELS

DIGITAL CHANNELS



Touch "PILOT 1" and "PILOT 2" to select the two channels to be used for the tilt measurement (level difference)

Touch "MENU" to choose the bargraph mode: level or tilt

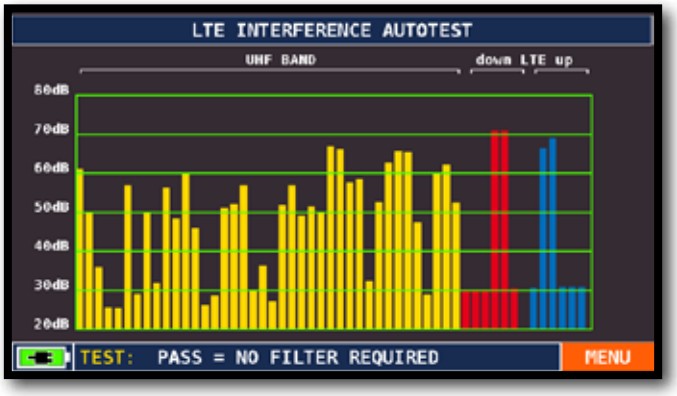
NOTE Function available only in TV or CATV mode

* if the icon is not available in the HOME menu, press the BARSCAN key.

LTE INTERFERENCE AUTOTEST

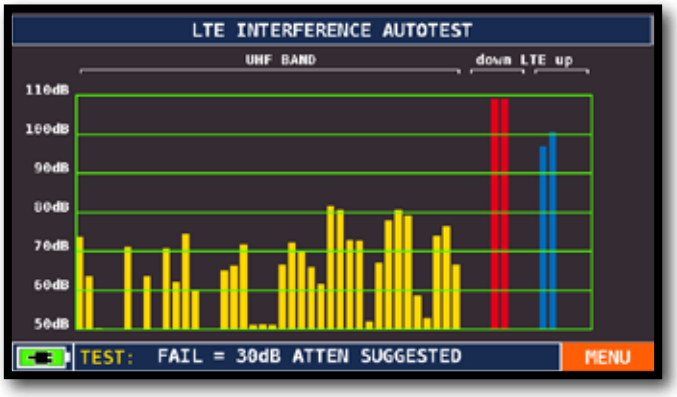
Press the "BARSCAN" key twice to go to the LTE INTERFERENCE AUTOTEST function.
Here you can find some examples:

EXAMPLE 1:



Low LTE interference.
The lower part of the display shows the following information:
PASS = NO filter required

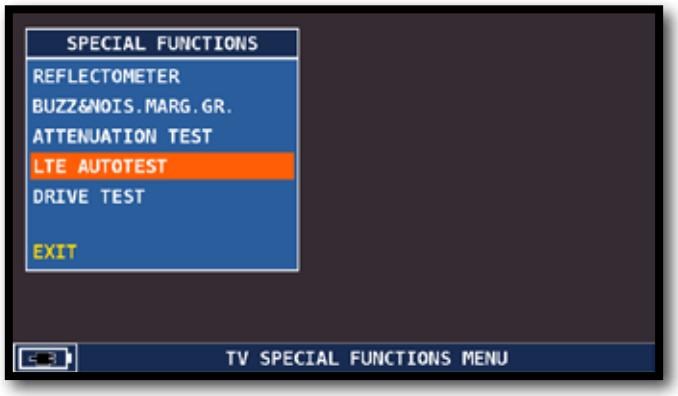
EXAMPLE 2:



High LTE interference.
The lower part of the display shows the following information:
FAIL = 30dB ATTEN SUGGESTED
(The instrument suggests attenuating the interfering LTE signals by 30 dB)

NOTE:
you can reach LTE AUTOTEST directly from the SPECIAL FUNCTIONS.

In TV mode press the HOME key
And touch "SPECIAL FUNCT"



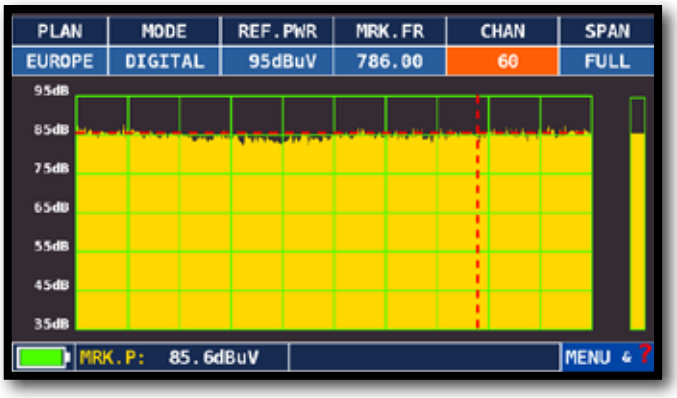
Touch "LTE AUTOTEST"

HD LTE FILTER "APP" (OPT.)

The meter has a built-in LTE hardware FILTER, It reduces any signal interference from the BTS of mobile telephones including the 790-1000MHz band.
The proximity of the receiving antennas and the antennas of the TV CELLS could compromise DTT signal reception due to intermodulations, that may develop in the antenna amplifiers, or directly in the decoder's tuner.
With the LTE filter you can see if the poor quality of the signals of several channels is due to interference / beats that is formed in the headend.

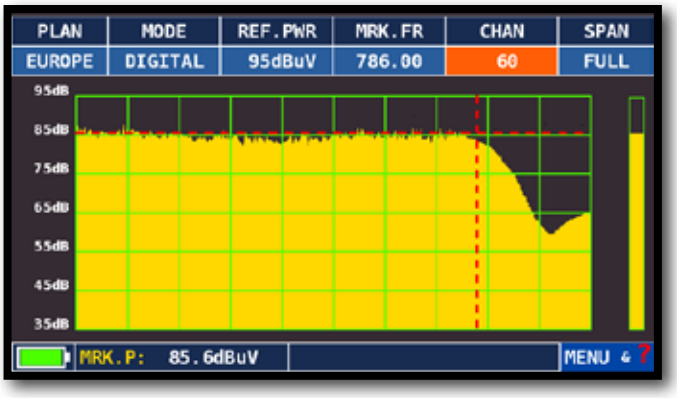
Touch "LTE FILTER" in the volume screen
And select "ON"

EXAMPLE 1:



FULL TV SPECTRUM:
visualization of an RF signal*
in lte filter mode "OFF"

EXAMPLE 2:



FULL TV SPECTRUM:
visualizATION of an RF signal*
in lte filter mode "ON".

NOTE:

- You can check the LTE filter function in spectrum mode, check the LTED filter function in spectrum, measurement and barscan mode.
- * The RF signals shown in the FULL TV SPECTRUM screens were generated using ROVER noise generator Mod. CNG 90 STC;
- For more information about the "APP"s, contact your distributor or send an e-mail to: wecare@roverinstruments.com

TS ANALYZER "APP"

The meter has a built-in TS analyzer. It provides complete ETR101290 coverage and monitoring and carries out analysis of transport streams, whether they are demodulated by one of the RF inputs or Injected through the ASI input.

