ATLAS NG

UNIVERSAL BROADCAST ANALYZER

PROMAX

NOTES ABOUT THE MANUAL

Read the user's manual before using the equipment, mainly **SAFETY RULES** paragraph.

The symbol ⚠ on the equipment means "**SEE USER'S MANUAL**". In this manual may also appear as a Caution or Warning symbol.

WARNING AND CAUTION statements may appear in this manual to avoid injury hazard or damage to this product or other property.

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ELECTRONIC MANUAL VERSION

You can access instantly to any chapter by clicking on the title of the chapter in the table of contents.

Click on the arrow ⬅ at the top right page to return to the table of contents.

At Index, click on a page number to access the related content.

Click on the **link** or scan the **QR code** inside de video boxes ▶ in order to play a tutorial video.

USER'S MANUAL VERSION

Manual Version	Web Publication Date	Firmware Version
F2.1	October 2023	1.5.0

■Please update your equipment to the latest firmware version available.

WHAT'S NEW on manual F2.0

- •New: Booting up sequence ("► Switching On:" on page 10).
- •New: Advanced tool: Drive Test ("Drive Test" on page 54).
- •New: Shoulder Attenuation tool ("Shoulder Attenuation" on page 40).
- •New: Audio levels tool ("Audio levels" on page 35).
- •Improvement: New section "Screenshot" ("Screenshot" on page 14).
- •Improvement: New section "Firmware update" ("Firmware Update" on page 18).
- •Improvement: New section "Channel plan Edition" ("Channel Plan Editor" on page 14).
- •Improvement: New section "Top menu" ("Top Menu" on page 13).

- Improvement: New chapter "Workspaces" ("WORKSPACES" on page 60).
- Update: Description of input impedance option ("Top Menu" on page 13).
- Update: More and better specifications ("SPECIFICATIONS ATLAS NG" on page 70).
- Update: Change of side micro-USB connector to USB-C ("Equipment Details" on page 7).
- Update: Optical power meter ("Optical Power Measurement" on page 52).
- Update: New videos ("MULTIMEDIA CONTENT" on page 92)
- Update: HDMI trademark.
- Improvement: Better figures definition.
- Others: Other minor updates and improvements.

SAFETY RULES

* The safety could not be assured if the instructions for use are not closely followed.

* Use this equipment connected only to systems with their negative of measurement connected to ground potential.

* The AL-103 external DC charger is a Class I equipment, for safety reasons plug it to a supply line with the corresponding ground terminal.

* This equipment can be used in Overvoltage Category I installations and Pollution Degree 2 environments.

* External DC charger can be used in Overvoltage Category II, installation and Pollution Degree 1 environments.

* When using some of the following accessories use only the specified ones to ensure safety:

        ■ Rechargeable battery
        ■ External DC charger
        ■ Car lighter charger cable
        ■ Power cord

* Observe all specified ratings both of supply and measurement.

* Remember that voltages higher than 70 V DC or 33 V AC rms are dangerous.

* Use this instrument under the specified environmental conditions.

* When using the power adaptor, the negative of measurement is at ground potential.

* Do not obstruct the ventilation system of the instrument.

* Use for the signal inputs/outputs, specially when working with high levels, appropriate low radiation cables.

* Follow the cleaning instructions described in the Maintenance paragraph.

SAFETY SYMBOLS

----	DIRECT CURRENT	|	ON (Supply)
∿	ALTERNATING CURRENT	◯	OFF (Supply)
∿	DIRECT AND ALTERNATING	▣	DOUBLE INSULATION (Class II protection)
⏚	GROUND TERMINAL	⚡	CAUTION (Risk of electric shock)
⏚	PROTECTIVE CONDUCTOR	⚠	CAUTION REFER TO MANUAL
⏚	FRAME TERMINAL	⊏⊐	FUSE
▽	EQUIPOTENTIALITY	♻ 🗑	EQUIPMENT OR COMPONENT TO BE RECYCLED

DESCRIPTIVE EXAMPLES OF OVER-VOLTAGE CATEGORIES

* **Cat I**: Low voltage installations isolated from the mains.

* **Cat II**: Portable domestic installations.

* **Cat III**: Fixed domestic installations.

* **Cat IV**: Industrial installations.

CAUTION:	The battery used can present danger of fire or chemical burn if it is severely mistreat. Do not disassembly, cremate or heat the battery above 100 °C under no circumstances.

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UNIVERSAL BROADCAST ANALYZER

ATLAS NG

1 INTRODUCTION

1.1 Description

The new **ATLAS NG** is the eighth generation of field meters that **PROMAX** launches. As each new generation, it represents an evolution from the previous, since it integrates the latest technological innovations and develops applications for the new demands and needs that have emerged in recent years.

The new **ATLAS NG** has been created with the aim to make easy the user experience. Everything has been designed so the equipment can be fully operated using the 10" multitouch display (even using wearing gloves). The friendly interface has been designed so the user has a simple tool to use but powerful. The new outer frame offers extreme ruggedness maximizing grip and ease of handling.

Figure 1.

The **ATLAS NG** is a universal analyzer that covers the most stringent requirements for broadcast professionals. It covers all standards developed by ISDB and the DVB consortium, as well as the ISDB and ATSC standard, including the next generation versions for these standards, like the ATSC 3.0 and DVB-S2x.

Besides the basic functions of TV meter and spectrum analyzer for terrestrial and satellite band, the **ATLAS NG** can analyze signals from IPTV, Transport Streams, SDI, WiFi, OTT and fiber optics. The frequency range arrives to 6 GHz,

covering the S and C bands, used by technologies like teleports or broadband wireless.

The **ATLAS NG** has a variety of input-output connectors that allows the user to work with most of the broadcast signals: N-type universal, 1PPS, FC/APC, ASI-SDI, SFP+, Ethernet among others. It also incorporates HDMI™ technology that allows audio and video output to be displayed on an external screen. Additionally, it can be connected to a network and remotely managed very easily using a standard web browser.

In an effort to facilitate its work to professionals, our long experience ensures an after sales quality service. In addition, there are software updates periodically released, that add functions and improvements to the equipment.

The **ATLAS NG** has been designed and developed entirely in the European Union. A multidisciplinary team of highly qualified professionals has dedicated effort and commitment to the development of a powerful, efficient and reliable tool. During the manufacturing process, all used materials have been subjected to a strict quality control.

Figure 2.

Introducing the ATLAS NG (01:30s)

S
C
A
N

2 SETTING UP

2.1 ▮ Package Content

Check that your package contains the following elements:

- **ATLAS NG** Universal Analyzer.
- External DC charger.
- Mains cord for external DC charger.
- Car lighter charger.
- GPS receiver.
- Dongle WiFi.
- BNC/m-TV/f IEC adapter.
- Aero N/m-F/f adapter.
- N/m-BNC/f adapter.
- Carrying bag.
- Support belt.
- 4V/RCA Jack Cable.
- Monopod.
- Transport suitcase.
- Quick Start Guide.

NOTE: Keep the original packaging, since it is specially designed to protect the equipment. You may need it in the future to send the analyzer to be calibrated.

2.2 ▮ Power

The **ATLAS NG** is powered by a 7.4 V built-in rechargeable Li-Po battery of high quality and long operation time. This equipment can operate on battery or connected to the mains using a DC adapter. An adapter is also supplied to use with the power connector car (cigarette lighter).

2.2.1 First Charge

The equipment comes with the battery half charged. Depending on the time elapsed from first charge and environmental conditions may have lost some of the charge. You should check the battery level. It is advisable a first full charge.

2.2.2 Charging the Battery

Connect the DC power adapter to the equipment through the power connector on the left side panel (see figure).

Figure 3.

Then connect the DC power adapter to the mains via the mains cord. Ensure that your mains voltage is compatible with the adapter voltage.

For a fast charging is necessary to switch off the equipment.

If the equipment is ON, the battery charge will be slower, depending on the type of work you are doing. When connecting the equipment to the mains the mains connected symbol appears inside the battery icon.

The charger led indicates the battery status:

- **Red**: Charging.
- **Green**: Charge finished.
- **Blinking**: Battery not detected.
- **Off**: Battery is discharging.

When switching on the equipment, the battery voltage is checked. If the tension is too weak to start, the equipment does not start up. In this case please charge the battery immediately.

2.2.3   Charge / Discharge Times

Average charging time with the equipment off (fast charge):

- 3 hours to achieve an 80% charge.
- 5 hours to achieve a 100% charge.

With the equipment on (slow charge):

- 5 hours to achieve an 80% charge.
- 8 hours to achieve a 100% charge.

Average discharge time (with external supply disabled):

- With the battery full charge the average battery time is 5:00 hours.
- With the battery at 80% charge the average battery time is 4 h.

2.2.4   Energy Saving

These options are available in the menu Settings -> Appearance.

- **Power Off**: It allows the user to select the time to power off, which is the time after which the equipment shuts down automatically unless pressing any key. Time options are: off, 1, 5, 10, 15, 30 o 60 minutes.
- **TFT Screen**: User can select a time after which the TFT screen turns off, but the equipment is still running normally. The equipment can measure (for example, making a datalogger or channel exploration) and the battery will last longer, about 10% more. The screen turns on by pressing any key. Time options are: off, 1, 5, 10, 30 or 60 minutes.

2.2.5   Smart Control Battery

The built-in battery of the equipment is of the "**smart**" type, which means that reports its state of charge. This information can be shown on screen by enabling the "Battery time" option. It shows the average time available next to the battery icon. In this way the user knows at any time the remaining battery level.

The remaining time charge that appears is calculated according to the work that has been doing. If the external supply is working, the average time would be reduced according to the increase in consumption that occurs.

2.2.6	Usage Tips

The battery is losing storage capacity as you go through its life. Contact your **PROMAX** distributor when necessary to replace the battery.

To extend battery life the user should follow these tips:

- In case of providing a long inactivity period of the equipment it is advisable to make every 3 months a charge / discharge cycle and a subsequent partial charge (40% aprox.).
- It is advisable to keep it in a cool place and away from heat.
- You should avoid keeping the battery for a long period of time at full load or fully discharged.
- There is not necessary to wait to fully discharge before a charge because these batteries have no memory effect.

2.3 | Equipment Details

| | Inputs and Outputs (03:13s) | S C A N |

Figure 4. Front View.
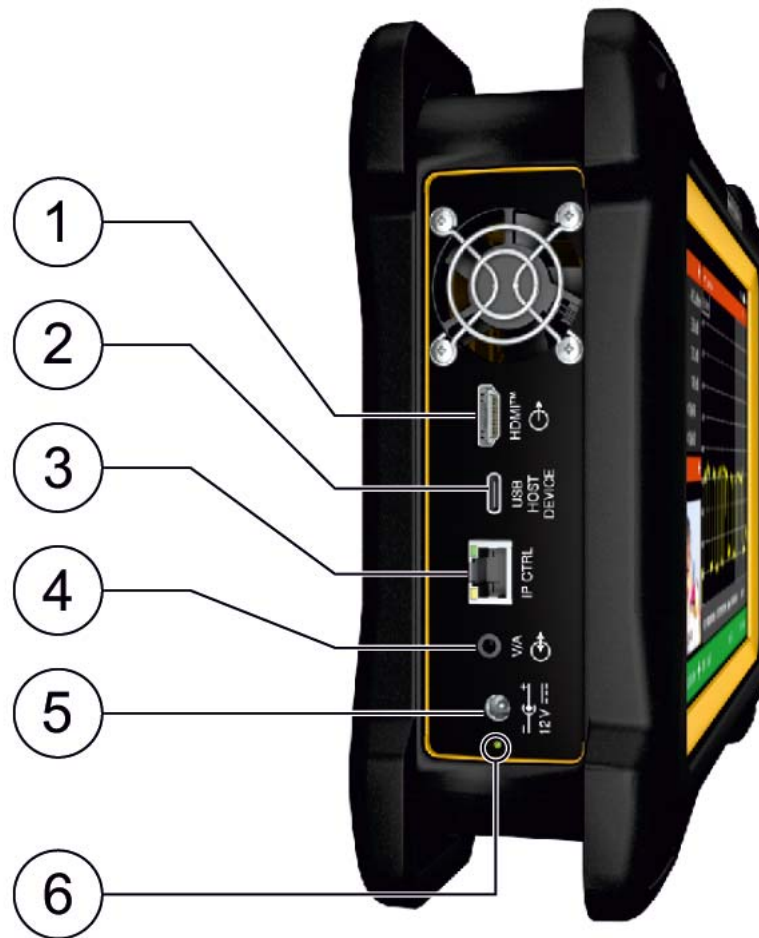
Figure 5. Left Side View.

1 Output with HDMI™ technology (supports HDMI 1.4b with 2.9 Gb/s and up to 3840x2160 @ 30 Hz).

2 USB-C Host/Device connector (selectable).

3 RJ45 connection for remote management.

4 Analogue Video/Audio input/output.

5 Power input connector.

6 LED indicator for battery charge level.
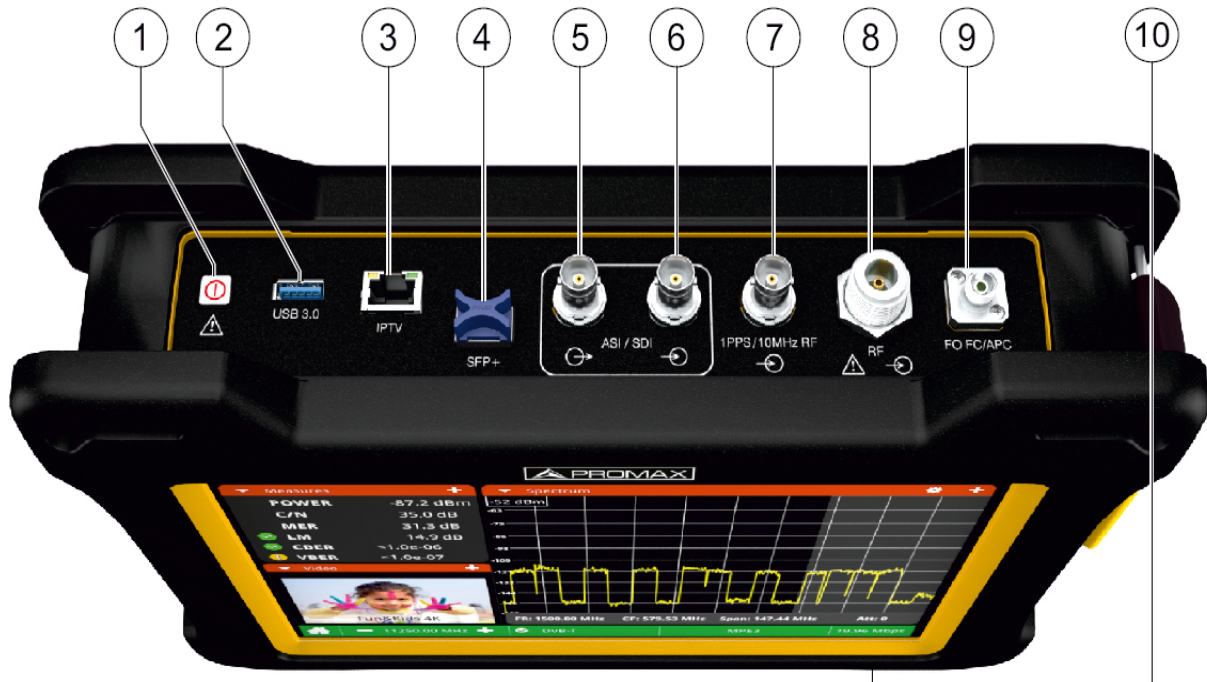
Figure 6. **Top View**.

1 ON/OFF. Press for an instant to switch on/off.

2 USB 3.0 port for WiFi dongle, GPS receivers or USB drives.

3 RJ45 connector for IPTV or OTT signal analysis.

4 SFP+ transceiver compatible with GE and fiber optics.

5 ASI/SDI output signal.

6 ASI/SDI input signal.

7 Input for reference synchronism signal 1PPS or 10 MHz.

8 Radio frequency input signal (RF).

9 Fiber optics input.

10 CAM module slot.

2.4		**Switching On/Off**

►**Switching On:**

1 Press the power on/off button located at the top of the device for a few moments. The SFP+ connector's LED lights will turn on, and the fans will start running to indicate that the device is booting up.

2 The boot screen appears and also a progress bar that indicates the system is loading.

3 After the system loads, it shows the same status before power off.

►**Switching Off by software (recommended):**

1 Press the switching off icon ⏻ at the main screen.

2 Select "Power Off" or "Reboot".

►**Switching Off by button:**

1 Press the ON/OFF button placed on the top of the equipment.

►**Switching Off by software (Energy save):**

1 Press the Settings icon ⚙ from the main screen.

2 Press the Appearance icon.

3 The option "**Power Off**" allows the user to enable the automatic shutdown option. Select a waiting time (time without pressing any key and the meter not working) after which the equipment turns off automatically.