HOME + ASI-IP ANALYZER	Touch "ASI-IP" from the "HOME" screen	Touch "CHAN" and select the channel to be analysed, or touch INPUT and select the input used.

Pages 1/3: Transport stream bitrate monitoring

DISPLAY ZONES:

1. Trasport Stream total bitrate measurement, of the stuffing rate and number of detected services.
2. Decodes the SI tables, listing the name and bitrate of all services detected in the order declared in the PAT.
3. Composition of the chosen service, listing the PID, the stream _ type information and the bitrate. scroll through the service list (area 2) and the window will automatically update with all the information of the corresponding services.

Pages 2/3: ETR101290 analysis

Touch "NEXT" to visualize the next screen.

The alarm LED status follows the following rules:

1 - Green LED: No alarm currently active;
2 - Red LED ROSSO: Alarm active;
3 - Orange LED: Alarm passed;
4 - Black LED: Alarm not available.

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

"APP" GPS (OPT.)

The meter has an internal GPS receiver. It allows you to carry out the analysis of a GPS reception antenna:

Touch "GPS" in the HOME screen

EXAMPLE 1:

GPS Diagnosis: excellent reception

EXAMPLE 2:

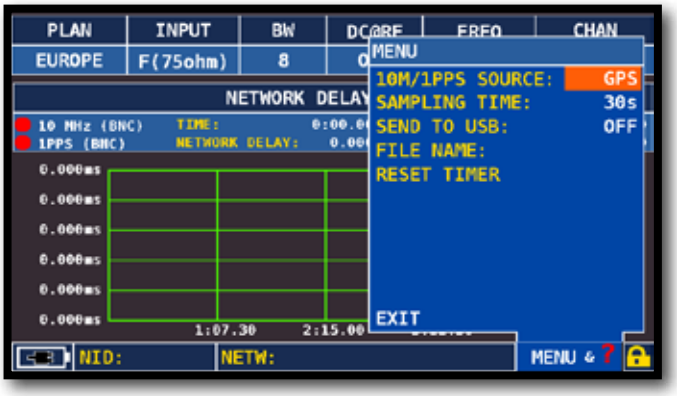
GPS Diagnosis: poor reception

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

"APP" NETWORK DELAY (OPT.)

The instrument has a Network Delay option. This allows you to measure the propagation time of a Transport Stream with MIP (DVB-T SFN).

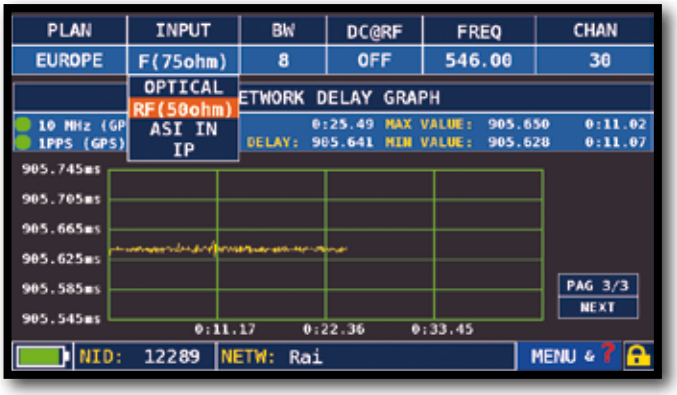
Touch "ASI-IP Analyzer" in the HOME screen



Touch "NEXT" to visualize the "3/3" screen.
Touch "MENU&?" and select:

- The reference source "10M/1 PPS SOURCE GPS or BNC"
- The "SAMPLING TIME" 5, 15, 30 or 60 seconds

EXAMPLE 1:



Touch "INPUT" and select the input source:

- Optical (opt.)
- RF (50 ohm)
- RF (75 ohm)
- ASI IN (opz.)
- IP (opt.)

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

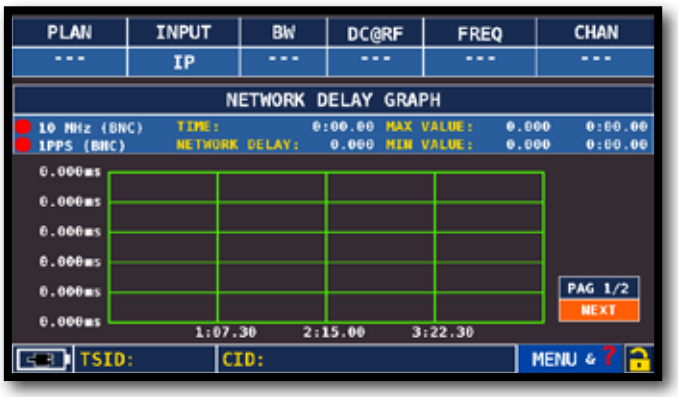
"APP" IP (OPT.)

The meter has a TS over IP input. It can deincapsulate the contents of an IP stream and carry out quality measurements on the IP transport and also decode the transported services.

Touch "ASI-IP Analyzer" from the HOME screen

Touch "INPUT" and select "IP" and wait for the IP board to start up

Connect the IP signal to the TS OVER IP LAN ingress (connettor 13).



Touch "NEXT" and select the 4/4 "IP MEASURES" screen

EXAMPLE 1:

Measurement and decoding example Of a service transported in IP.

NOTE:

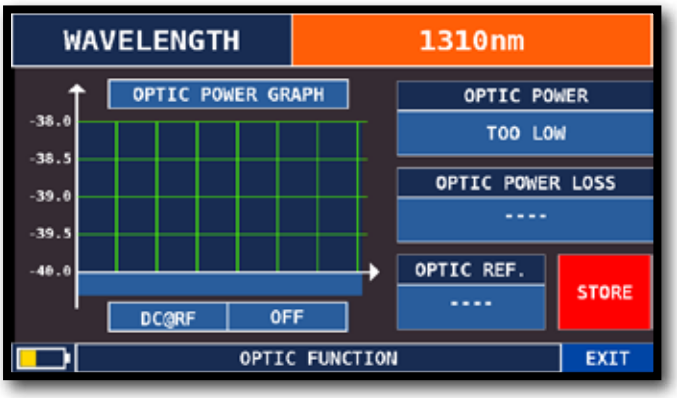
- Touch "IPTV CONFIGURATION" from the "CONFIGURATION MENU" to configurate the instrument parameters (LAN CONFIG IPTV) and IP stream parameters (IP ADDRESS and DESTINATION PORT)
- For more information about the "APP"s, contact your distributor or send an e-mail to: wecare@roverinstruments.com

"APP" OPTICAL

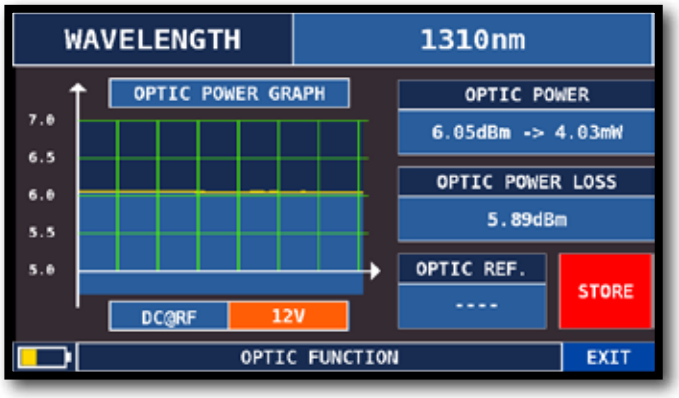
The meter has an internal optical converter. This measures the POWER and OPTICAL ATTENUATION and carries out RF measurements from the optical input, decode the services and visualize the spectrum.

POWER AND OPTICAL ATTENUATION MEASUREMENTS

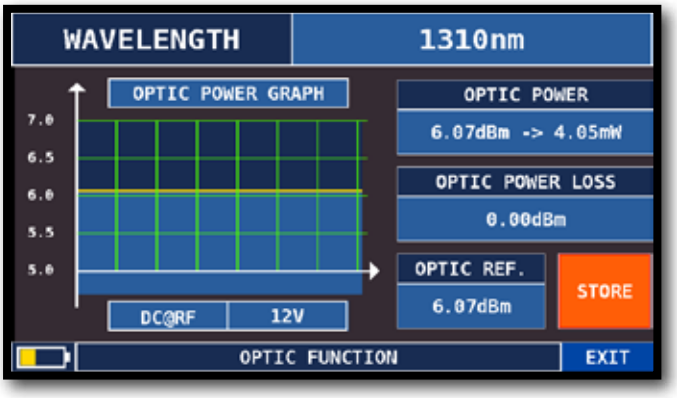
Touch "OPTIC" from the HOME screen



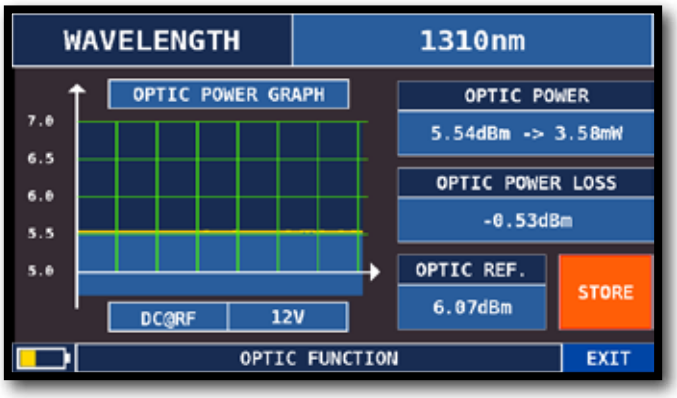
Touch "WAVELENGTH"
and select the required wavelength,
for example 1310nm



Touch "DC@RF"
and select, if it is required, the power
supply voltage: for example 12V.

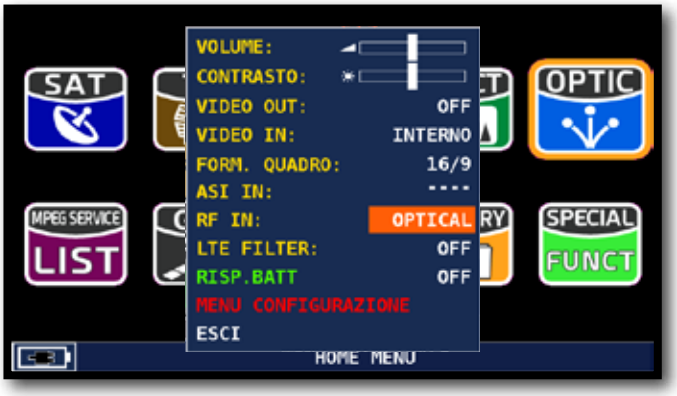


Touch "STORE"
and store the measured optical power value
(Optic Ref.): for example 6,07 dBm

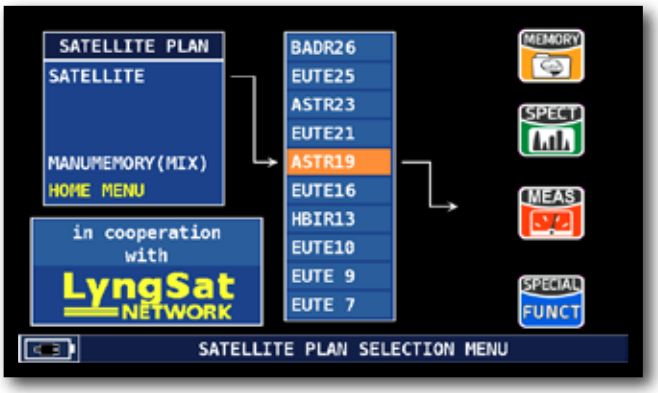


The "OPTIC POWER LOSS" field shows the optical
attenuation value compared to the stored value
(Optic REF): for example: - 0,53 dBm

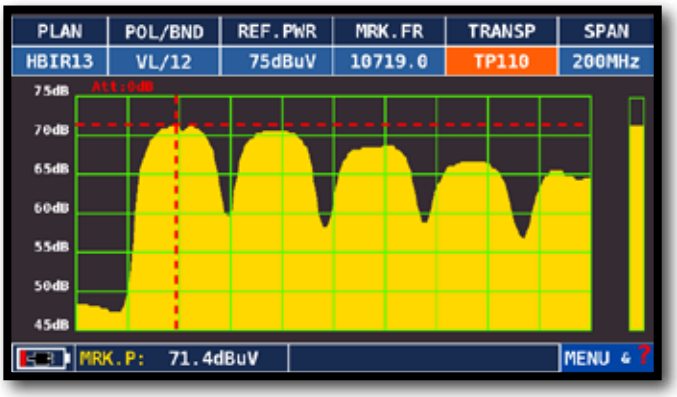
OPTICAL INPUT RF MEASUREMENTS & SPECTRUM



Touch "RF IN" and select "OPTICAL" from the volume screen



In SAT mode press the "PLAN" key, select the satellite required, then "SPECT" to visualize the spectrum