> **NOTE:** The equipment keeps its last status (mode and screen) which is recovered when power on.

2.5		**Reset**

How to **RESET**: Hold down the ON/OFF key for 10 seconds until the equipment switches off.

When to **RESET**:

- ■ **When it crashes and does not respond to any key**.
- ■ **When it does not switch on**.
- ■ **When it does not finish the boot process**.

2.6   Icons

Icons on screen provide useful information about the equipment:

Icon	Description	Icon	Description
ATT	Attenuator: The input signal has an adequate level.	✓	Signal Quality according to threshold: Correct quality.
ATT	Attenuator: The input signal is over-attenuated.	!	Signal Quality according to threshold: Quality close to threshold.
ATT	Attenuator: The input signal is saturated.	✗	Signal Quality according to threshold: Not acceptable quality.
50Ω	RF Input Impedance: 50 Ohms.		Outdoor unit power supply: Power off.
75Ω	RF Input Impedance: 75 Ohms.	18V	Outdoor unit power supply: It shows selected voltage.
⚡	Battery charging.	18V	Outdoor unit power supply: It shows selected voltage and 22 kHz signal activated.
▮	Battery in use.		

2.7　Home Menu

To access the Home Menu from any screen press the PROMAX logo ▲ at the left bottom corner.

From the Main Menu you can access the main tools as described below.

- 📺🔍 TV Analyzer: Tool to analyze and demodulate terrestrial, CATV or FM signals (from 45 to 1000 MHz) and satellite (from 250 to 2350 MHz) (for more details refer to).

- 📊🔍 Spectrum Analyzer: Tool to tune and measure RF (power and C/N) signal from 5 MHz to 6 GHz.

- **ip** IPTV: Tool to inspect in detail IPTV streams.

- **S**ASI ASI: Tool to analyze Transport Streams.

- **S**SDI SDI: Tool to analyze SD-SDI, HD-SDI and 3G-SDI.

- 📖 Manual: Quick guide and complete user manual.

- ⚙️ Settings: Access the settings menu (for more details refer to).

2.8 Top Menu

To access the Top menu from any screen, swipe down from the top of the screen.

From the Top menu, you can access various management options. Some options are only available in certain modes.

The options are described below:

- Workspace: It allows you to manage the workspace folders where data and resources are stored (for more information refer to "WORKSPACES" on page 60).

- USB: It allows you to manage the type of connection (host/slave) to the device connected to the USB 3.0 port. It also allows you to unmount the connected device.

- GPS: It allows you to manage the GPS connected to the USB 3.0 port.

- WiFi: It allows you to manage the WiFi antenna connected to the USB 3.0 port.

- HDMI™: It allows you to view the resolution and other details of the interface with HDMI™ technology.

- CAM: It allows you to manage the CAM card.

- Optical Power: It measures power at full optical band (800 - 1700 nm).

- Optical LNB (available only for Optical Option): It allows users to measure optical power for each band and manage the conversion of optical signals to RF for optical LNB.

- ASI OUT: It allows you to enable/disable the ASI output.

- Antenna: It allows configuring the antenna field strength and input impedance at the RF input (N connector) of the meter. The input of the meter is designed to have 50 Ω. If the input is 75 Ω, a 75/50 Ω adapter should be used at the meter's input (see optional accessories in "SPECIFICATIONS ATLAS NG" on page 70) and then select the 75 Ω option. When selecting 75 Ω, a software correction is done, applying the 7.5 dB loss of the 'Min loss pad' impedance adapter.

- External Power: It allows you to select the voltage and frequency of power supply for external devices.

- Volume: It allows you to increase or decrease the audio volume.

- Brightness: It allows you to increase or decrease the screen brightness.

- Notifications space: It allows you to view the latest notifications displayed on the screen.

2.9   Screenshot

The Screenshot function captures an image of what appears on the screen. The image is saved in PNG format.

There are 2 capture methods:

- Press and hold the PROMAX icon located in the bottom-left corner (on some screens) for one second.
- Swipe 3 fingers horizontally from right to left across the screen.

When the capture is done, a virtual keyboard will appear to name the file of the captured image. Pressing Enter will save the image to the workspace folder, and a screenshot notification will appear.

> **NOTE:**   The PROMAX icon 🔺 may not appear on all screens; in such cases, you can try tne second method.

Access to screenshots:

1 Access the "Top" menu by swiping down from the top of the screen.

2 Select the "Workspace" option and choose your workspace folder. If you haven't created one, click on "Default."

3 In the dropdown menu, select the mode (Main, TV Analyzer...) in which the capture was taken.

4 Next, click on the "Screenshots" icon to list the captured images.

5 Click on one of the images to view the options menu, which allows you to rename the image, delete it, or export it to a USB.

2.10   Channel Plan Editor

To create or edit a channel plan from an existing channel plan, follow these steps:

1 Access the "Top" menu by swiping down from the top of the screen.

2 Select the "Workspace" option and then choose the workspace folder. If you haven't created any folder yet, click on "Default."

3 In the dropdown menu, select the "TV Analyzer" mode.

4 Tap on the "CH Plans" icon to list all the channel plans.

5 Connect a USB memory to the USB 3.0 port.

6 Tap on the channel plan you want to edit until the options menu appears. Select the "Export to USB" option to copy the channel plan to the USB memory.

7 Safely disconnect the USB memory using the option to unmount the USB.

8 Now you can connect the USB memory with the channel plan to a computer to edit the file containing the channel plan. Use an XML editor such as XML Notepad (https://microsoft.github.io/XmlNotepad/).

9 Once edited, save the file in the root of the USB memory and connect it again to the USB 3.0 port of the meter.

10 Access the "Top" menu and tap on "Workspace." In the side menu that appears, select "USB" The edited file of the channel plan will appear.

11 Tap on the channel plan until the options menu appears. Select the "Export to work space" option to copy the channel plan to your workspace folder.

12 The edited channel plan is now available for use in the TV analyzer.

NOTE:	Remember to follow the steps for connecting and disconnecting the USB memory correctly to avoid data loss or damage to the device.

2.11 Tuning Practical examples

The next section is a general explanation of how to tune a terrestrial or a satellite RF signal, step by step. If you have any doubt, check the specific chapter to get more details.

2.11.1 RF Terrestrial signal tuning

1 Connect the RF input signal cable to the RF input connector.

2 Press **Settings** .

3 Press **StealthID** and select the type of signals you want to identify automatically when it is searching a signal (in this case should be terrestrial signals as DVB-T, DVB-T2, etc.).

4 Press ▲ to return to the **Home** menu.

5 From the Home Menu press on the **TV Analyzer** .

6 On the main panel, press ▼ and select the **Spectrum** tool. On the small panels, you can select other tools, like the video tool to watch the demodulated signal or the measurements tool to check power and MER.

7 Swipe right from the left side or press on the bottom bar to display the tuning menu.

8 Select the **terrestrial band** ⌐ᵐᵐ .

9 Select **type of tuning**: frequency ᵢₙₗₗₙ or channel ⁚⁚⁚ .

10 If you tune by channel, then previously you have to select a channel plan that contains the channels in your area. In case you do not find a proper channel plan, you can add or create a new one.

11 Select **Span** (recommended value for terrestrial: 50 MHz).

12 Adjust the **reference level**.

13 Adjust your **frequency or select a channel**. You can also search your frequency or channel by dragging left or right on the screen.

14 When you are on the carrier, it must be automatically locked and the bottom tool bar should turn green. If is not locked, the bottom bar turns red.

15 If locked, it is automatically demodulated. On video tool shows the image and on signal parameters shows all related parameters.

2.11.2		**RF Satellite signal tuning**

1 Connect the RF input signal cable to the RF input connector.

2 Press **Settings** ⚙ .

3 Press **StealthID** 🔍 and select the type of signals you want to identify automatically when it is searching a signal (in this case should be satellite signals as DVB-S, DVB-S2, etc.).

4 Press ▲ to return to the **Home** menu.

5 From the Home Menu press on the **TV Analyzer** 🖼 .

6 On the main panel, press ▼ and select the **Spectrum** tool on the main panel. On the small panels, you can select another tools, like the video tool to watch the demodulated signal or the measurements tool to check power and MER.

7 Swipe right from the left side or press on the bottom bar to display the tuning menu.

8 Select the **satellite band** 📡 .

9 Select **type of tuning**: frequency ᵢₙₗₗₙ or channel ⁚⁚⁚ .

10 If you **tune by frequency**, select the settings parameters: Supply voltage, polarization and satellite band.

11 If you **tune by channel**, then previously you have to select a channel plan that contains the channels for the satellite. In case you do not find a proper channel plan, you can add or create a new one. **Channels from channel plan have pre-set parameters** (supply voltage, polarization and satellite band), so they cannot be changed from the Tuning menu.

12 Select **Span** (recommended value for satellite: 100 MHz).

13 Adjust the **reference level**.

14 Adjust your **frequency** or select a **channel**. You can also search your frequency or channel by dragging left or right on the screen.

15 When the marker is on the carrier, it must be automatically locked and the bottom tool bar should turn green. If is not locked, the bottom bar turns red.

16 If locked, the signal is automatically demodulated. On video tool shows the image and on signal parameters shows all parameters related.

2.12   Firmware Update

In order to update your ATLaS follow these steps:

1 Download the firmware from the ATLAS datasheet at the PROMAX website in order to obtain the latest version of the update file.

2 The downloaded file is in ZIP format. Unzip it and copy the UDPATE file to the root of a USB memory.

3 Restart the meter and connect it to the mains to avoid draining the battery during the update process.

4 Go to the **Settings** ⚙ menu.

5 Press **Update** 🔷 to enter the update screen.

6 The update screen shows in the field "last release" the current release installed on the meter.

7 In this moment (not before), insert the USB memory into the USB 3.0 port. The meter will detect the USB and it analyses its content.

8 After few moments (it can change according to the file size) if the update file is correct, the "Update" button turns green and shows the release number.

9 Press the "Update" button and confirm to start the update process. A bar indicates the update progress. Wait a few minutes.

10 Once finished, a pop-up window will appear informing that the software is up to date. Disconnect the USB memory and press OK. The meter will restart.

11 During the boot process, it shows the message "booting new update" in the upper left corner, indicating that the update has been successfully installed. If, on the other hand, it displays the message "rolling back" it will indicate that there has been an issue during the update (corrupt file, damaged USB drive, etc.), and the previous version will be restored.

3 SETTINGS AND PREFERENCES

3.1   **Settings Menu**

Press **Settings** ⚙ on the Home Menu to access the Settings menu.

▶ **Settings Menu (02:19s)**   S C A N

Settings are classified according to these categories:

- **General**: Equipment information and customizing options.
- **TV Analyzer**: TV analyzer settings.
- **IPTV**: IPTV settings.
- **Spectrum Analyzer**: Spectrum analyzer settings.

3.1.1   **General Settings**

▶**Equipment Information**

- Provider: Provider's name.
- Name: Equipment's name.
- Serial number: Unique identification number for this equipment.
- Release: Version of software installed on the equipment.
- Free data memory: Free size of the flash memory installed on the equipment / Size of the flash memory installed for data (dataloggers, screenshots, service recording and so on...).
- Company: Name of the company which owns the equipment (set by user; protected by PIN code).
- User: Name of the equipment's user (set by user; protected by PIN code).
- Change Pin Code: It allows user to change the pin code. The default PIN is 1234.
- Product ID: Identifier name of the equipment.

►**Appearance**

- ■ Power Off: It allows the user to select the time to power off, which is the time after which the equipment shuts down automatically unless an user press any key. Time options are: off, 1, 5, 10, 30 o 60 minutes.

- ■ Language: Language used on menus, messages and screens. Available languages are: English, Spanish and Catalan. Once the new language is selected, the equipment changes automatically to the new language.

- ■ TFT Screen: User can select a time after which the TFT screen turns off, but the equipment is still running normally. The screen turns on by pressing any key. Time options are: off, 1, 5, 10, 30 o 60 minutes.

- ■ Theme: It is the colour palette used on screen (dark or light).

- ■ Battery Time: It hides or shows the remaining battery time. Remaining battery time is displayed next to the battery level icon.

►**Time & Date**

- ■ Date Format: It allows the user to change the time format (12 or 24).

- ■ Continent: It allows the user to select continent where the meter is in order to determine if it is necessary to apply DST (Daylight Saving Time).

- ■ Country: It allows the user to select the capital of the country where the meter is.

- ■ Network time: It allows you to enable/disable syncing time from a network.

►**Network**

Network parameters identify the equipment into a data network. It is necessary to connect to a PC via ethernet.

- ■ MAC: Physical address of the equipment. It is unique and cannot be edited.

- ■ DHCP: Enable this option to get the proper IP address when the unit is first connected to a network. That feature contributes to make things easier to installers when debugging network access.

- ■ IP: IP Address of the equipment into the local network.

- ■ IPNetMask: Subnet mask of the equipment (by default 255.255.255.0).

- Gateway: IP Address of the router into the local network (by default 10.0.1.1).

- DNS1: Option 1 of DNS (by default 8.8.8.8). DNS stands for Domain Name System and translates domain names into IP addresses so that computers can communicate with each other over the Internet.

- DNS2: Select DNS2 (by default 8.8.4.4).

►**Options**

It shows all the options that have been installed.

►**Wizard**

- Show wizard next restart: It allows the user to enable or disable the assistant that guides you when starting the meter.

- Input name: User's name.

- Input e-mail: User's e-mail.

- Input phone: User's phone.

- Input subscription: It allows the user to subscribe or unsubscribe from the updating service to keep the meter updated to the last software version.

►**Software Update**

- Last Update Information: It shows information about the current update.

- Update: It shows if there is an update available for download and install.

3.1.2   TV Analyzer Settings

►**Measurements**

- Terrestrial Units: It allows the user to select the terrestrial measurement units for the signal level. Available options are: dBm dBmV and dBμV.

- Satellite Units: It allows the user to select the satellite measurement units for the signal level. Available options are: dBm, dBmV and dBμV.

■ **Linked Reference Level:** It allows the user to enable/disable the automatic adjustment of the reference level.

■ **Min. Ter. Level:** It sets the minimum level for a terrestrial analogue signal to be identified when channel exploring or datalogger.

■ **Min. Ter. Power:** It sets the minimum power for a terrestrial digital signal to be identified when channel exploring or datalogger.

■ **Min. Sat. Power:** It sets the minimum power for a satellite digital signal to be identified when channel exploring or datalogger.

■ **Min. FM Level:** It sets the minimum power for a FM signal to be identified when channel exploring or datalogger.

■ **Power Offset:** It adds this value to the power/level measurement. When this value is different to 0 dB, next to power/level measurement an asterisk (*) is shown as a warning that offset is been applied.

■ **Terrestrial Downlink:** If this option is enabled it allows you to set a local oscillator in terrestrial band from Settings ⚙ and it displays intermediate and downlink (DL) frequencies calculated from local oscillator. For example, it allows you to work with terrestrial radio-links or frequency converters.

▶**Stealth-ID Options**

It allows the user to select the set of signal types being used while auto identifying any modulation type.

- Annex B.
- FM
- DVB-C
- DVB-T
- DVB-T2
- ISDB-T
- ATSC
- ATSC-3
- DAB
- DVB-S
- DVB-S2
- DVB-S2X
- DSS

3.1.3   IPTV Settings

► Network

Network parameters to receive IPTV signal.

- DHCP: Enable this option to get the proper IP address when the unit is first connected to a network. That feature contributes to make things easier to installers when debugging network access. Enable the DHCP protocol for proper IP configuration.
- IP: IP Address of the equipment into the local network.
- Mask: Subnet mask of the equipment (by default 255.255.255.0).
- Gateway: IP Address of the router into the local network (by default 10.8.8.1).

►Discovery

- Discovery Enabled: It enables/disables this feature to discover IPTV streams.

►IGMPv3

- IGMP Versions: Protocol for multicast transmissions used by the router.
  - IMGPv1: IGMP version 1. Each time user selects a multicast address, meter asks for the new multicast stream.
  - IMGPv2: IGMP version 2. Each time user selects a multicast address, meter stops receiving the current stream and asks for receiving the new one.
  - IMGPv3: IGMP version 3. Each time user selects a multicast address, meter stops receiving the current stream and asks for receiving the new one, from the servers approved by the user.
  - Off: Meter does not send any IGMP messages and discards the received ones.

3.1.4   Spectrum Analyzer Settings

Settings for the Spectrum Analyzer.

►**SP Measurements**

- SP Units: It allows the user to select the power units (dBm, dBmV, dBuV).
- Reference Level linked: It allows the user to enable/disable the reference level to be adjusted to the received signal automatically.

3.2　Audio and Brightness Settings

From the Top menu, you can access audio and brightness settings among others management options (for more details refer to <u>"Top Menu" on page 13</u>).