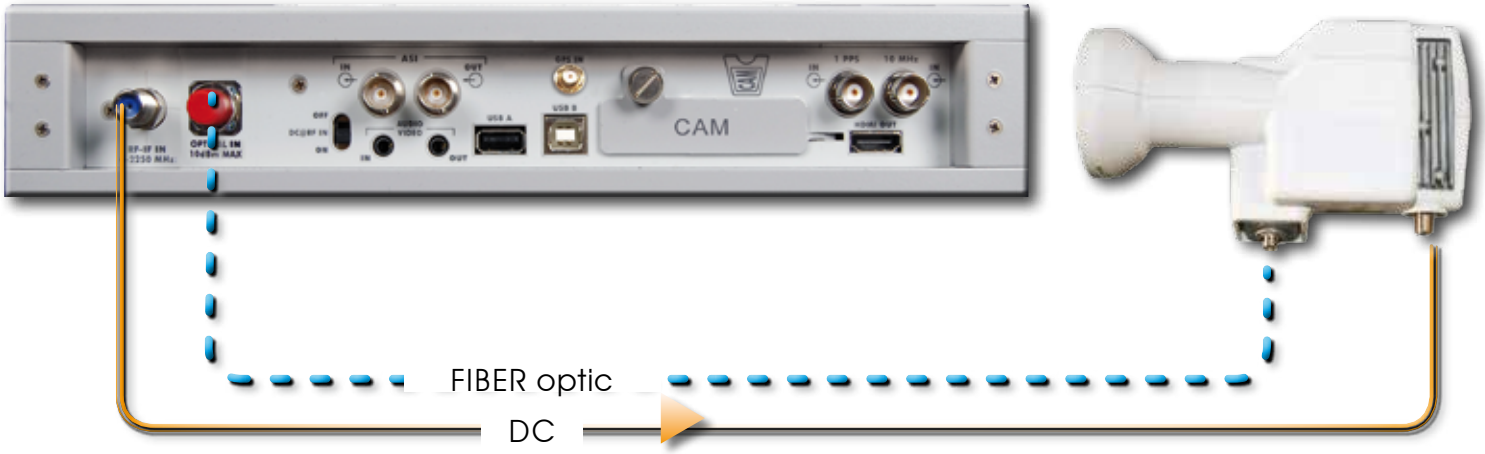


SAT spectrum

Press the "SAT" key to carry out the measurements

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

FIBER OPTIC AND REMOTE POWER SUPPLY CABLE CONNECTION



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

HELP INSPECT THE PARAMETERS OF AN UNKNOWN SIGNAL

The "HELP" function identifies the tuning parameters of a digital tv or sat signal.

HOW TO USE THE "HELP" FUNCTION

Spectrum mode move the "mrk.Fr" to the center of a digital carrier

o
r

In measurement mode when the lock icon is open (the signal is not locked)

Touch

and select

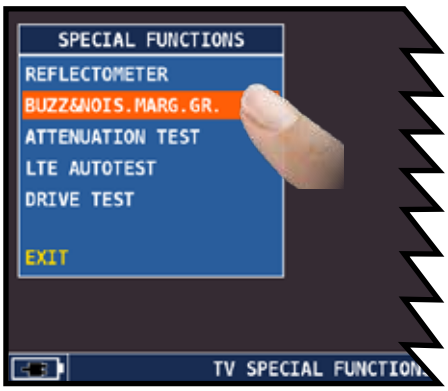
The "HELP" function will try to identify the tuning parameters of the selected digital carrier

At the end of the search (the word "FOUND" will be shown in the 3 boxes) the meter automatically shows the measurement display and the picture of the selected carrier (if available).

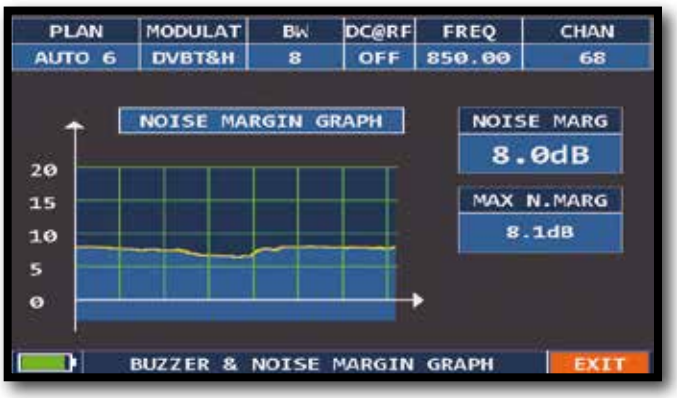
SPECIAL FUNCTIONS

NOTE: the special functions depend on the active operating mode: TV SAT or CATV

TV: BUZZER & NOISE MARGIN GRAPH



Touch BUZZ&NOIS.MARG.GR



Buzzer & Graphic of the progress of the noise NOISE MARGIN of the tuned channel according to time.

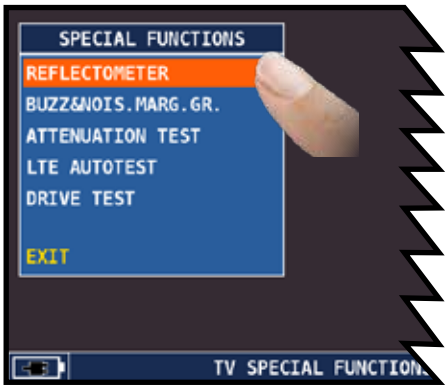
high tones = the BEST Noise Margin level
deep tones = the WORST noise margin level
Noise Marg = real time noise margin
Max n.marg = maximum stored noise margin
MER = MER in real time

NOTE: The function is also available in CATV and SAT mode

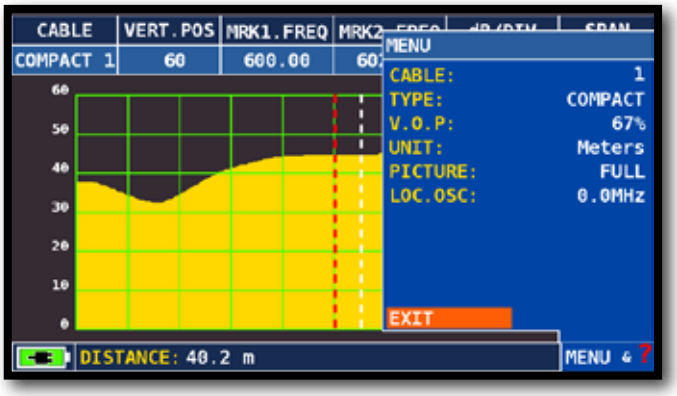
TV: "APP" REFLECTOMETER

The application "HD COAX CABLE REFLECTOMETER" allows you to check the correct impedance matching of a 75Ω distribution installation.

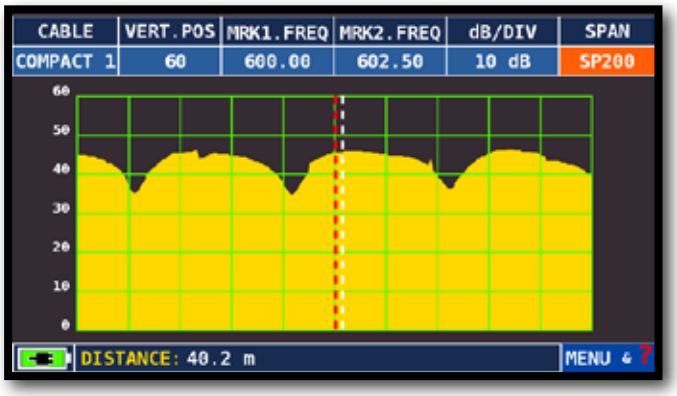
Through the use of a ROVER instrument, combined with a calibrated noise generator (for example the ROVER CNG 90 STC), if in a distribution installation there was an impedance mismatch, such as a cable short-circuit, a cable cut or a not properly terminated cable to a 75 ohm dummy load, it will create a standing wave pattern that can be seen on the spectrum of the instrument as shown in the figures below.