To access the Top menu from any screen, swipe down from the top of the screen.

Slide the audio/brightness marker from left to right and viceversa to increase or decrease these settings.

4 TV ANALYZER

4.1 ▊ Introduction

The TV Analyzer mode allows you to analyze RF signals: terrestrial, satellite, CATV or FM. It can demodulate and display services for terrestrial/CATV from 45 to 1000 MHz and satellite from 250 to 2350 MHz.

▶ **TV Analyzer Introduction (02:58s)** S C A N

The TV Analyzer screen is divided into 3 panels:

- main panel
- left top panel
- left bottom panel

Each one of these panels can show a tool selected by the user. Press on the triangle ▼ on any panel to display the tools menu. Select one tool to be shown on the panel.

There are also a menu with advanced tools that the user can deploy by swiping from the right side of the screen to the left.

The standard tools available for the TV Analyzer are:

- Spectrum
- Measurement
- Signal Parameters
- Video
- Audio levels
- Video/Audio parameters
- Constellation
- Echoes
- Shoulder attenuation
- MER by Carrier
- Recording
- TS Analyzer

- FM
- Optical Power Meter (through the Top menu)

The advanced tools available for the TV Analyzer are:

- Drive Test

4.2   TV Analyzer Screen

Figure 7.

1 Triangle ▼ (all panels): It displays a menu with all available tools. Select one tool to be displayed on the panel. The same tool cannot be in more than one panel (for more details about tools refer to "Tools" on page 28).

2 Plus (+) sign (small panels): It maximizes the panel, switching to the big panel position.

3 Gear ⚙ (big panel): It displays a settings menu for the tool. It is available for some tools and only on the big panel.

4 + / - sign (big panel): It shows the panel in full-screen mode. To return to the previous view press on the minus sign.

5 Tuning bar: It shows tuning parameters like frequency/channel selected, signal info (standard, bandwidth...), network name and Transport Stream total bitrate. Also it gives access to Tuning Settings (for more details about tools refer to "Tuning Settings" on page 27). The House icon returns to the Home screen.

6 Info Bar: It is the bar at the top of the screen. From left to right shows: Type of tuned signal (terrestrial/Satellite); name of selected workspace; attenuation enabled/disabled; supply output enabled/disabled; time; battery.

4.3		**Tuning Settings**

To display the Tuning Settings swipe right from the left side of the screen or press any field related to tuning (frequency, span...).

- **Band:** It allows selecting between terrestrial or satellite frequency band.

- **Tune by:** It allows selecting between tuning by channel or tuning by frequency.

- **Tuning Frequency:** It allows selecting the frequency to tune. Select numbers on the keypad and the frequency unit (MHz, kHz, Hz).

- **Channel Plan:** It allows selecting a channel plan from the ones available in the workspace.

- **Channel:** It allows selecting a channel from the channel plan.

- **Downlink frequency:** It displays downlink (DL) frequency calculated from local oscillator value.

- **Polarization:** It allows the user to select the signal polarization between Vertical or Horizontal. In tuning by channel mode this option can not be changed because is defined by the channel.

- **Sat Band:** It allows the user to select the High or Low band frequency for satellite channel tuning. In tuning by channel mode this option can not be changed because is defined by the channel.

- **Symbol Rate:** Symbol Rate determines the rate at which symbols occur. A symbol may consist of one or more bits as determined by the modulation format.

- **Signal type:** It displays the selected standard and allows selecting another standard in the same band (terrestrial or satellite).

- **Center Frequency:** It allows the user to edit the center frequency. The center frequency is the frequency at which the screen is centered.

- **Span:** It allows to edit the span, which is the frequency range displayed on screen on the horizontal axis. The current span value appears at the bottom.

- Reference Level: It allows the user to edit the reference level. The reference level is the power range represented on the vertical axis. The Reference Level can be changed directly swiping up or down.

- Attenuator: It can work in Manual mode or Automatic mode. In manual mode the user must select a value of attenuation between 0 and 70. In automatic mode the system applies attenuation according to the signal.

4.4   Tools

In the next sections each tool for the TV Analyzer is explained. They are:

- Spectrum
- Measurement
- Signal Parameters
- Video
- Audio levels
- Video/Audio parameters
- Constellation
- Echoes
- Shoulder attenuation
- MER by Carrier
- Recording
- TS Analizer
  •TS tables
  •TS bitrate
  •TS PIDs
  •TS Alarms
- FM
- Optical Power Meter

4.4.1 Spectrum

The spectrum tool shows the spectrum of the signal received from the RF input.

Spectrum (02:26s)

►**Touch gestures**

Tap: It places the cursor on the point.

Zoom out: It amplifies signal, reducing the span.

Zoom in: It reduces signal, amplifying the span.

Horizontal drag (spectrum): It moves along the frequency band.

Horizontal drag (tuned signal): It moves the signal over the frequency.

Vertical drag: It changes reference level.

►Screen

Figure 8.

1 Spectrum: The red vertical line shows the frequency been tuned. At either side there are two dotted white lines that define the signal bandwidth over which the meter is trying to identify the tuned signal. When the signal is tuned, the meter auto identifies it. The dotted lines change to a full white band falling over the tuned signal.

2 .Spectrum bar: There are four fields that give quick information about the tuned frequency in this order: frequency tuned, the center frequency in the spectrum window, the span and the attenuator selected. Pressing on any of this buttons opens that field in the tuning menu.

3 Tuning bar: It turns green showing the signal has been identified and demodulated. It shows the network name and transport stream total bitrate.

►Settings

Press on the gear ⚙ to display a settings menu for this tool:

- Line Mode: It defines the spectrum trace mode: Line, solid or gradient. Line shows only the spectrum outline. Solid shows the spectrum with a yellow background. Gradient shows the spectrum with a gradient of yellow background.

- Marker: It defines how to display the marker: Line, marker or horizontal.

- Resolution filter: It defines the resolution bandwidth filter value. Resolution filters available are: 2 kHz (only terrestrial band), 10 kHz, 20

kHz, 30 kHz, 40 kHz, 100 kHz, 200 kHz and 1000 kHz. According to filter selected maximum and minimum span changes.

- Visible span: It disables or enables span.

- Center marker: It centers the selected frequency on the screen.

4.4.2	Measurement

The measurement tool displays all relevant measurements for the tuned signal.

	Measurements (00:53s)	S C A N
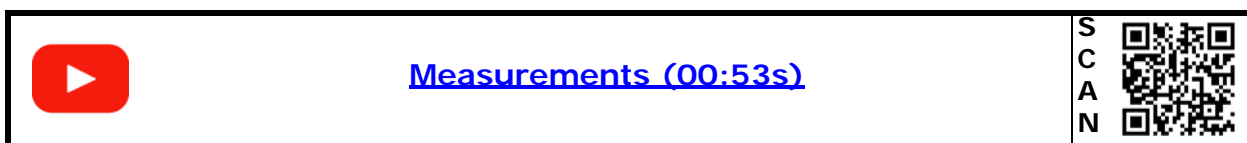
►**Touch gestures**

Tap: Select a measurement to monitor it on the graph.

►**Settings**

Press on the gear ⚙ to display settings:

- Reset PER: It resets the PER value (Packet Error Ratio).

►**Screen**
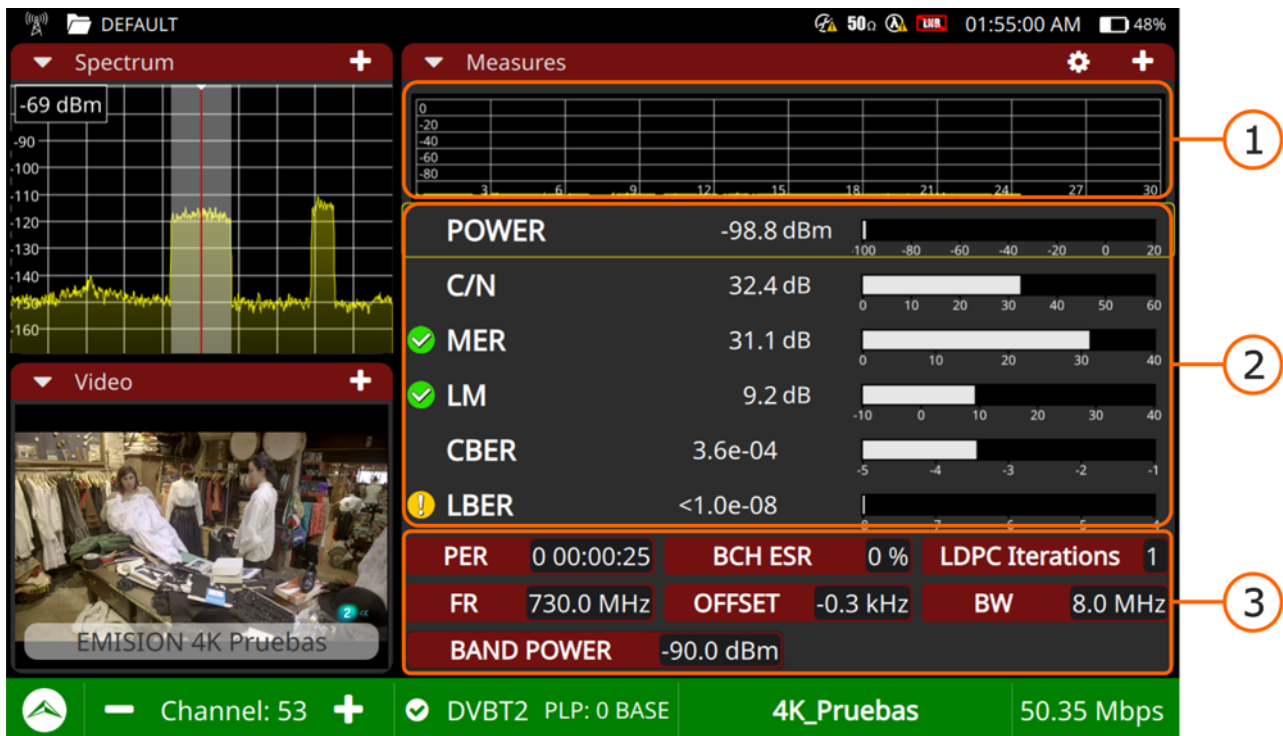
Figure 9.

1 Monitoring graph: It shows the selected measurement being plotted on a graph over time. The user can select any of the measurements available on the panel below. The selected measurement is inside a yellow frame.

2 .Relevant Measurements: It shows the most relevant measurements for the tuned signal. Measurements are in numerical value and also plotted on a graph bar. The sign on the left indicates its quality.

3 Extra Measurements: It shows some extra measurements according to the signal (PER, frequency, offset, bandwidth, band power, etc.).

4.4.3 Signal Parameters

The signal parameters tool displays the modulation parameters of the signal being tuned and demodulated.

Signal Parameters (00:32s)

▶**Screen**
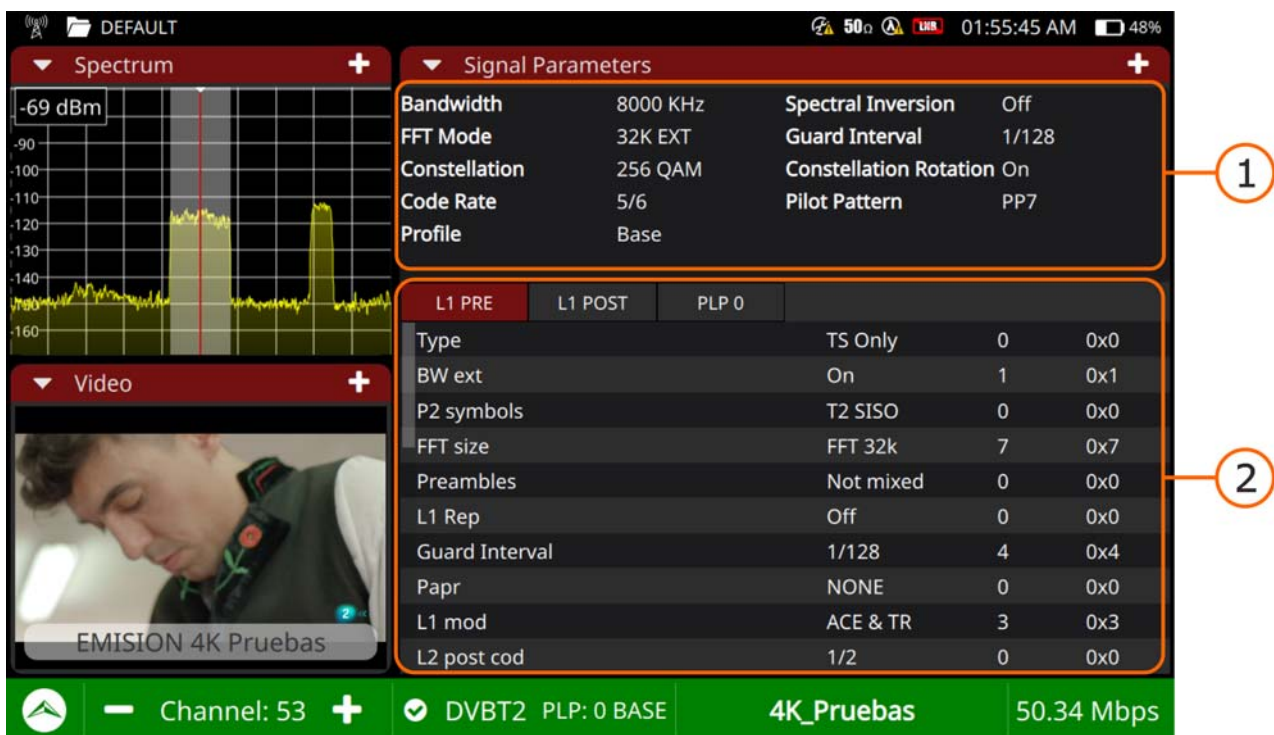
Figure 10.

1 General Panel: It displays the most relevant information.

2 Detail panel: It shows detailed data.

4.4.4   Video

The video tool displays one of the services carried by the signal being demodulated.

Video (01:15s)
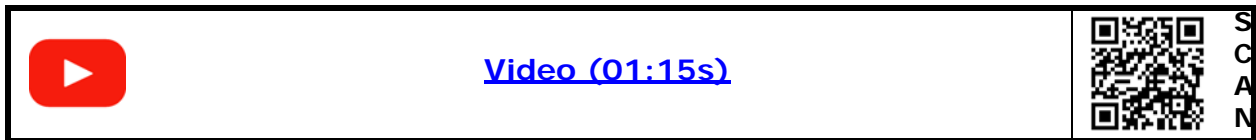
▶**Screen**
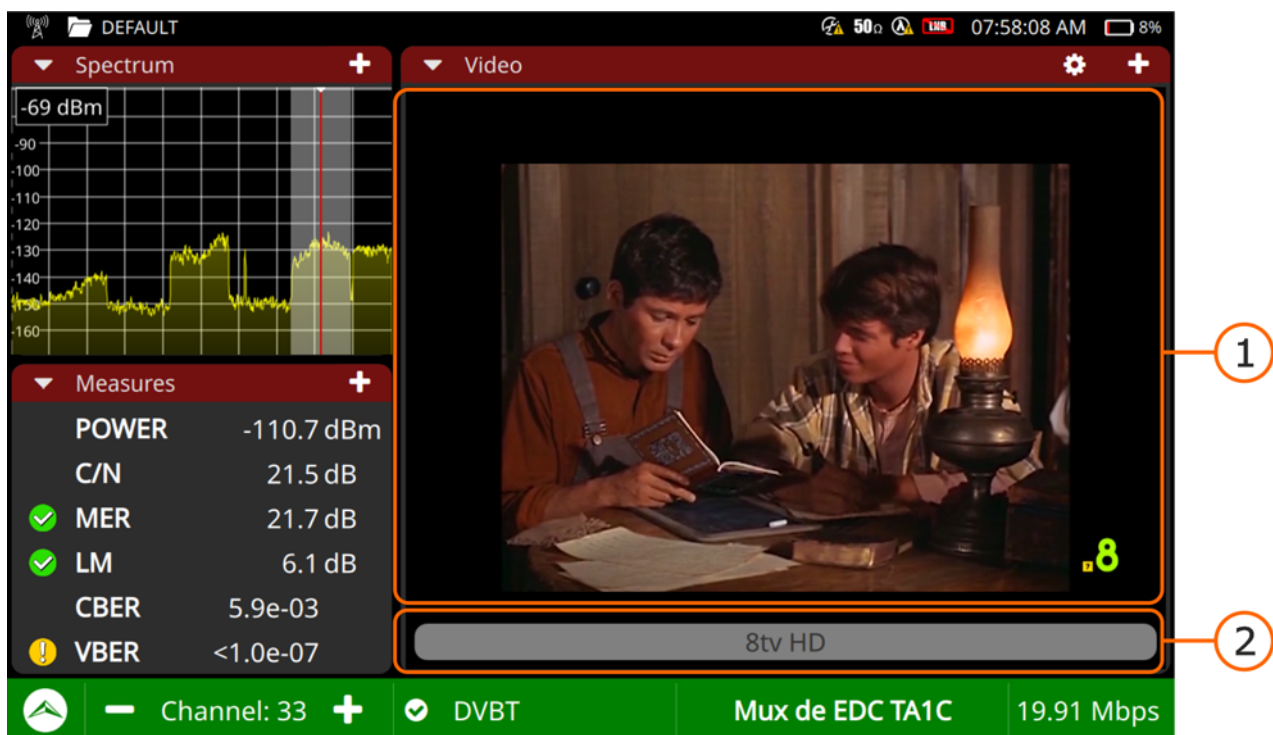
Figure 11.