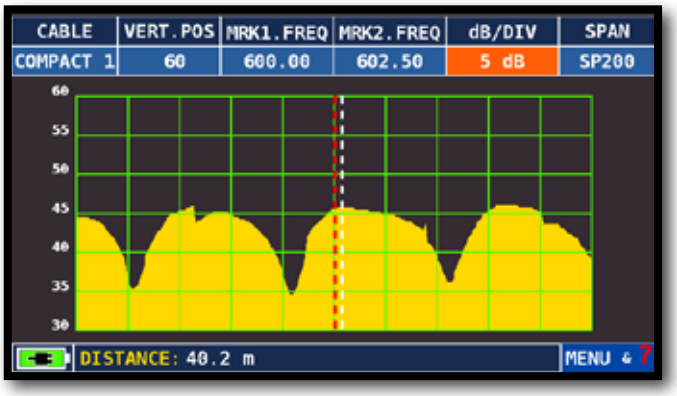
Touch "REFLECTOMETER"



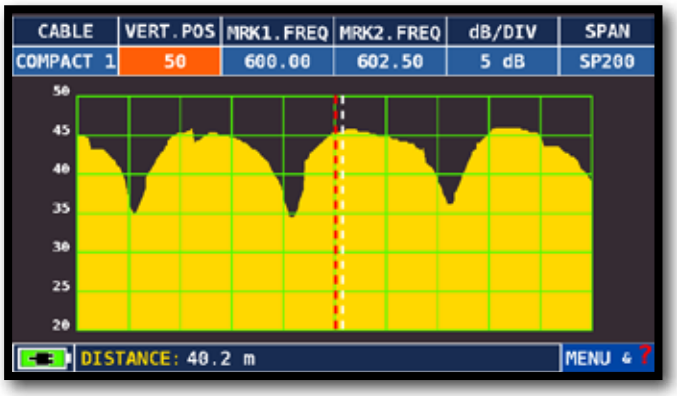
Touch "MENU" and set the features of the coaxial cable you need to analyze (see next page)



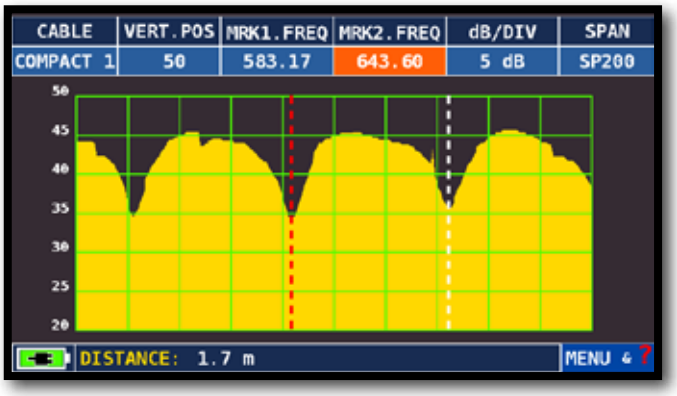
Touch "SPAN" and select the correct visualization value



Touch "dB DIV" and select the correct visualization value

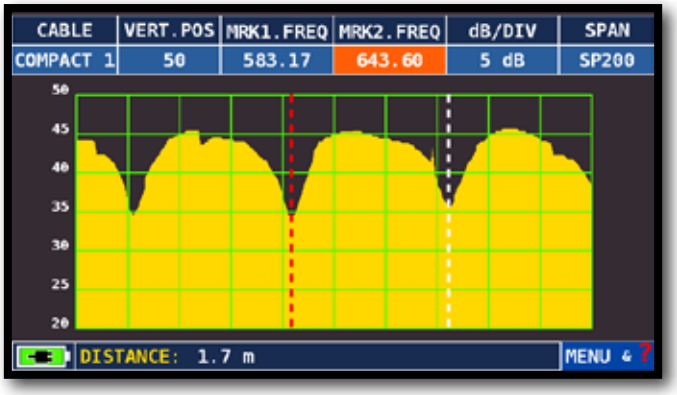


Touch "VERT.POS" and select the correct visualization value



Touch "MRK1.freq" then "MRK2.freq" and set the marker frequencies in correspondence with the first and second minimum points

EXAMPLE 1:



In the DISTANCE window, read the cable's mismatching value: example 1.7 m

CONFIGURATION OF COAXIAL CABLES

Cable: from 1 to 5.

- Default coaxial cable configurations (adjustable).

TYPE: Type of cable to be tested.

- AIRSPACE: coaxial cable with dielectric in the air.
- COMPACT: coaxial cable with compact dielectric.
- FOAM: coaxial cable with foam dialectric.

V.O.P.: Propagation speed.

- Set the value provided by the cable manufacturer.

UNIT: Measurement unit.

- Set the value in meters or feet.

PICTURE: Spectrum graphics.

- Set the spectrum graphics mode to FULL or CONTOURS.

LOC.OSC.: LOCAL TV OSCILLATOR.

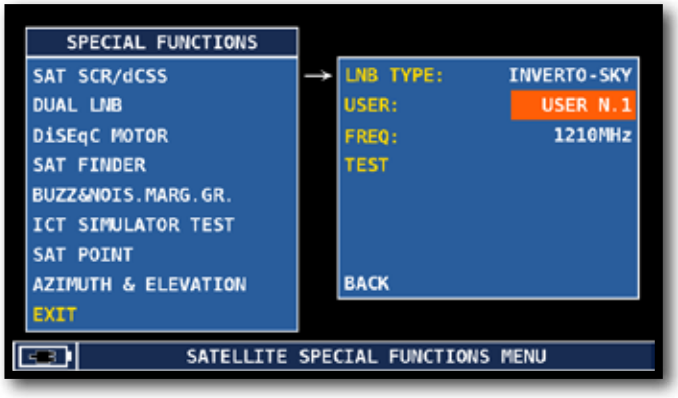
- Leave the value set by the manufacturer: 0 MHz.

CONNECTION DIAGRAM

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

SAT: SAT SCR

Touch "SAT SCR/dCSS"



Touch "LNB TYPE" and choose the LNB/MULTISWITCH model

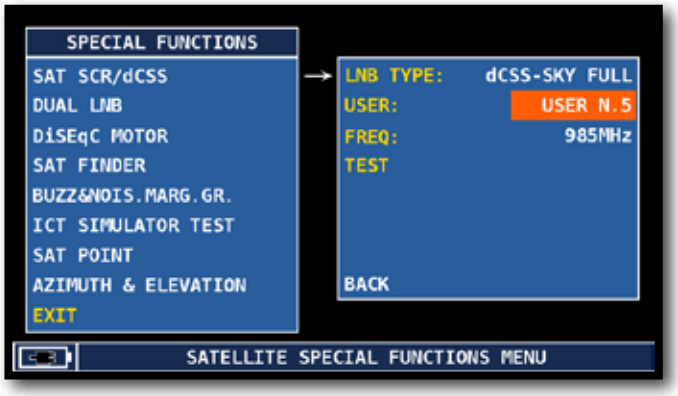
Touch "SCR USER" and choose the user number to test (USER 1-4)

Press "SPECT" to display the spectrum or "MEAS" to start measuring

Or touch "TEST" to perform in spectrum mode the SCR LNB/MULTISWITCH 4 frequencies check (USER 1-4).

SAT: SAT dCSS

Touch "SAT SCR/dCSS"



Touch "LNB TYPE" and choose the LNB/MULTISWITCH model

Touch "SCR USER" and choose the user number to test (USER 5-16)

Press "SPECT" to display the spectrum or "MEAS" to start measuring

Or touch "TEST" to perform in spectrum mode the SCR LNB/MULTISWITCH 8 frequencies check (USER 5-16).

SAT: SAT FINDER

Touch "SAT FINDER"

To change the displayed transponders manually, touch "STOP" and select the wanted tp/ts. Touch "START SEARCH" to start.

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

AUTOMEMORY (TV)

To automatically store all the existing channels in a city or building

Set the desired parameters:

Touch "AUTOMEMORY TV"

Touch "to FILE N" and select the destination file "AUTO" where the search must be saved.

Touch "LEVEL" and set the minimum level threshold of the analog channels searched.

Touch "POWER" and set the minimum power level of the digital channels searched.

Touch "DISCOVERY" and set the channel search mode.

- TERR ONLY (terrestrial only)
- TERR & CABLE (terrestrial & cable)

Touch "START SAVE" to create a new channel plan and to activate the search.

NOTE: If the words "START OVERWRITE" appear, the selected file will be overwritten.
Wait a few mins, the meter indicates the recorded ANALOG & DIGITAL CHannels

Upon automemory completion the new plan is automatically selected

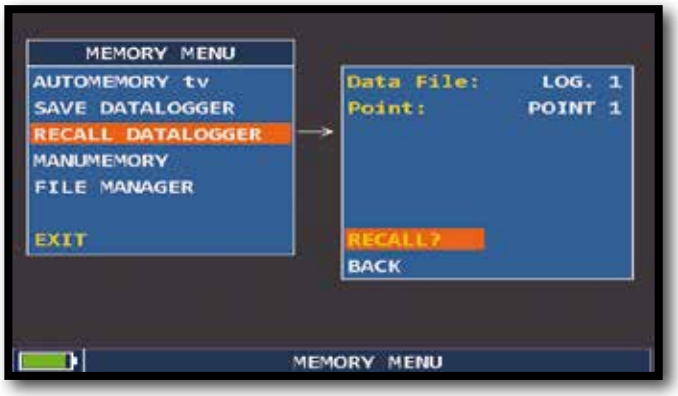
LOGGER SAVE

Touch "SAVE DATALOGGER" and set the parameters required. Touch "START SAVE" to create a new log file

DATA LOGGER run

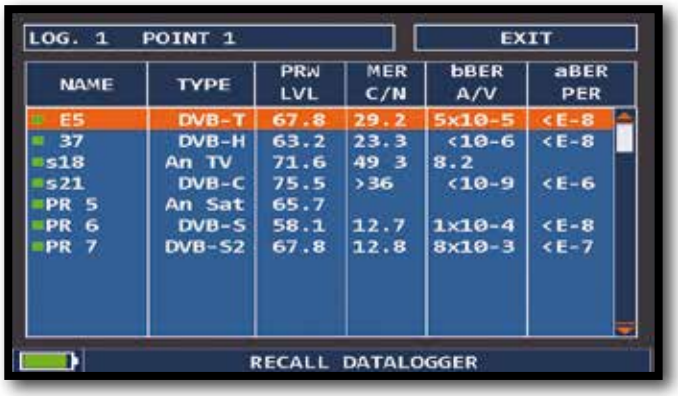
NOTE: if the MANU plan has mixed TV and SAT programs, the STOP&GO function will assist when running a LOGGER asking to move the cable lead from a TV to a SAT signal source or vice-versa.

LOGGER RECALL



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

EXAMPLE 1:



Browse through measurements saved in the log file

Rotate to navigate

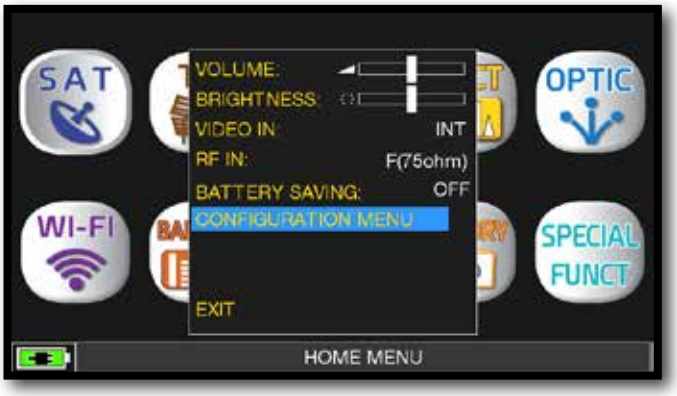
NOTE: The MENU (written and graphic) may vary from model to model without notice.

OPTIONAL "APPs"

REMOTE CONTROL

The SW REMOTE CONTROL application allow to configure and memorized the instruments
And all measurements remotely via web browser (PC, TABLET and SMARTPHONE)

"DHCP" CONFIGURATION EXAMPLES.



Touch "CONFIGURATION MENU"
From "VOLUME" screen.

Touch "METER" and then
"LAN CONFIGURATION".

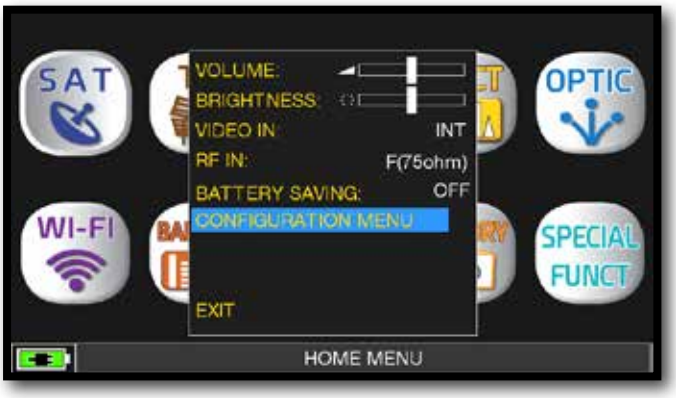
Touch "IP CONFIG" and select "DHCP".

Touch "CHECK".

IP address assignment to be inserted
into the web browser done.

At the end touch "EXIT" to exit.

EXAMPLE OF "STATIC" CONFIGURATION.



Touch "CONFIGURATION MENU"
From "VOLUME" screen.

Touch "METER" and then
"LAN CONFIGURATION"

Touch "IP CONFIG" and select
"STATIC", insert the "IP", "NMASK" and
"GWAY" parameters.