1 Video Panel: It displays the demodulated service.

2 Service bar: It shows the name of the service and quality. If pressing, it opens a new window that shows all services available for the transport stream. Select one service to be displayed on screen. Each service is identified by its ID and name and it shows if it is video, audio or data. In case of video it also shows resolution (SD, HD or UHD).

▶**Settings**

Press on the gear ⚙ to display settings:

- Audio: It allows the user to change language of the service in case there is more than one available.

4.4.5　Audio levels

The Audio level tool allows the user to visualize audio levels in a graphical way..

▶ **Audio levels (01:33s)**　　　　　　　　S C A N

▶**Screen**
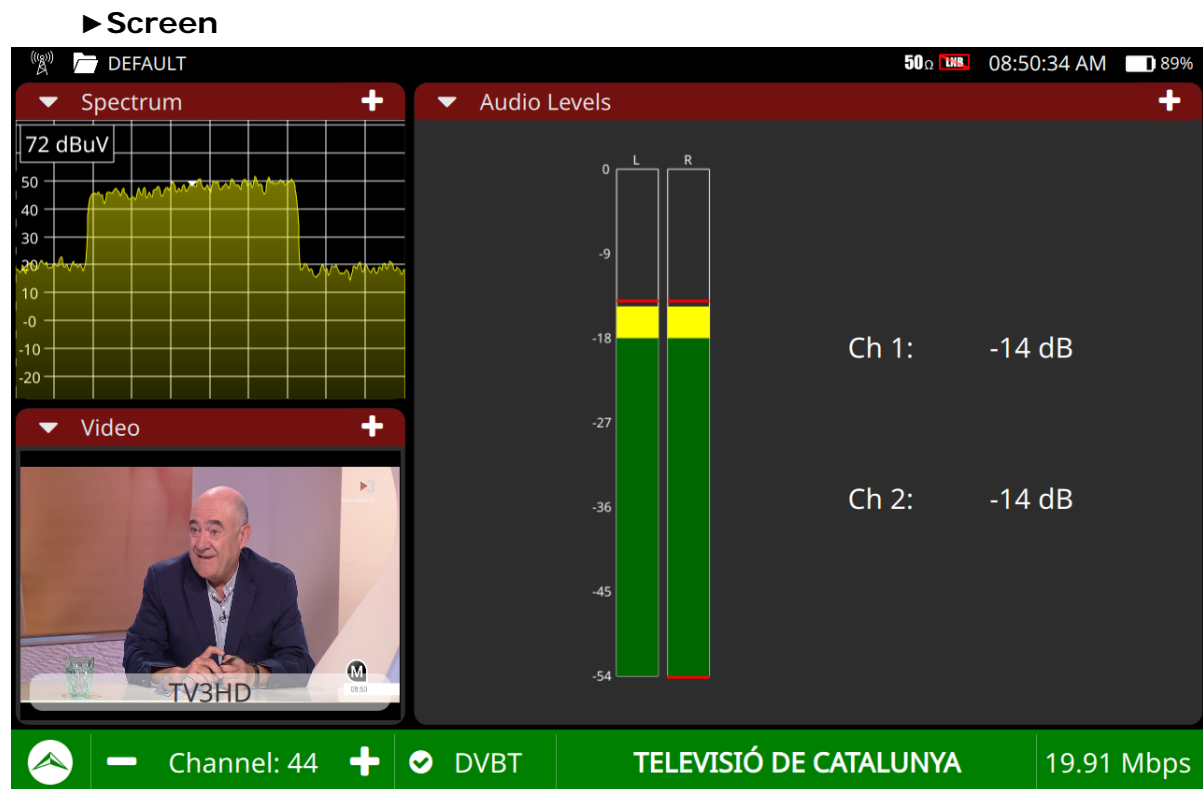
Figura 12.

1 Two bars display the audio level for the left channel and right channel respectively. The bar colour indicates the audio level:

- Red: High volume (0 dB <-> -9 dB)
- Yellow: Medium volume (-9 dB <-> -18 dB)
- Green: Proper volume (-18 dB <-> -54 dB)

| 4.4.6 | | **Audio/Video Parameters** |

It shows details about the service selected and its video and audio layers.

Video Values (01:43s)
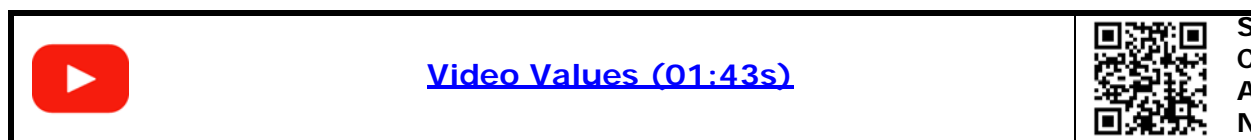
►**Screen**
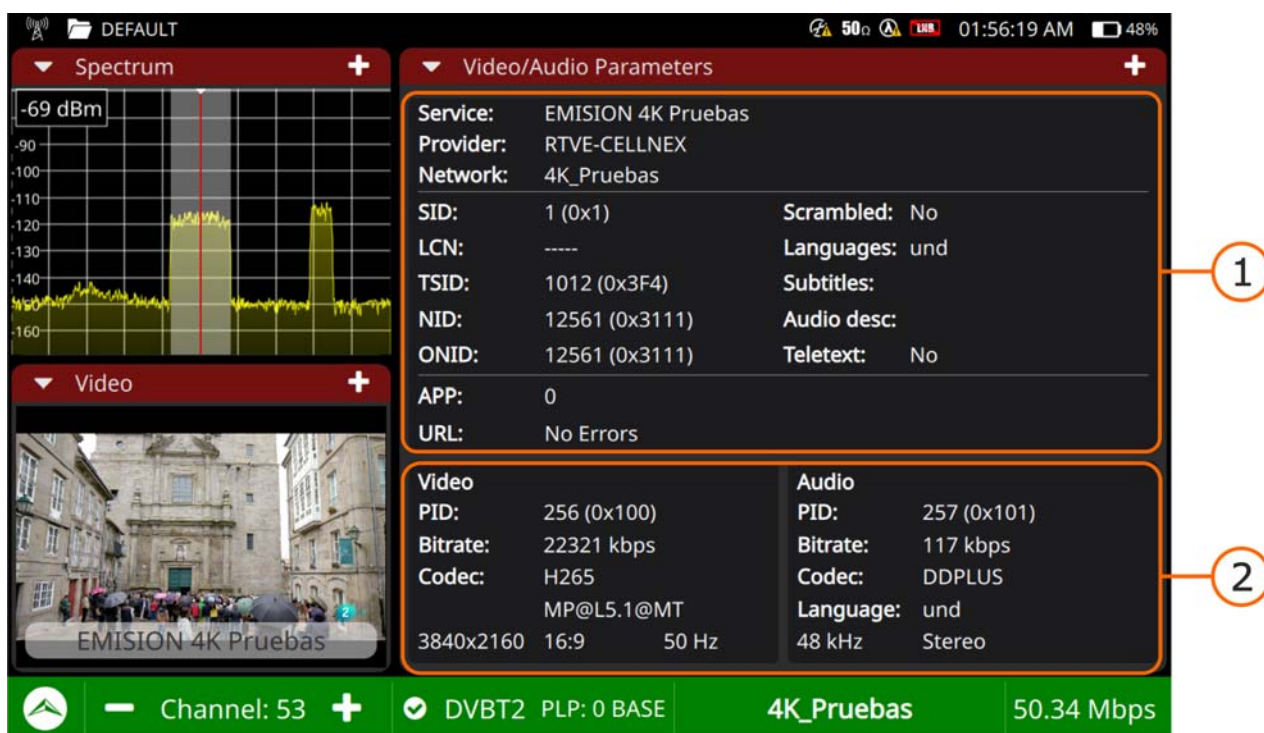
Figure 13.

1 General Panel: It provides service information: name, provider and network name. Also Service ID, Logical Channel Number, transport stream ID, Network ID, original network ID, if the service is scrambled, audio language, subtitles language and some others.

2 Video/audio panel: On the left side shows video layer details: PID, bitrate, codec, resolution, aspect ratio and scanning rate. On the right side shows audio layer details: PID, bitrate, codec, language, sampling rate and format.

If you amplify this tool to full screen pressing on Plus it shows a new area on the left side with more details about the service layers and also about the MPD file if there is any.

4.4.7 Constellation

The constellation tool is used to analyze terrestrial, satellite and CATV digital signals.

Constellation (03:06s)

S
C
A
N

►**Settings**

Press on the gear ⚙ to display settings:

- Grid: Full grid or cross grid.
- Zoom:
- Point size: Large, medium, small, pixel.
- Clear: It clear current constellation to start plotting from scratch.

►**Screen**
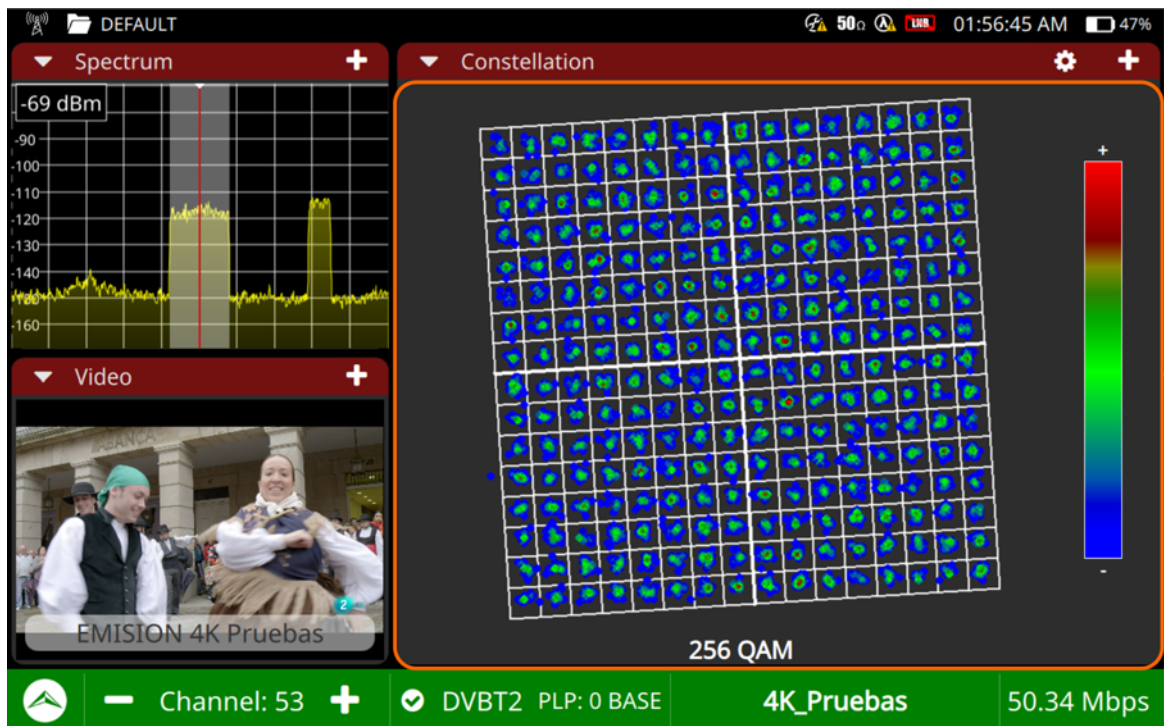
Figure 14.

1 General Panel: It displays the signal demodulated. The constellation is a pattern that shows the symbols received by the demodulator. Symbols are colour coded according to the density of points falling the same area across time. The greater amount of impacts in an area, the warmer the colour of symbols. Well defined points implies a transmission and reception system with low noise and interferences. Scattered symbols denote a higher degree of noise and interferences.

►**Touch gestures**

Drag: It moves around the constellation.

Zoom out: It amplifies constellation.

Zoom in: It reduces constellation.

4.4.8 Echoes

The echoes tool detects and displays the echoes that can occur due to multiple reception of the same digital terrestrial channel with different delays.

Echoes (04:22s)

SCAN

► **Screen**

Figure 15.

1 Graph Panel: It shows the echoes. The horizontal axis shows time (µs) and the vertical axis shows level (dB carriers). It can display up to 10 echoes. Everything falling in between the red areas is received within the guard interval, everything falling in the read areas are outside the guard interval and therefore very damaging.

2 .Measurement panel: For each echo, comparing to the main signal, shows level (dB carrier), delay (µs) and distance (km).

►Touch gestures

Tap: Tap on a table column in the measurement panel and its corresponding echo will be highlighted in blue color.

►Settings

Press on the gear ⚙ to display it:

- Zoom: To zoom out echoes graph (x1, x2, x4, x8).

4.4.9	Shoulder Attenuation

The Shoulder Attenuation tool measures interferences in adjacent channels that look like shoulders.

The meter takes this measurement following the guidelines corresponding to the signal standard.

Shoulders Attenuation (03:03s)

S
C
A
N

▶Screen
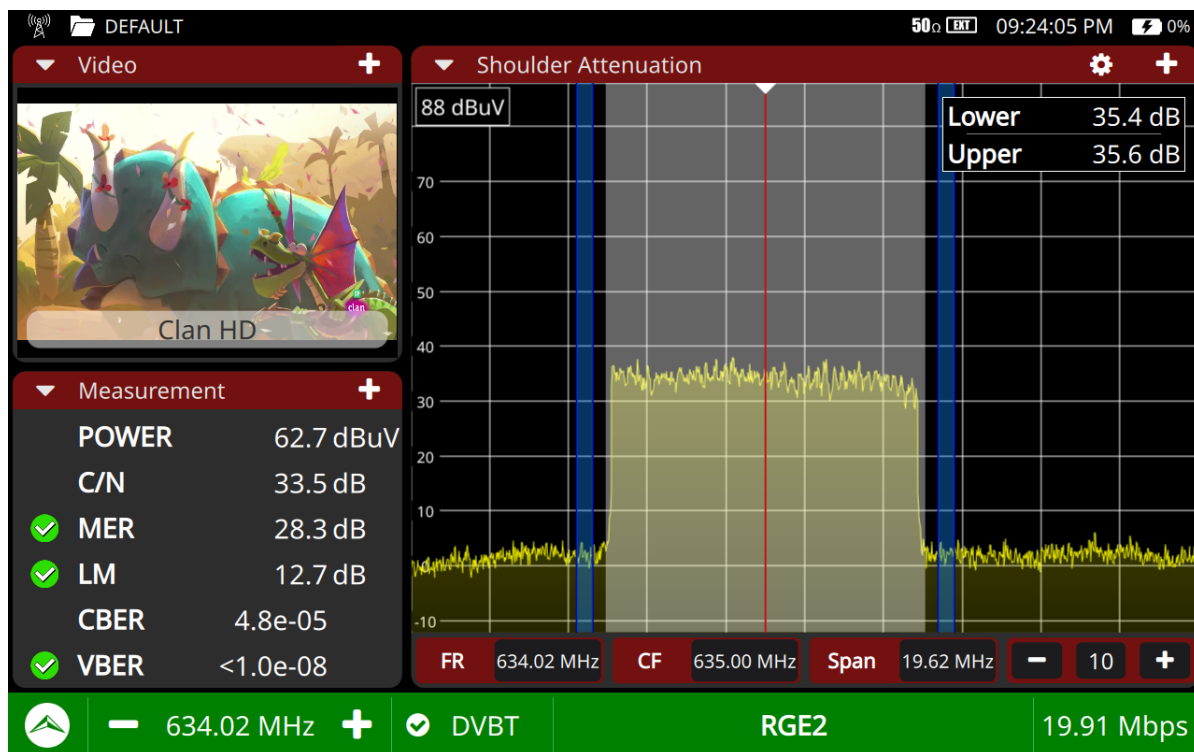
Figura 16.

1 The two blue bands on each side of the tuned channel are the areas where the shoulder attenuation measurement are taken.

2 The top right box show two values corresponding to the attenuation shoulder. The lower attenuation corresponds to the left side and the upper attenuation corresponds to the right side.