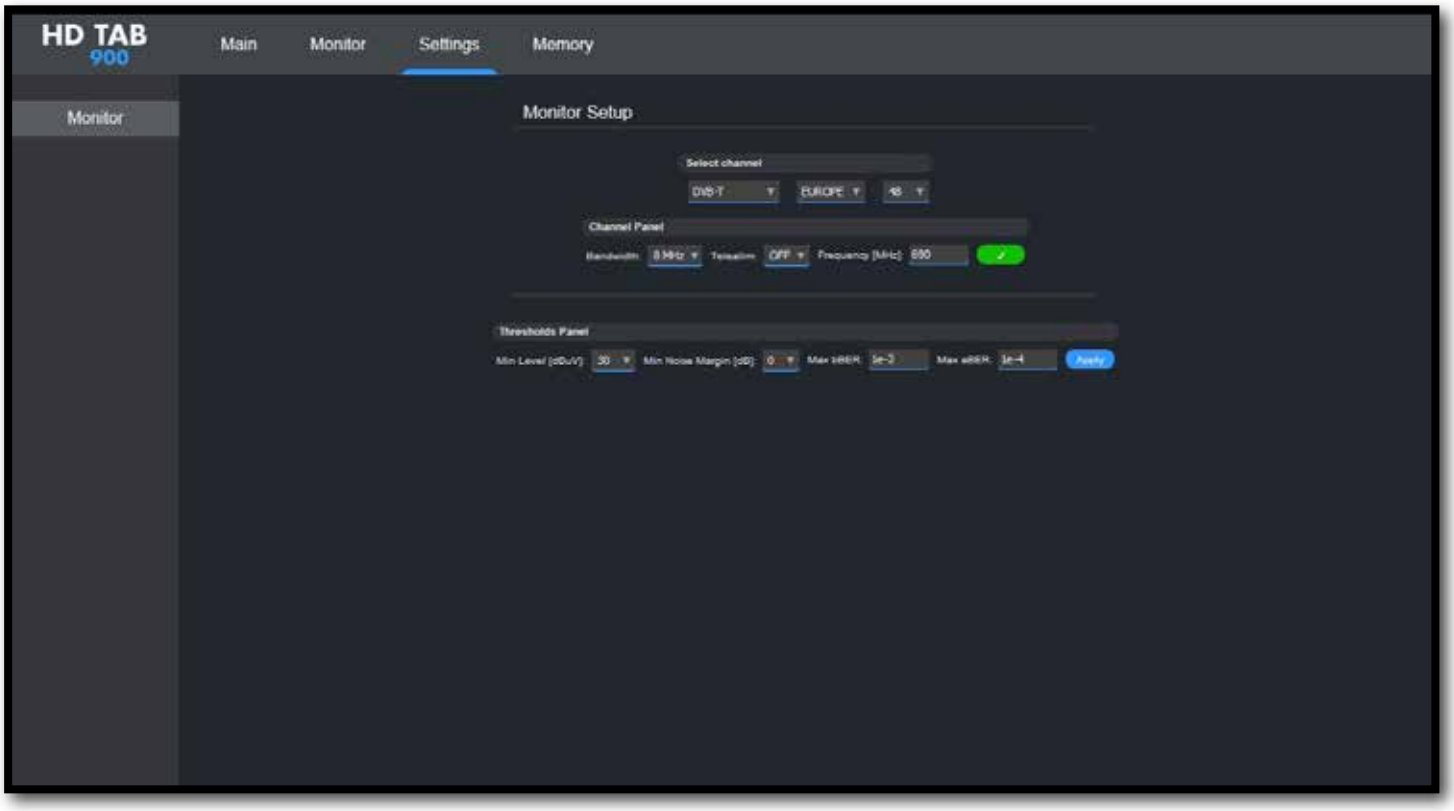
Touch "CHECK".

At the end touch "EXIT" to exit.

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

REMOTE CONTROL INTERFACE

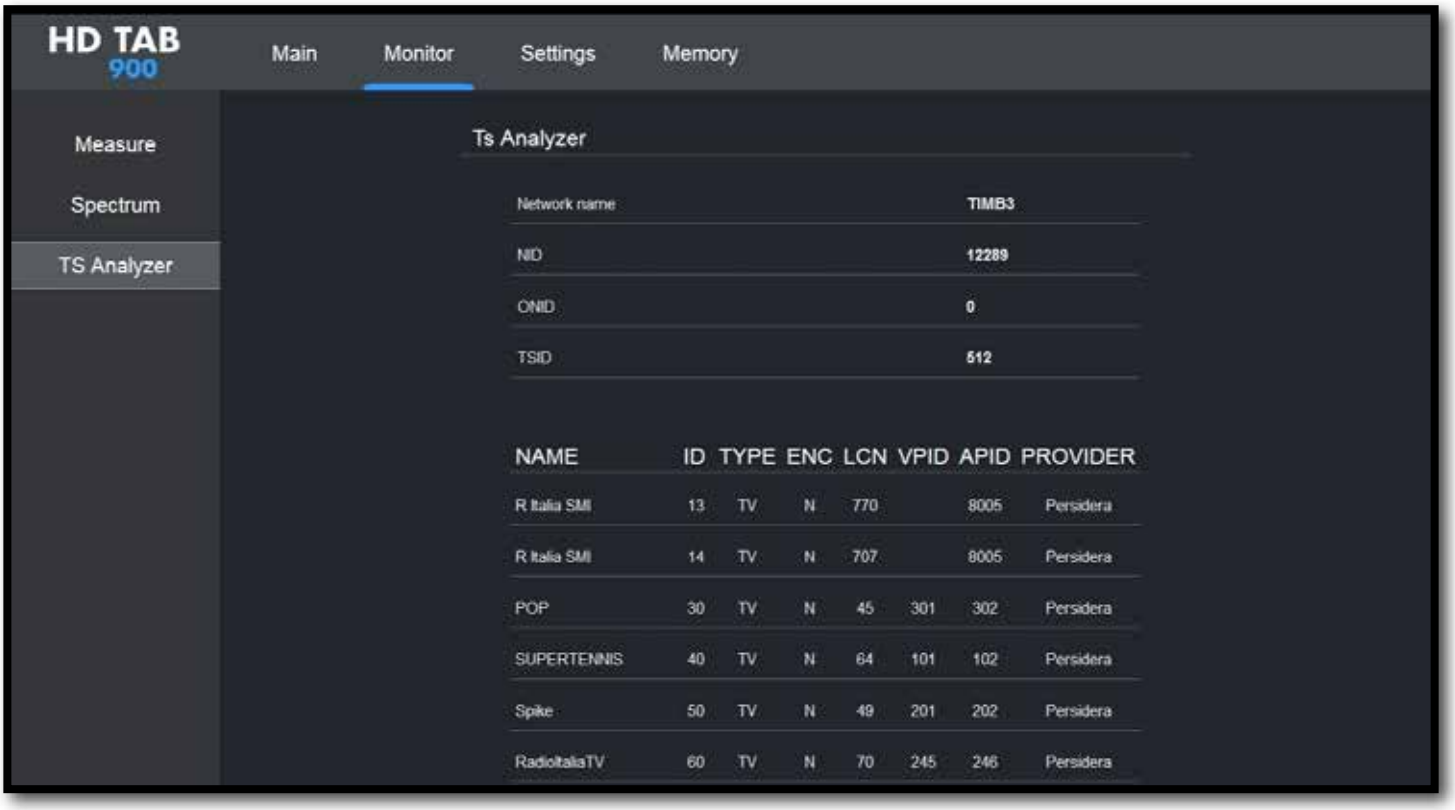
1. Open a web browser
2. Write the assigned IP address, example 192.168.15.134/index.html