▶Settings

Press on the gear ⚙ to display a settings menu for this tool:

- Line Mode: It defines the spectrum trace mode: Line, solid or gradient. Line shows only the spectrum outline. Solid shows the spectrum with a yellow background. Gradient shows the spectrum with a gradient of yellow background.

- Marker: It defines how to display the marker: Line, marker or horizontal.

- Resolution filter: It defines the resolution bandwidth filter value. Resolution filters available are: 2 kHz (only terrestrial band), 10 kHz, 20 kHz, 30 kHz, 40 kHz, 100 kHz, 200 kHz and 1000 kHz. According to filter selected maximum and minimum span changes.

- Visible span: It disables or enables span.

■ Center marker: It centers the selected frequency on the screen.

4.4.10		MER by Carrier

The MER by carrier tool measures the MER for each carrier in the channel and shows it graphically. This tool is useful to analyse systems where signals of different type interfere between them.

▶	MER by Carrier (01:37s)	⬛ SCAN

▶**Screen**
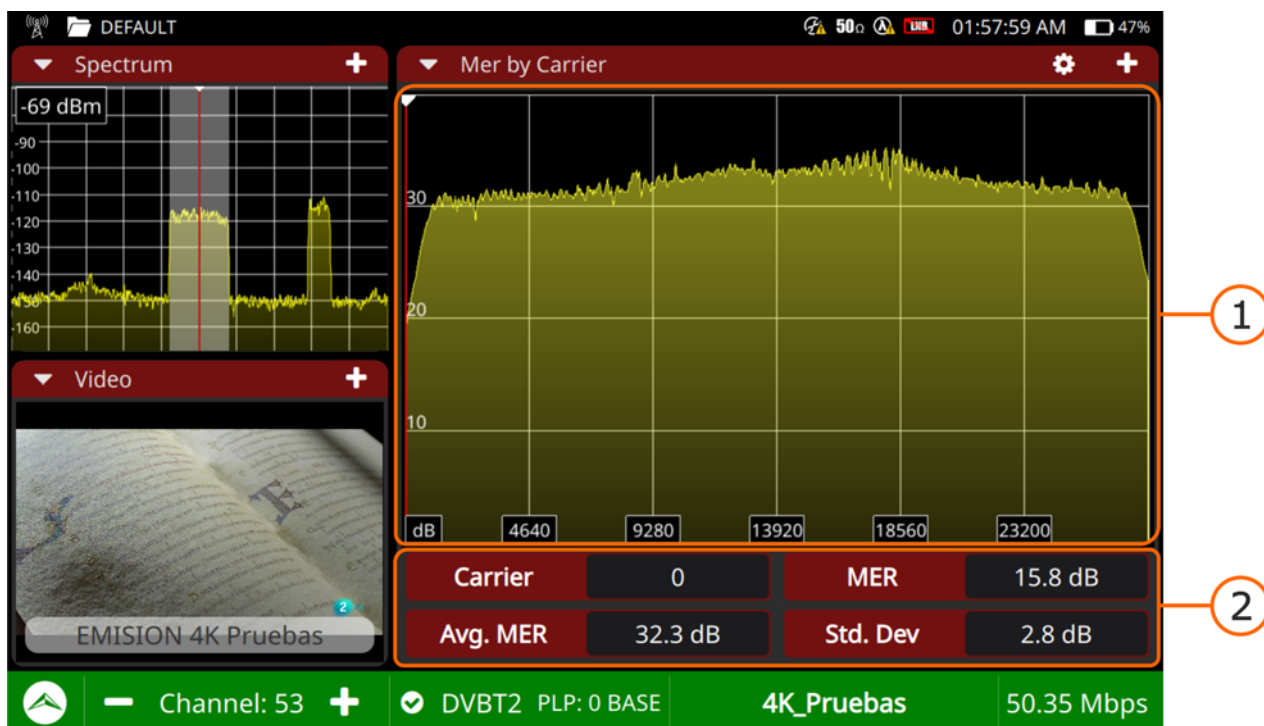
Figure 17.

1️⃣ Graphic Panel: The horizontal axis shows the number of carriers and the vertical axis shows the MER value.

2️⃣ Measurement panel: It shows the average MER for all carriers and its standard deviation. If there is an interference signal, a drop in the MER of the affected carriers will occur. The fields Carrier and MER shows these values for a single carrier selected by the user.

►**Touch gestures**

Tap: Select a carrier.

►**Settings**

Press on the gear ⚙ to display settings:

■ Line Mode: It defines the spectrum trace mode: Line, solid or gradient. Line shows only the spectrum outline. Solid shows the spectrum with a yellow background. Gradient shows the spectrum with a gradient of yellow background.

4.4.11	Recording

The recording tool allows recording the full transport stream from the demodulated signal being tuned.

Recording (01:09s)

S
C
A
N

▶**Screen**
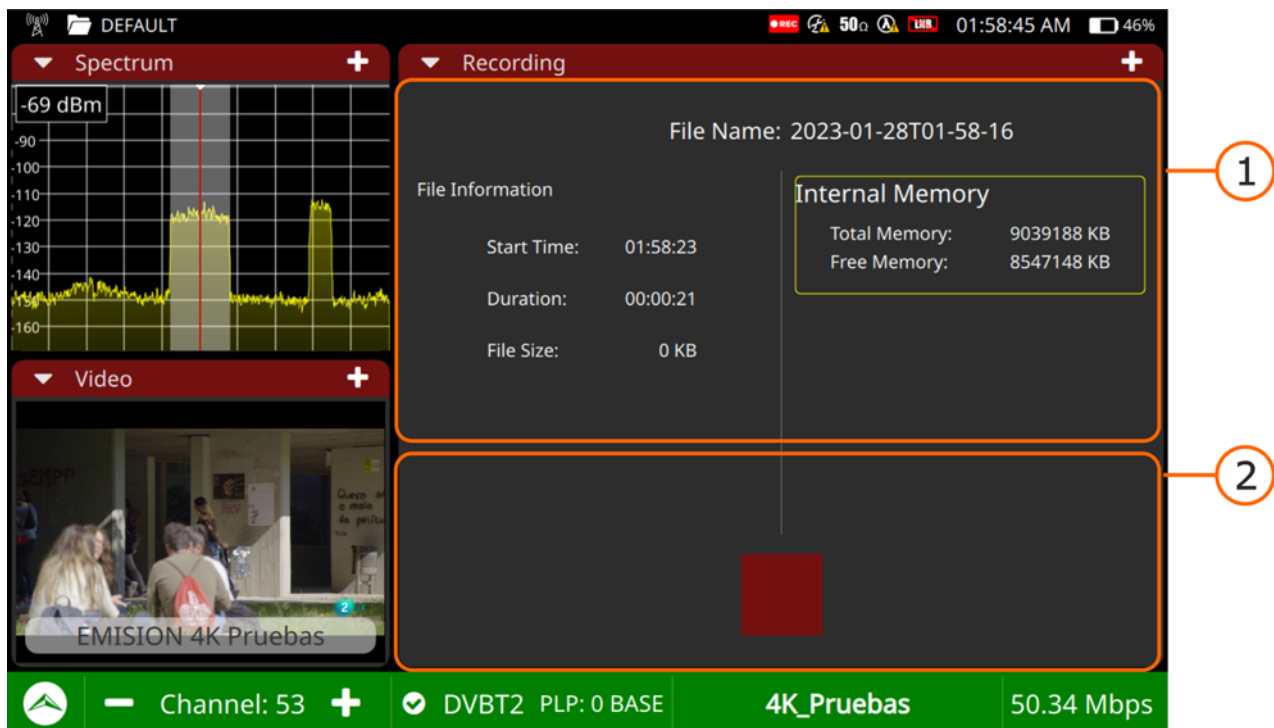
Figure 18.

1 File information Panel: On the left you can see start time, duration and file size. On the right side there is the total memory and free memory available.

2 On/Off button: It shows a red button to start/stop recording. If pressing when the button is a cercle it starts recording and when it is square it stops recording. Records are saved in your workspace.

▶**Touch gestures**

Tap: Tap the on/off button to start/stop recording.

4.4.12 | **Transport Stream Analyzer**

The Transport Stream (TS) Analyzer is a set of tools that provides the user with a comprehensive analysis of the transport stream extracted from the digital

signal being tuned. The transport stream can be received through any of the equipment inputs.

	Transport Stream Tools	S C A N

The TS Analyser has these tools:

- TS Tables
- TS Bitrate
- TS PIDs
- TS Alarms

In the next sections each one of these tools are explained in detail.

4.4.12.1   Transport Stream Tables

The TS Tables tool identifies and captures the TS signal and all its metadata. All PSI and SI tables and their fields are extracted and shown on screen.

►**Touch gestures**

Tap: To unfold tables and see its sub-fields.

►**Screen**
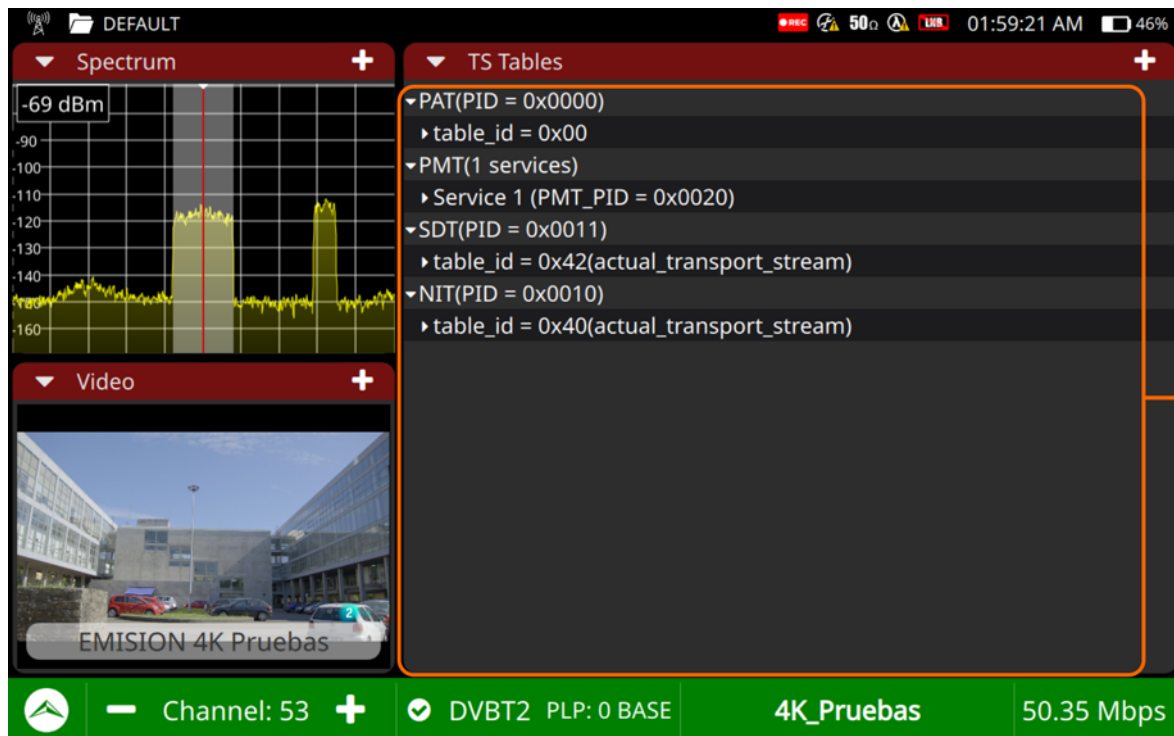
Figure 19.

1 General Panel: It shows all metadata extracted from the transport stream. These are the PSI (Program Specific Information) and SI (Service Information) tables and all their related fields. They can be unfolded to see its subfields.

4.4.12.2	Transport Stream Bitrate

The TS bitrate tool shows the nominal bitrate for each service within the TS in real time.

►**Screen**
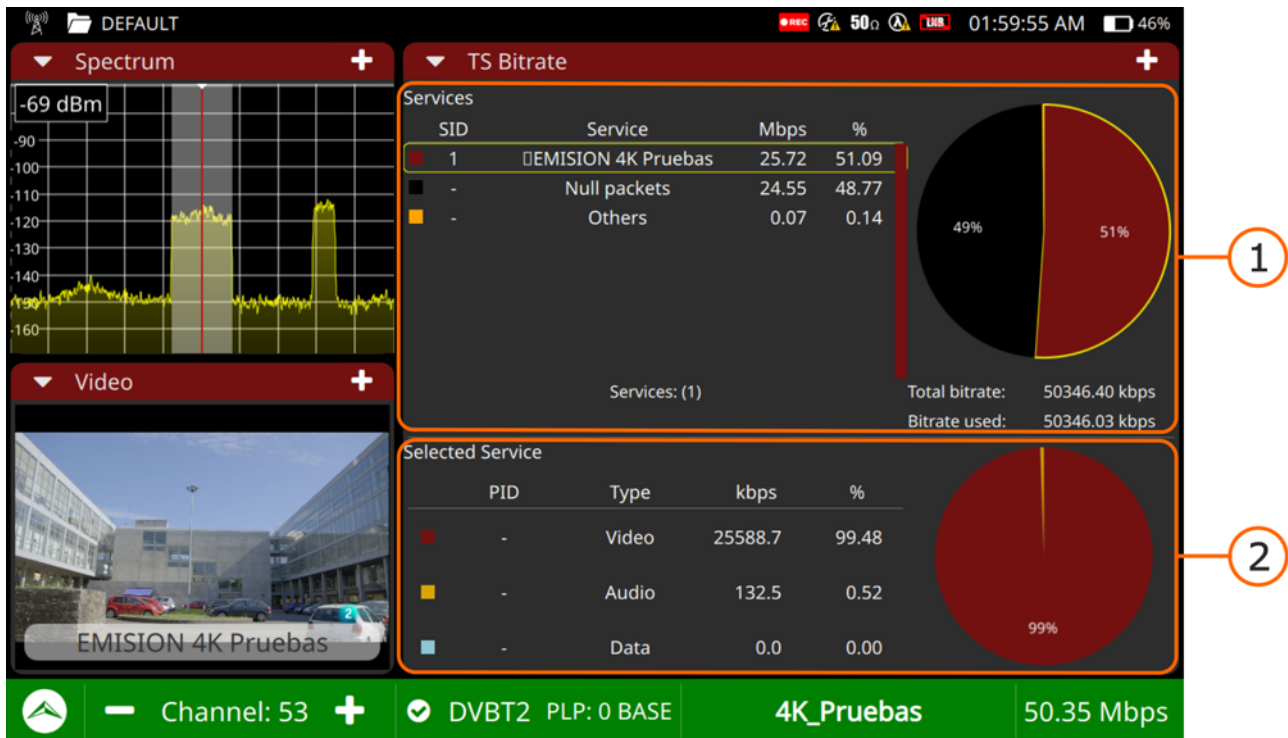
Figure 20.

1 Services panel: It shows all services in the transport stream in real time. The "Others" service indicates the amount of bitrate used by the PSI/SI tables. The pie chart indicates the percentage contribution in bitrate per service in respect to the total TS bitrate, including null packets, which are displayed in black. Below the pie chart there is the total TS bitrate and total bitrate used.

2 .Selected service panel: It shows video, audio and data bitrate for the selected service in real time, both in percentage and absolute value. The pie chart shows this information graphically.

►**Touch gestures**

Tap: It selects a service.

4.4.1.2.3 **Transport Stream PIDs**

The TS PIDs tool lists all the PIDs in the Transport Stream.

►**Video Screen**
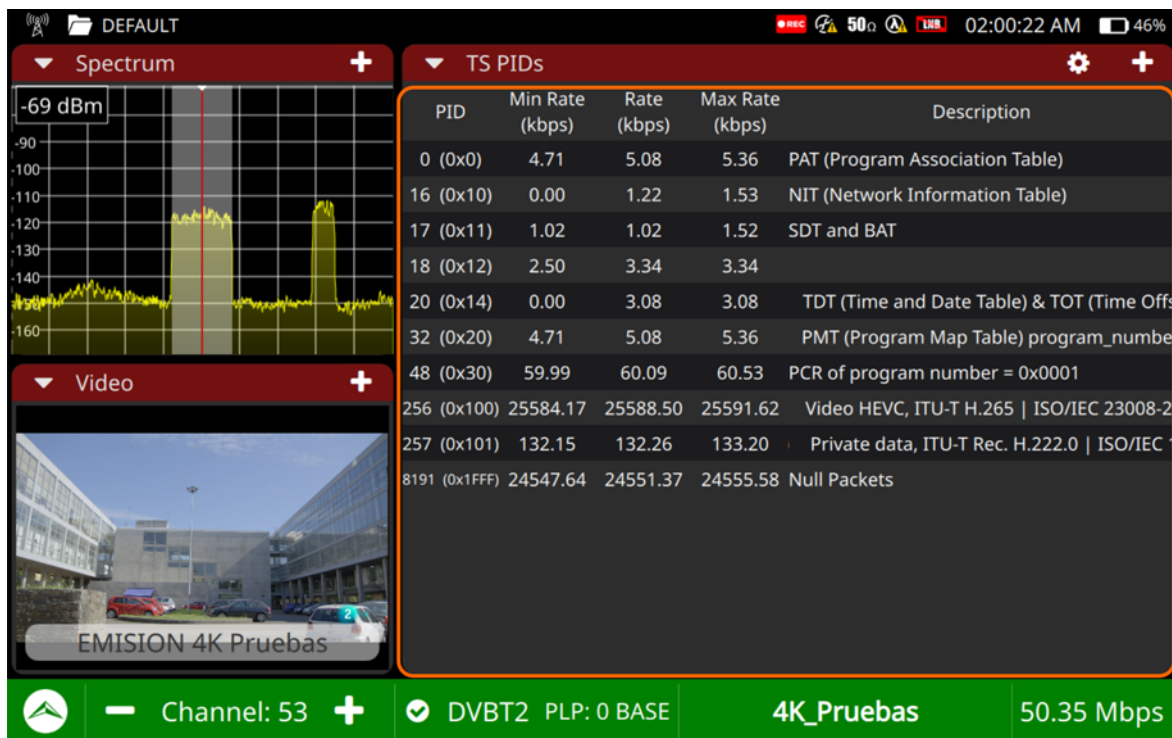
Figure 21.

1 PID Panel: It displays all the PIDs in the analyzed TS. For each PID describes its content and their minimum, average and maximum bitrates.

►**Touch gestures**

Drag: It moves along the PID list.

► **Settings**

Press on the gear ⚙ to display settings:

■ Order by: It allows ordering by PID, bitrate, max. bitrate, min. bitrate or description.

- Reset: It resets and captures the PID list.

4.4.1.24	Transport Stream Alarms

The TS Alarms tool shows the list of alarms which are classified in three priority levels (according to TR 101 290 guidelines by DVB group).

►**Screen**
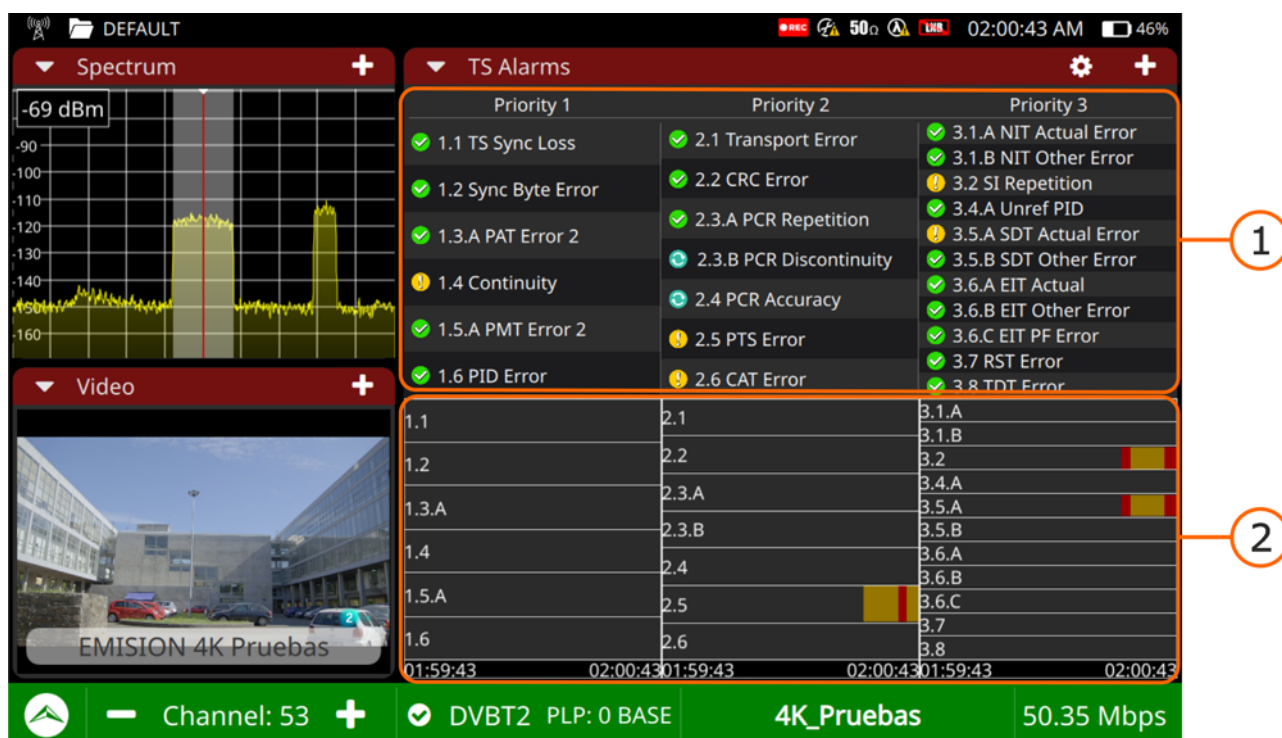
Figure 22.

1 Alarms Panel: It shows all the alarms classified by priority. Press on any of these alarms to enter in a specific screen for the alarm that shows a log with a list of events, a description and an option to enable/disable the alarm.

2 Events panel: It shows a graph for each alarm with all the events that have happened. Errors are shown as a red strip lasting as long as the error.

►**Touch gestures**

Tap: It opens an alarm to show log, description and settings menu.

► **Settings**

Press on the gear ⚙ to display settings:

- ■ Reset: It initiates the alarm analysis from scratch.
- ■ Restart: It initiates the capture of PSI/SI table info again followed by the alarm analysis.

► **Icons**

Besides each alarm there is an icon which is explained in the following table.

Icon	Description
✅	No errors occurred for this alarm.
⚠️	There has been an event for this alarm in the last 5 seconds.
❌	The event for this alarm just happened.
	The alarm is still being evaluated or there is no info in the TS to evaluate it.

4.4.13	■ FM

The FM tool tunes and takes measurements of an FM signal. It also shows RDS (Radio Data System), which is a communications protocol standard for embedding digital information in FM radio broadcast.

►**Screen**
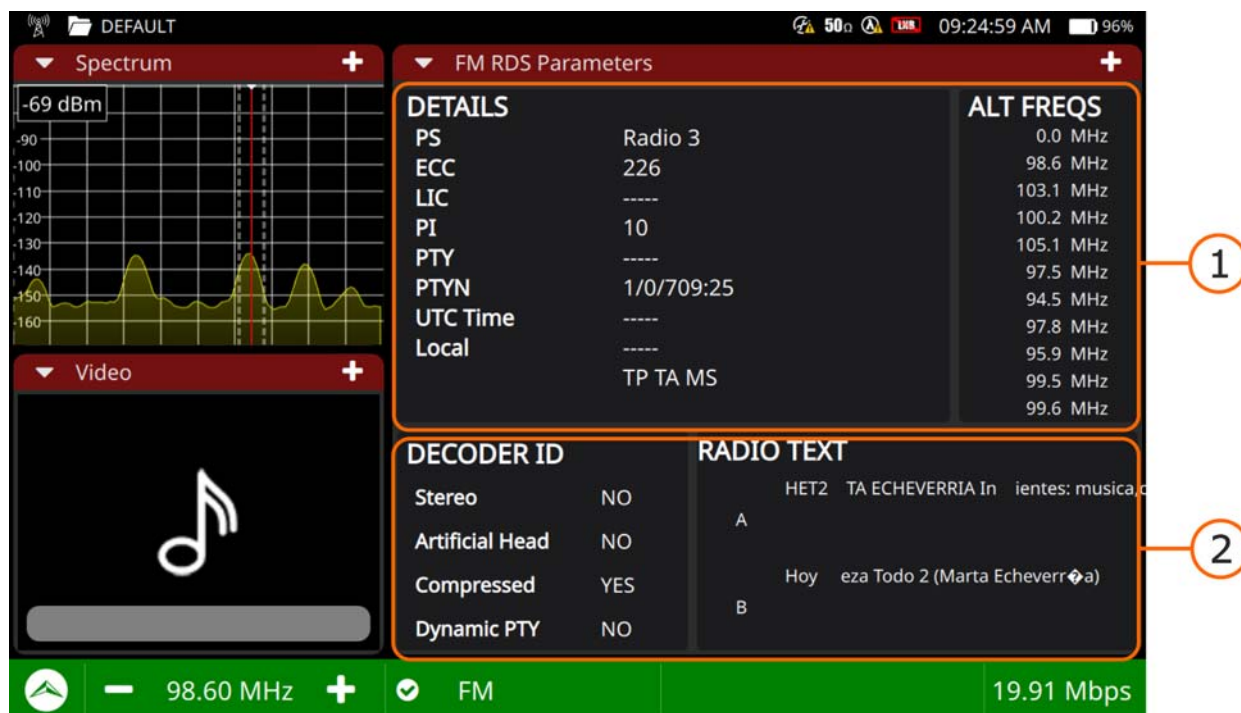
Figure 23.

1 General Panel: The column on the left shows several RDS data fields. The column on the right shows alternative frequencies.

2 Specific panel: The column on the left shows different operation modes of the decoder. The column on the right shows extra text information.

►**RDS Data**

- ■ PS: Programme service.
- ■ ECC: Extended country code.
- ■ LIC: Language Identification Code.
- ■ PI: Programme Identification.
- ■ PTY: Program type.
- ■ PTYN: Program type name.
- ■ UTC Time: Universal time.
- ■ Local: Local time.

4.4.14		Optical Power Measurement

The meter has an FP/APC input that allows connecting fiber optics to take different measurements.

> [▶] **Optical Power Measurement (01:00s)**   [QR] S C A N

To measure power in the whole optical band you must follow these steps:

1 Connect the optical signal to the meter's optical input (FC-APC connector).

2 From the TV Analyzer mode, access the Top menu by swiping down from the top of the screen.

3 Select the Optical Power icon.

4 If everything is correct, a bar will appear on the screen indicating the total power of the optical band, ranging from 800 to 1700 nm.

►**Screen**
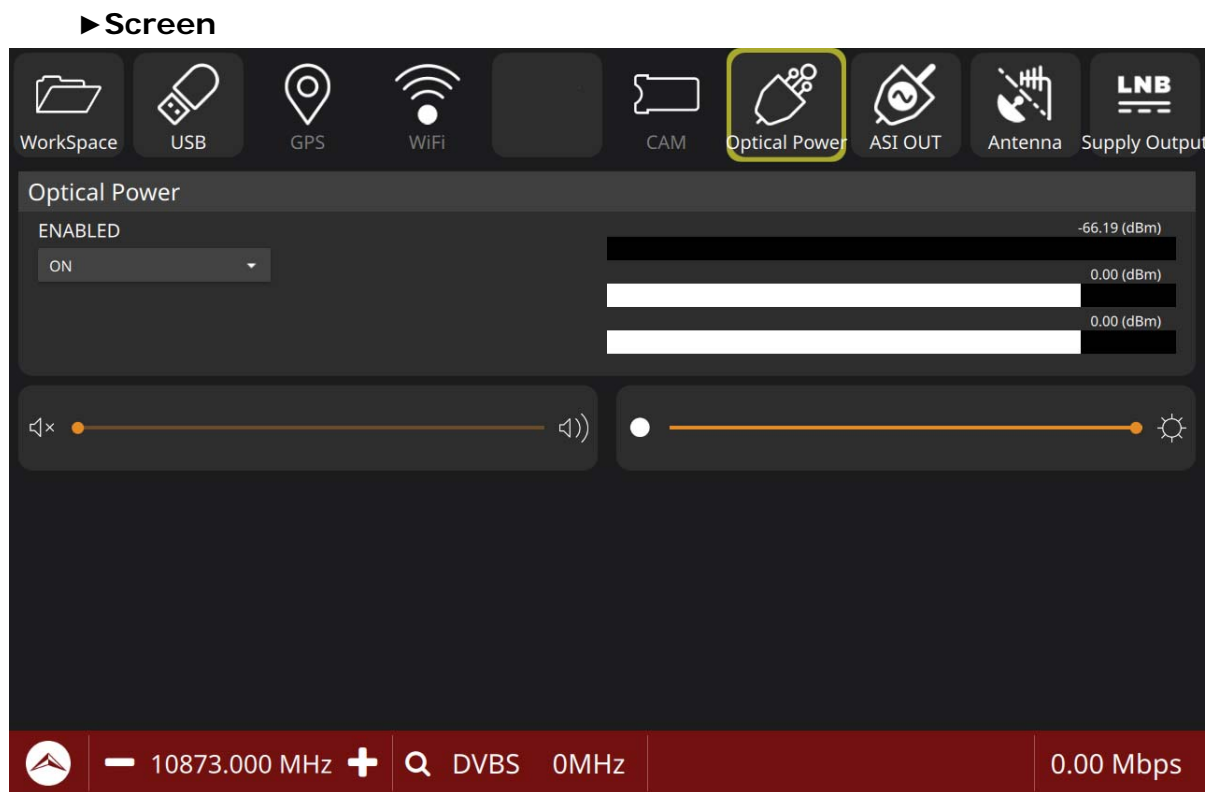
Figura 24.

1 The first bar shows the optical power in the full optical bandwidth.

To take measurements by optical band or make RF conversions for optical LNB, it is necessary to install the optical fiber option.

4.5   Advanced Tools

In the next sections each advanced tool for the TV Analyzer is explained. Now, these are the available ones:

- Drive Test

NOTE: Advanced tools make use of a large amount of the meter's resources, so some functions may not be available while the advanced tool is running. Make sure to exit or finish the advanced tool in order to use the meter in the usual manner.

4.5.1		**Drive Test**

The Drive Test tool allows you to carry out a drive test in order to map the coverage of a specific transmitter.

▶ Drive Test (07:06s)   SCAN

To perform a Drive Test the user must follow these stages:

- Create a Drive Test task
- Set the GPS receiver
- Run the drive test
- Export the drive test
- Exit the drive test

Next it is explained each one of these stages:

► Creating a Drive Test task

1 From the TV Analyzer mode, access the Advanced Tools menu by swiping from the right side of the screen to the left and tap on "Drive Test".

2 The Drive Test screen allows you to create a new Drive Test task or select one already created.

3 Previously to create a drive test task, tune a channel to use it as a reference to carry out the drive test (for more details refer to <u>"RF Terrestrial signal tuning" on page 15</u>).

4 To create a new Drive Test task tap on the "+" sign and fill in all the fields:

- Name: Name that identifies the task.

- Description: Description of the task.

- Audio enabled (OFF/ON): When enabled it sounds an alarm in case the analyzer gets unlocked from the channel.

- GPS Alarm (OFF/ON): When enabled it generates an alarm if the GPS receiver gets unlocked from the satellite.

- Select Mode (Auto/Manual): It allows the user to choose among two modes of operation. The "Auto" mode takes measurements automatically, according to the sampling time. The "Manual" mode takes measurements every time the user press the measurement button.

- Span Time (s): Defines the length of the time axis in the plot that is displayed when the Drive Test starts.

- Sample Time (s): Time between samples when working in Auto mode.

5 When finish tap on "Save" to save the Drive Test task.

6 Exit the Drive Test tool by swiping from the right side of the screen to the left and pressing on the cross next to "Drive Test" or select the drive test task just done to start the Drive Test.