Example of SETTING a TV RECEPTION CHANNEL (DVB-T Standard)
And the related ALARM THRESHOLDS (THRESHOLDS)

Example of MEASUREMENTS of a TV CHANNEL (DVB-T Standard)
And related screen of IMPULSE RESPONSE (ECHOES)

Example of DISPLAY of a TV SPECTRUM, SPAN 50 MHz



Example of TRANSPORT STREAM ANALYSIS

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 S.M.A.R.T. program on your PC.
This program enables you to carry out SW upgrades and/or upload Memory Plans (.mem).
There are two types of S.M.A.R.T. program: S.M.A.R.T. PRO for all ROVER Meters and S.M.A.R.T. FAST for PDA models only.
The S.M.A.R.T. program has two versions: Standard and PRO. The S.M.A.R.T. PRO is initially functional for 30 days free of charge. The S.M.A.R.T. PRO version (if you have not acquired the respective APP) automatically expires after 30 days and becomes SMART Standard.
To purchase the S.M.A.R.T. PRO APP contact the ROVER Technical Service Department.

- The S.M.A.R.T. Standard program allows you to continuously update your Meter's SW;
- The S.M.A.R.T. PRO program allows you 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)**. The 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 showing the upgrade advancement blocks, 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 section **"F.A.Q.".**

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.".**

LI-ION POLIMER BATTERIES

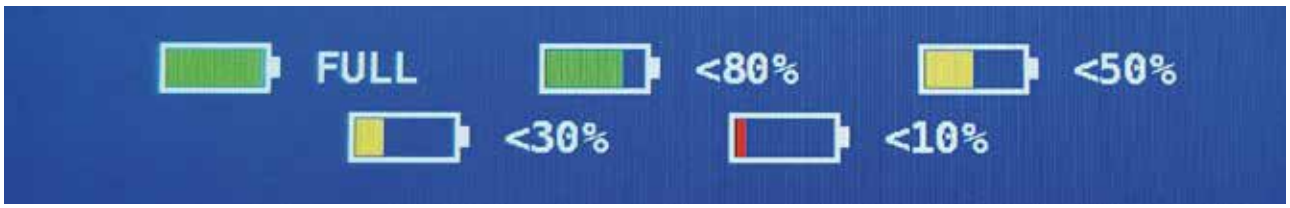
IMPORTANT:

- ALWAYS TURN THE INSTRUMENT OFF BEFORE CONNECTING THE BATTERY CHARGER;
- DO NOT LEAVE THE BATTERIES DISCHARGED FOR LONG PERIODS;
- ALWAYS CHARGE THE BATTERIES AT NIGHT FOR AT LEAST 7 HOURS, 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 6 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.

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.

PREREQUISITES:

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;

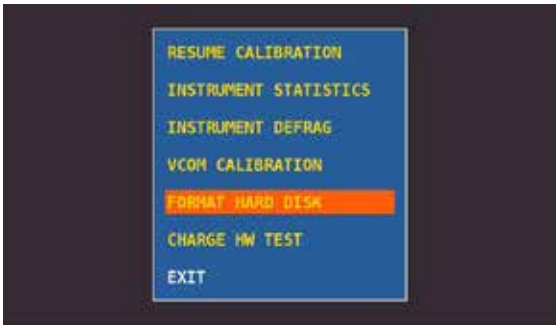


Figure 1: Menu selection
"FORMAT HARD DISK"

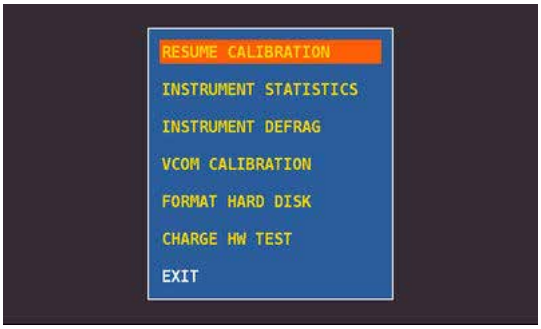


Figure 2: Menu selection
"RESUME CALIBRATION"

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.

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
OFF	NO	OFF	OFF	Batteries sufficiently charged
ON	NO	OFF	OFF	Battery operation
OFF	NO	OFF	Flashing 2 SECONDS OFF 0.5 SECONDS ON	The meter does not turn on. Recharge the batteries.
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 fast charge
OFF	YES	ON	OFF	Battery charge completed
OFF	**WITH A POWER SUPPLY NOT FROM ROVER**	Flashing 0.5 SECONDS OFF 0.5 SECONDS ON	OFF	**The meter does not turn on. Check the mains power adapter**
turning ON	NO or YES	FLASHES 15 TIMES	OFF	The meter is being turned on
ON	NO or YES	FLASHING SIMULTANEOUSLY 0.5 SECONDS OFF - 0.5 SECONDS ON		The meter detects an error and turns off automatically.
ON	YES	FLASHING ALTERNATIVELY 1 SECOND OFF - 1 SECOND ON		BATTERY TEST being carried out. The meter charges and discharges the batteries AUTOMATICALLY

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.

NOTES

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*

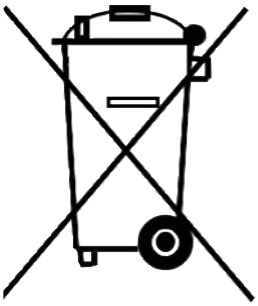
   d. Please note that the request for an estimate of repair costs must be submitted upon return of the analyzer with a written note. If the repair cost estimate is not accepted, ROVER Laboratories reserves the right to charge the customer for the estimate costs analysis.

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.

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

(*) 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	2x10 −6	2x10 −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	<1x10 −7	<1x10 −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	2x10 −6	2x10 −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	1x10 −7	1x10 −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	1x10 −3	<1x10 −6
bBER post Trellis	3x10 −6	<1x10 −8
aBER pre R.S.	3x10 −6	<1x10 −8
MER	16 dB	23 dB

ROVER INSTRUMENTS

made in Italy

ACCESSORIES SUPPLIED

LIST OF PROVIDED ACCESSORIES:

- Soft BAG
- Removeable side pocket for tools and accessories
- Shoulder strap
- Safety antenna mast attachment Strap
- USB 2.0 cable for PC connection
- Audio Video 3 x RCA Male - JACK 3.5 mm Male, 1.8 M. cable
- Audio Video 3 x RCA Female - JACK 3.5 mm Male, 1.8 M. cable
- Battery charger power supply
- Vehicle battery charger adapter
- DiSEqC switch, 2 inputs for dual LNB pointing
- User guide (hard copy, available soon)
- User guide (CD)
- Quick guide
- F Female - F Female connector
- BNC Female - F Female connector
- IEC Female - F Female connector
- QUICK F Male - F Female connector
- N Male - 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.

NOTES

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Wecare@roverinstruments.com

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Designed in Europe, Assembled in Europe
RO.VE.R. LABORATORIES S.p.A. Via Parini 2, 25019 Sirmione (BS) Italy tel. +39 030 9198 1 fax +39 030 990 6894