►Screen
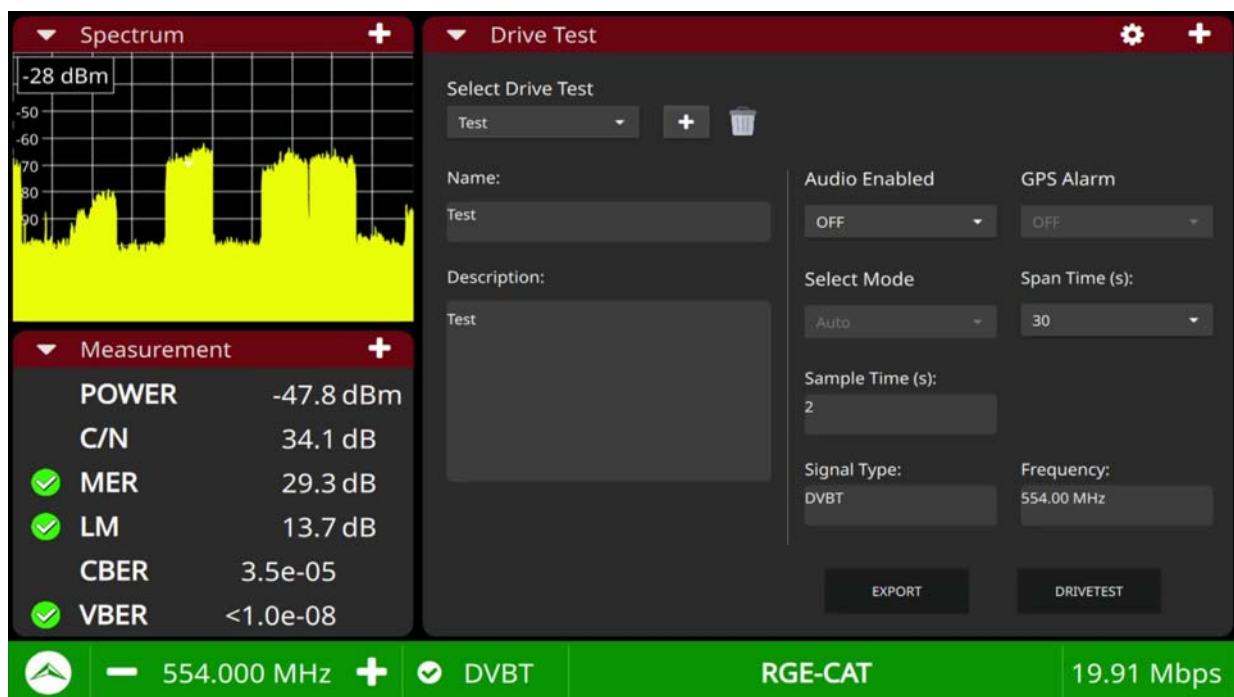
Figure 25. Drive Test task screen

► **Setting the GPS receiver (in case it is need it)**

1 Swipe down from the top of any screen to access the Top Menu.

2 Connect your GPS receiver to the USB 3.0 port. It should appear a notification "GPS Inserted".

3 Tap on the "GPS" option to access the GPS Status screen.

4 The GPS Status screen shows all the satellites detected by the GPS receiver and which ones are locked to (in green).

5 It also shows SNR measurements and geoposition data.

6 If all is correct the user can follow to the next stage.

►**Screen**

GPS Status

SAT#	SNR
27	16 dB
10	32 dB
32	36 dB
16	32 dB
23	34 dB
22	33 dB
33	0 dB
3	0 dB
6	0 dB
1	0 dB
8	0 dB
29	0 dB

Date	Time	Latitude	Longitude	Altitude	Accuracy	Satellites	Status
14-07-2023	12:28:41	41°N 21' 19.01"	2°E 6' 57.14"	8.8 m	Good	12	Locked
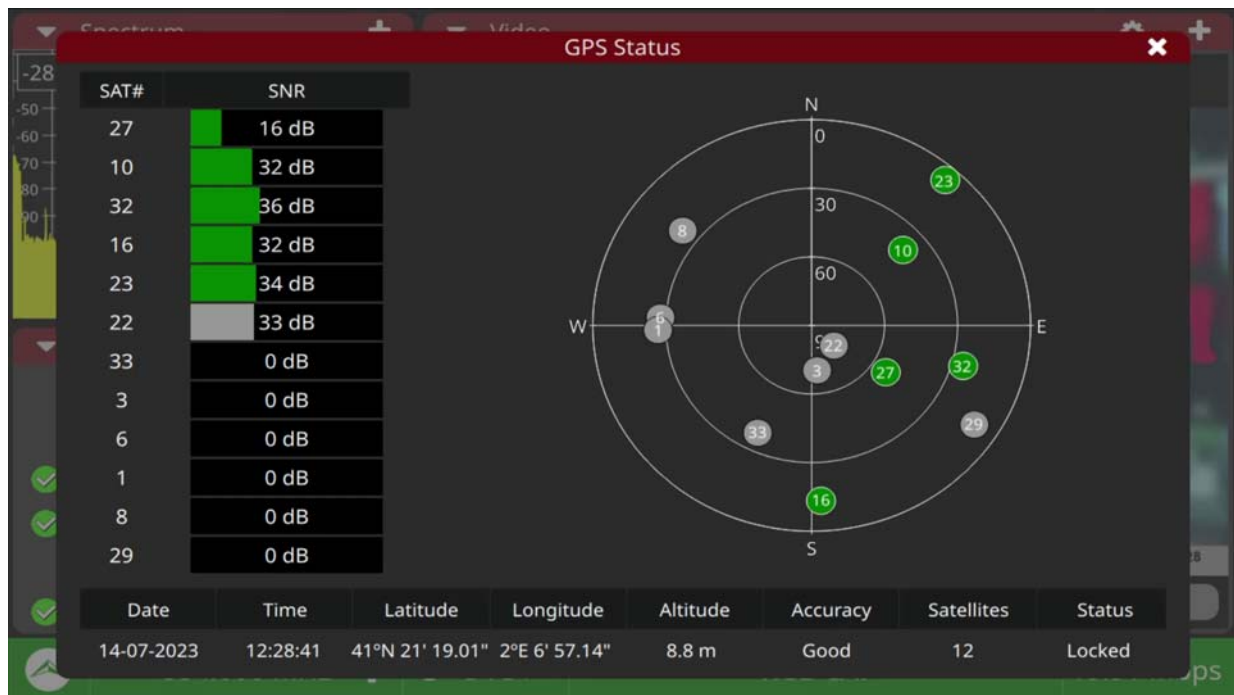
Figure 26. GPS Status screen

► **Running a Drive Test task**

1 From the TV Analyzer mode, access the Advanced Tools menu by swiping from the right side of the screen to the left and tap on "Drive Test".

2 On the "Select Drive test" select one of the drive test tasks previously created and tap on "Drive Test".

3 Now press on the "Drive test" button to go to the Drive Test screen.

4 The Drive test screen shows the drive test data plotted on the main panel. The left top panel will show the spectrum and the left bottom panel will show measurement. These panels cannot be changed during the drive test.

5 To launch the drive test press on "Start". It may appear some warning messages before the test. If you agree, press OK.

6 When starting, it first tunes the channel saved in the task and then starts plotting measurements over time. All data measurement and geolocation data is saved in a file that can be recovered after the drive test task finishes.

7 During the drive test task, if it is needed, the user can pause it pressing on "Pause" and resume it pressing on "Resume".

8 Press on "Finish" to end the drive test task. It shows a confirmation message. If you agree, press OK.

►**Screen**
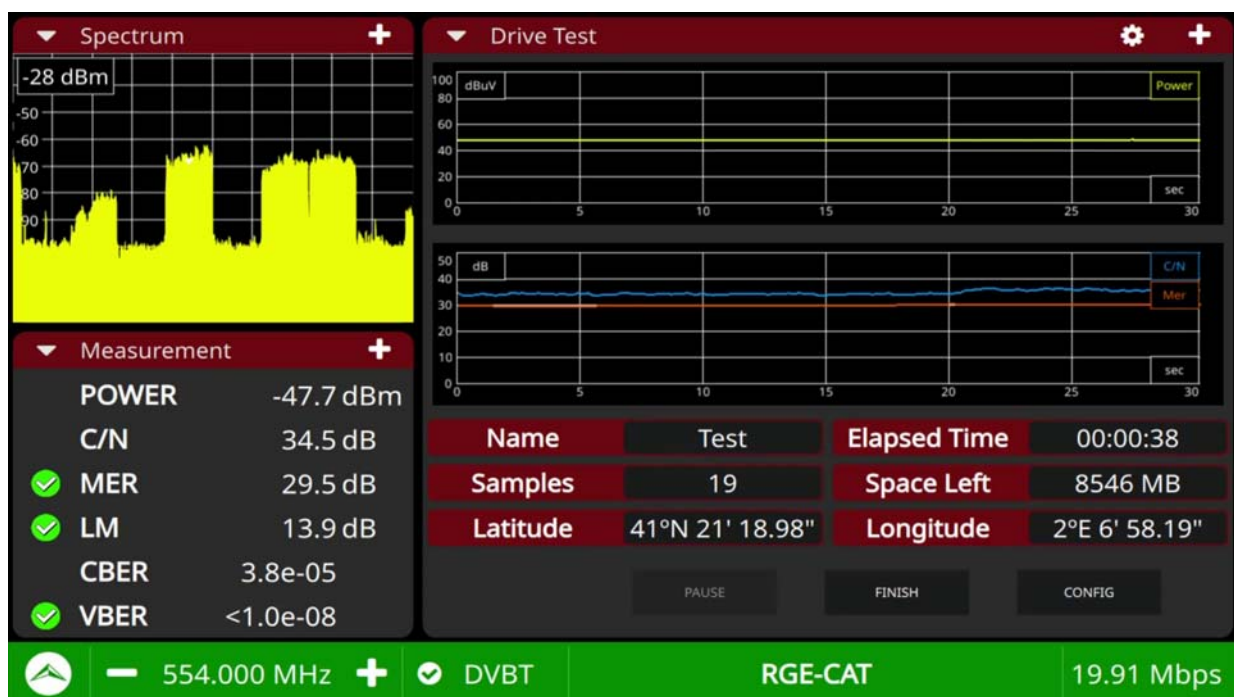
Figure 27.

1 Plot showing power level measurement over time.

2 Plot showing C/N and MER measurement over time.

3 Drive Test data: task name, samples taken, elapsed time, space left, latitude & longitude.

4 Options:

•Config: Access to drive test task data.
•Pause/Resume: It pauses or resumes the drive test.
•Finish: It ends the drive test.

5 Spectrum.

6 Measurement.

► Exporting Drive Test data

1 Once the drive test task is done we can recover the measurements taken. From the TV Analyzer mode, access the Advanced Tools menu by swiping from the right side of the screen to the left and tap on "Drive Test".

2 In the dropdown menu, select the Drive Test task done to export its data.

3 Tap the "Export" button. It opens a windows that allows the user to select where to download data between internal memory or a USB memory and also the file format among KML, CSV or XLSX.

4 KML format can be used in Google Earth or other programs to overlay measurements on a map.

►Screen
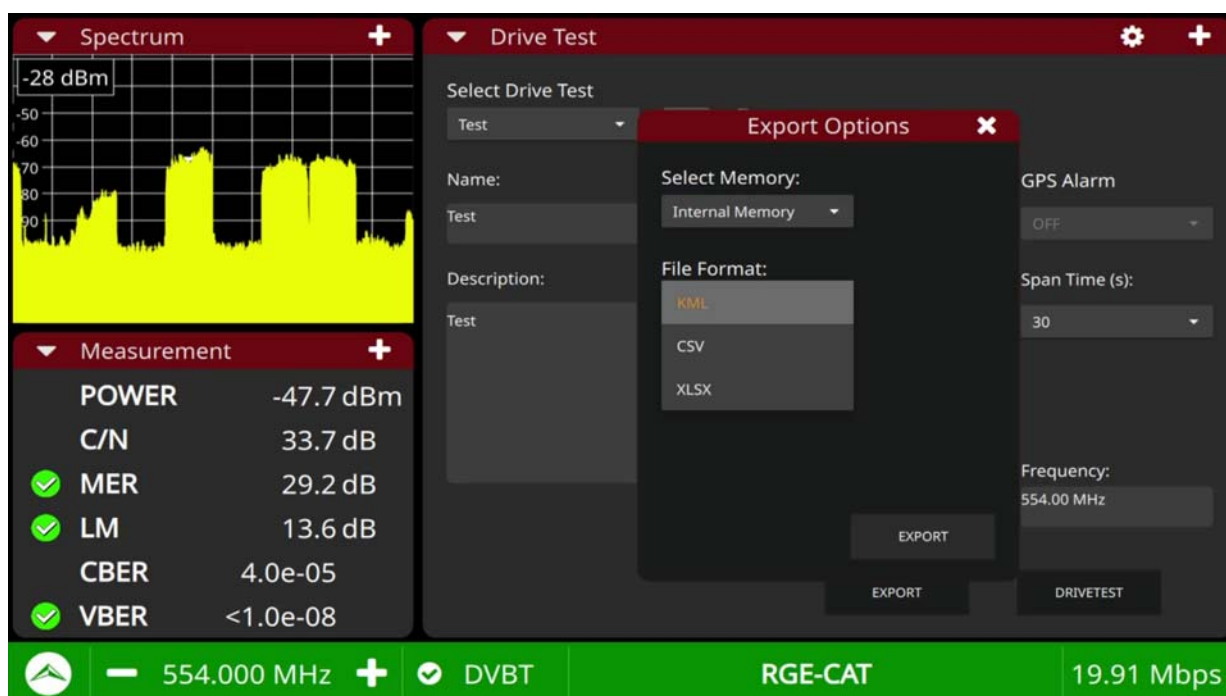
Figure 28.

► Exit the Drive Test task

1 The Drive Test is a high level function and it needs all the resources of the meter. For this reason some other functions cannot be working simultaneously with the drive test. You must quit the Drive Test tool in order to work as usual.

2 To quit the Drive Test there are two options:

- Press the Finish button at the Drive test screen.

- Swipe from the right side of the screen to the left and tap on the cross next to "Drive Test".

5 WORKSPACES

5.1 | Introduction

The tool Workspaces is a function that allows the user to easily create a folder to store and manage data independently from other folders. Measurements, channel plans, screenshots and any other data associated will be stored in its folder. These data can later be exported a visualized to a PC.

If the user does not create any workspace, data will be stored in the default folder (named "DEFAULT").

▶	**Workspaces (shortly available)**	S C A N
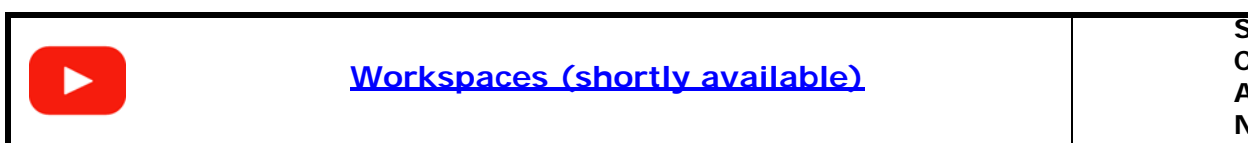
5.2 | Operation

Next, it is described how to access and manage the content of the workspaces:

1 Swipe down from the top of any screen to access the Top Menu.

2 From the Top menu, tap on the "Workspace" option to access the resources and workspaces management screen.

3 A screen displaying all available workspaces will appear.

4 The side menu allows you to switch between "workspaces" and "resources". Tap on "workspaces".

5 Tap on a workspace to access the data stored in that folder.

6 From the workspace, select the working mode from the dropdown menu. The working mode is the mode during which the data has been stored. The available working modes are:

- ■ Main (Home screen).
- ■ TV Analyzer.
- ■ Spectrum Analyzer.
- ■ IPTV.
- ■ ASI.
- ■ SDI.

7 Now, at the top toolbar, you can find all the type of data available for the selected mode. Depending on the selected working mode different data can appear. They are:

- Tools

- CH Plans

- Dataloggers

- Drive Test

- Recordings

- Screenshots

- Quality

- Multicasts

8 When you tap on one of these data types, it will show a list with all the related files.

9 When you long-press on a file, a menu pops up, providing the following actions:

- Rename: It allows you to change the name using the virtual keyboard.

- Remove: It deletes the file after confirmation.

- Export to USB: It copies the file to the USB memory connected to the USB 3.0 port of the meter.

10 Select the desired option from the menu.
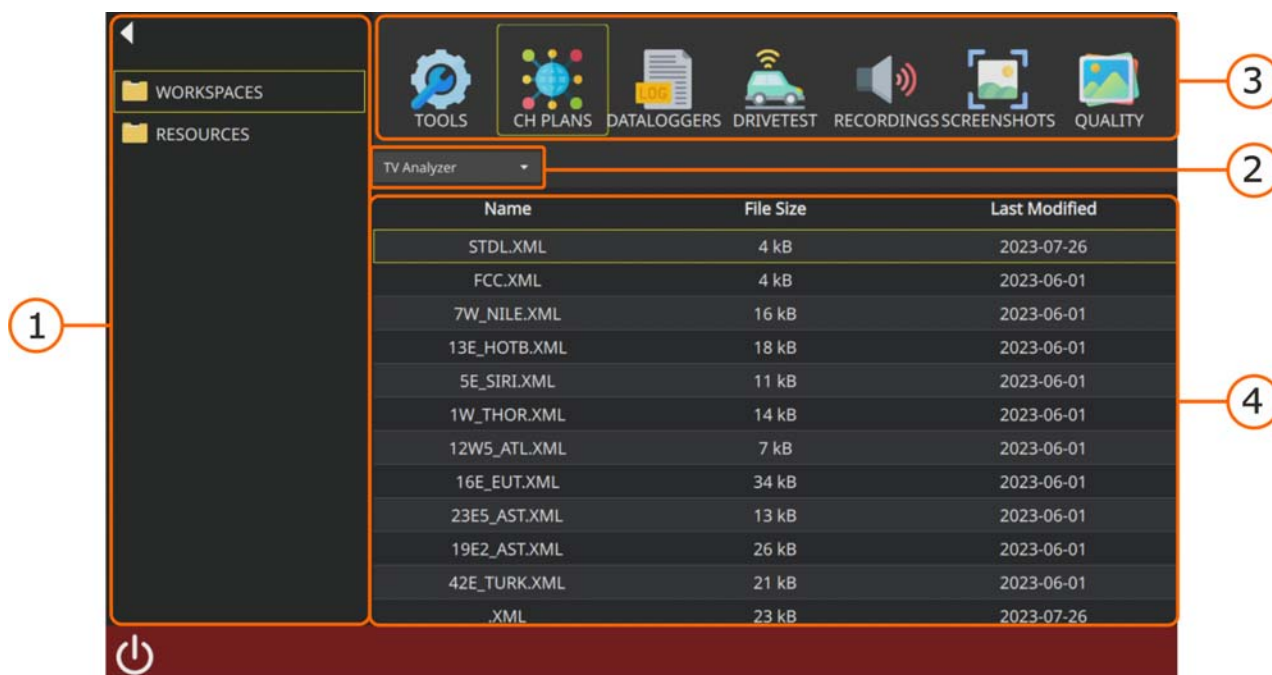
Figura 29.

1 Side Bar: choose between wokspaces or resources.

2 Dropdown menu: select the Working Mode.

3 Top toolbar: select the type of data.

4 File list: select a file to export, rename or remove.

► **Case Example**

I have captured the spectrum in TV Analyzer mode and saved it with the name "test". Now I want to view it on my PC. How do I do it?

1 Access the Top menu by swiping down from the top of the screen.

2 Tap on the "Workspaces" option. The Workspaces and Resources screen will appear.

3 Tap on the workspace folder that was selected at the time of the screenshot (if no workspace was created, select the "default" option).

4 Connect a USB memory to the USB 3.0 port.

5 In the Mode dropdown menu, select the "TV Analyzer" mode.

6 On the toolbar, click on "Screenshots.".

7 The list of captured files should appear, and one of them should be a file named "test". Long-press on the file name "test," and from the popup menu, select "Export to USB" to copy the file to the USB memory.

8 Safely eject the USB memory from your meter and connect it to your PC in order to view the image.

5.3   **Workspace Management**

Next, we describe how to manage the workspaces in order to create a new one, remove, load, etc.:

1 Swipe down from the top of any screen to access the Top menu.

2 From the Top menu select "Workspaces" to access the workspaces and resources management screen.

3 A screen will appear showing all available workspaces.

4 The side menu allows you to switch between "Workspaces" and "Resources". Select "Workspaces".

5 Next, press and hold your finger on one of the workspaces for a moment. A pop-up menu will appear with the following options:

- Open: opens the selected folder for viewing and managing data.

- Load: it loads the selected folder as a workspace. From this moment on, the workspace name will appear in the upper left corner. All data will be saved in this workspace.

- New Workspace: it creates a new workspace.

- Rename: it renames the selected workspace.

- Remove: it removes the selected workspace ("default" workspace cannot be removed).

- Export to USB: it copies the selected workspace to a USB connected to the USB port of the meter.

6 Select an option.

5.4 Resources

The "Resources" folder is a repository of common data for all the workspaces. This folder stores a large number of files that can be exported to the currently selected workspace at any given time.

For example, in the case of channel plans, we can keep in our workspace only the channel plans that we regularly use. If we ever need a different channel plan, we can simply export it from the resources folder.

To use the Resources folder:

1 Swipe down from the top of any screen to access the Top menu.

2 From the Top menu select "Workspaces" to access the workspaces and resources management screen.

3 The side menu allows you to switch between "Workspaces" and "Resources". Select "Resources".

4 From the workspace, select the working mode from the dropdown menu. The available working modes are:

- TV Analyzer.
- IPTV.

5 Now, at the top toolbar, you can find all the tools with available resources. Depending on the selected working mode different tools can appear. They are:

- Tools
- CH Plans
- Quality
- Multicasts

6 When you tap on one of these data tools, it will show a list with all the related files.

7 When you long-press on a file, a menu pops up, providing the following actions:

- Rename: It allows you to change the name using the virtual keyboard.
- Remove: It deletes the file after confirmation.
- Export to the workspace: It copies the file to the current workspace.

8 Select the desired option from the menu.

6 WEBCONTROL

6.1 Introduction

The webControl function allows you to connect remotely to the meter in order to visualize measurements and operate on it. The meter must be connected to a data network. To connect to meter from a remote access device use just a standard web browser.

WebControl tools are:

■ Console: It emulates and allows you to interact with the meter in first person.

The next section explains how to configure the meter to be able to connect remotely.

▶ **webControl (02:49s)**

S
C
A
N

6.2 Settings and Remote Access

► **Meter Settings**

1 The meter can be connected to a data network via an Ethernet cable or via WiFi. To access the configuration parameters:

•Ethernet network: From the meter, access the preferences options by pressing the "Installations" 🗁 key for 1 second. Go to the "Network" tab where you can find the configuration parameters to register in the network.
•WiFi network: Connect the USB WiFi adapter to the USB 3.0 port. Access the Top menu by swiping your finger from top to bottom of the screen. Select the WiFi opton to access the WiFi network configuration settings.

2 Select DHCP ON, if you connect the meter to a network with a router or server with DHCP protocol enabled. Then the network will set automatically the parameters in the meter. If not, follow the next steps to set the meter.

3 On "IP Address" box enter the meter IP. Use an IP in the same range used by your PC in the local network (if you do not know these data see "find out local network data" section). For instance, if the IP for your PC is 10.0.1.18, the meter must have a free IP in the same range, like 10.0.1.50.

4 In the "Mask" box, enter the mask value, which should be the same as the one used by the local network (usually 255.255.255.0; if you do not know these data see "find out local network data" section).

5 To connect the meter from an external network, fill in the "Gateway" with the info obtained from the local network. In the DNS fields, you can either leave the default values or assign others.

6 Connect the meter to a data network with Internet access. You can use an Ethernet cable connected to the IP CTRL port or in case of WiFi network, connect the USB WiFi adapter to the USB 3.0 port, select the network and enter the password.

► Find out Local Area Network Data (LAN)

1 To obtain data from the Ethernet network where your meter is connected, you should use a PC connected to this same network.

2 From the PC click on Start menu in Windows. On the Search box write CMD and press Enter.

3 In opens a command line in a window. Write IPCONFIG and press enter.

4 It displays a window with some lines with info. On line "Local Network Ethernet Adapter" see line "IPv4 Address". This is the local IP for your PC. Write down this IP. Also write down "Subnet Mask" and "Default Gateway". This data is needed to configure the meter by hand.

► Remote Access

1 From a remote access device (PC, mobile device) run a standard web browser (Chrome recommended).

2 On the address bar write the address to remotely access the meter.

3 If the connection is successful, it should appear on screen the webControl access screen (see figure).

Sign in

http://10.0.1.45

Your connection to this site is not private

Username [   ]

Password [   ]

Sign in   Cancel

Figure 30.

4 Enter user and password and press "Start Session".

5 User and password by default are:

- **Username: atlas**
- **Password: password**

NOTE: There are many ways to connect to the meter from an external network. If you have follow these instructions and you fail to connect the webControl, please contact PROMAX technical assistance and we will help you (promax@promax.es).

6.3   Remote Console

► **Description**

Console screen allows you to interact remotely with the meter like you were in front of it. To interact with the meter you can use the mouse pointer as a touch on screen.

► **Screen Description**
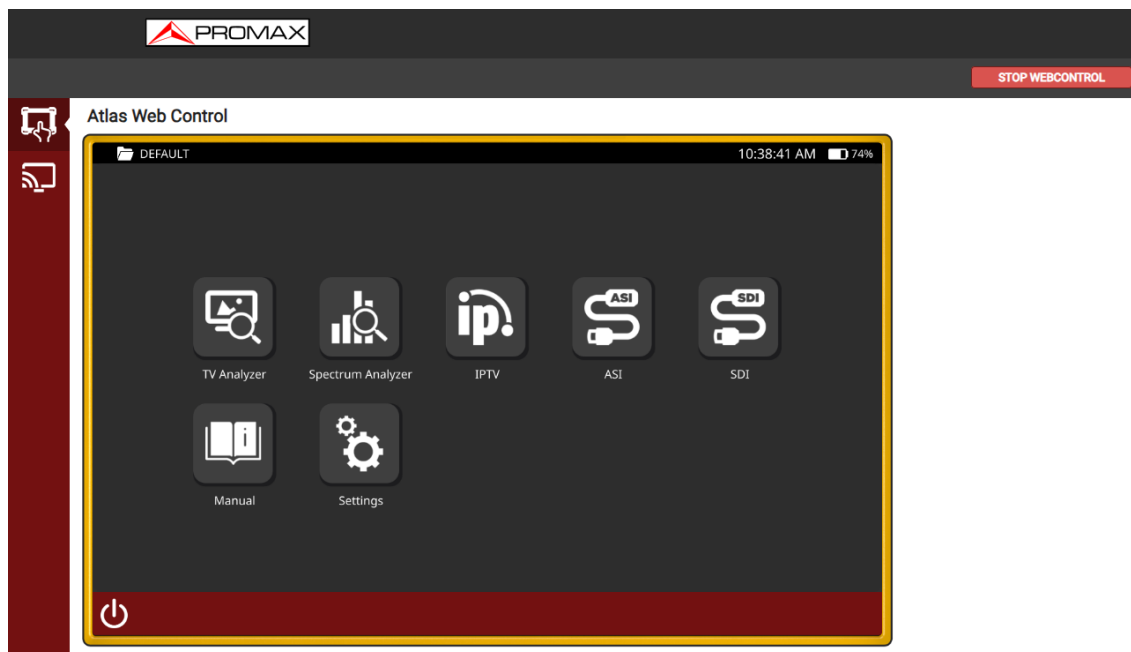
Figure 31.

1 Selected function (Console).

2 Start / Stop console emulation button. To start emulation press on "start webcontrol". The meter will display the message "webserver in use" and it cannot be used while emulation is running. To end the emulation press on "stop webcontrol" or on the device itself, which will prompt for confirmation.

7 SPECIFICATIONS ATLAS *NG*

7.1 General

▶ **Inputs and Outputs**

Parameter	Value	Additional Data
RF Input		
Connector	N female 50 Ω	
Maximum Input Power	15 dBm	5 MHz - 20 MHz
	23 dBm	20 MHz - 6 GHz
Maximum Input Voltage	50 Vrms	DC - 100 Hz (with AL-103)
	30 Vrms	DC - 100 Hz
Optical Input		
Connector	FC-APC/h	
Optical Power Measurement Range	800 - 1700 nm	
ASI/SDI Input		
Connector	BNC female 75 Ω	Up to 3 Gbps
Electrical	200 m cable lenght at 3 Gbps Nominal 800 mVp-p 1.4V common mode	
ASI/SDI Output		
Connector	BNC female 75 Ω	Up to 3 Gbps
Electrical	300 mVp-p min 850 mVp-p max 8 mV common mode	3 Gbps
Work modes	Loop	Signal goes in through the SDI input and comes out through the SDI output
	Pattern	Genera una carta estática de 1080p
10 MHz / 1PPS Reference Input		
Connector	BNC female high impedance	min. 150 mV; max. 5 V
SFP+		
Connector	SFP+	
IPTV		
Connector	RJ45	
Type	Ethernet 10 Mbps / 100 Mbps / 1 Gbps	
Analogue Video Input		
Input Connector	Multipole Jack	Zin=75 Ω
Sensibility	1 Vpp	75 Ω; positive video
Analogue Audio Input		

Parameter	Value	Additional Data
Input Connector	Multipole Jack	Zin=3 kΩ; same input as video
Digital Video / Audio Output		
Output Connector	Supports HDMI 1.4b with 2.9 Gb/s	Resolution up to 3840x2160 @30 Hz
Audio Output		
Output Connector	Multipole Jack 32 Ω	Stereo; to connect headphones or external speakers
Speakers	2 stereo speakers	
USB Interface 3.0		
Connector	USB type A	
Features	Mass Storage Host	Can read and write on a pendrive USB
	USB CDC	CDC: Communication device class (GPS, probes)
USB Interface 2.0		
Connector	USB type C	
Features	Two modes: master or device	
	Master: mass storage host, USB CDC	For GPS, probes
	Device: virtual COM	For remote control via remote orders
IP Interface (control IP)		
Connector	RJ45	Labeled IP CTRL
Type	Ethernet 10 / 100 Mbps / 1 Gbps	
Communication Software	webControl	
	Remote commands	
	SNMP Protocol	
CAM		
Connector	DVB-CI compliant CAM module input	
WiFi Interface		
Type	Wireless standard 802.11 abgn	Dongle-Wifi connected to USB port
		Dongle must be validated by PROMAX
Remote control Interfaces		
Interfaces	RJ45 Ethernet; USB Virtual COM; WiFi	
Remote control	JSON: sending and receiving remote commands with JSON files	All interfaces
	webControl: web technology using a standard browser	RJ45, WiFi
	SNMP: Protocol used to manage and monitor network devices	RJ45, WiFi
Monitor Display		
Monitor	10.1" TFT touch panel	
Aspect Ratio	16:9	
Format	1280 x 800 dots	(RGB); (W) x (H)

Parameter	Value	Additional Data
Brightness	850 cd/m^2	
External Unit Power (through the RF input connector)		
Terrestrial Supply	External	
	5 V	Up to 500 mA
	12 V	Up to 500 mA
	24 V	Up to 250 mA
Satellite Supply	External	
	5 V	Up to 500 mA
	13 V	Up to 500 mA
	15 V	Up to 500 mA
	18 V	Up to 500 mA
22 kHz Signal Voltage	0.65 V ± 0.25 V	Selectable in Satellite band
22 kHz Signal Frequency	22 kHz ± 4 kHz	Selectable in Satellite band
DiSEqC Generator	DiSEqC 2.x (DiSEqC 1.2 commands implemented)	DiSEqC is a trademark of EUTELSAT
SATCR / SCD (EN50494)	Available	DiSEqC 1.2 available
dCSS / SCD2 (EN50607)	Available	Compatible with LNB SKY UK According DiSEqC 2.x
LNB Band	Ku / Ka / C	
Polarity	Horizontal / Vertical, Right / Left	

►Operation Modes

Parameter	Value	Additional Data
TV Analyzer	Available	
Spectrum Analyzer	Available	
IPTV	Available	
ASI IN	Available	
SDI	Available	

►Datalogger

Parameter	Value	Additional Data
Stored Data	Signal type, modulation parameters, all measures available for the detected signal type, and time stamp, PSI info for each measured channel	If GPS is connected to USB port, the equipment stamps GPS coordinates in each measurement made. For DVB-T2 signals it saves information from all PLPs. In case of Satellite signal it also saves polarization. LBER equal o less than 1E-7.
Timestamp	Date and time at each measured channel	

►Mechanical Features

Parameter	Value	Additional Data
Dimensions	304x218x83 mm	(W) x (H) x (D)
Weight	3.4 kg	Without installed options

Parameter	Value	Additional Data
Volume	5,5 cm^3	

► **Power Supply**

Parameter	Value	Additional Data
Internal Battery	7.4 V; 18.3 Ah	Li-Po Smart battery
Battery Operation Time	> 4 hours	With smart power management
	aprox. 3 hours	Working with DVB-T2 standard and decoding UHD TV images in TV Analyzer mode
Charging time	8 h (100%)	
External Voltage	12 ± 2 V DC	40 W
Consumption	135.42 Wh	
Energy saving	Auto power off TFT Off Standby mode	Configured by user The standby mode will be available in next releases

► **Operating Environmental Conditions**

Parameter	Value	Additional Data
Altitude	Up to 2000 m	
Temperature Range	From 5 °C to 45 °C	Automatic disconnection by excess of temperature
Max. Relative Humidity	80%	Up to 31°C; decreasing lineally up to 50% at 40 °C.

> **NOTE:** Equipment specifications are set in these environmental operating conditions. Operation outside these specifications is also possible. Please check with us if you have specific requirements.

► **Included Accessories**

Parameter	Value	Additional Data
1x 0 MT0170	Antenna Dual WiFi	
1x 0 MF0213	USB WiFi adapter	
1x 0MF0214	USB cable	
1x 0 CO6861	Aero SMA/f-BNC/m adapter	
1x	GPS receiver	
1x CC-046	Jack 4V/RCA cable	
1x AA-103	Car lighter charger	
1x AL-103	External DC charger	
1x AD-055	F/f-BNC/f adapter	
1x AD-056	F/f-DIN/f adapter	
1x AD-057	F/f-F/f adapter	
1x CA-005	Mains cord	
1x CB-096	Rechargeable Li-Po battery 7.4 V 18.3 Ah	Built-in
1x DC-300	Transport belt	
1x DC-302	Carrying bag	

Parameter	Value	Additional Data
1x DC-230	Transport suitcase	
1x DG0399	Quick Reference Guide	
1x MN-001	Monopod	

NOTE: It is recommended to keep all the packing material in order to return the equipment, if necessary, to the Technical Service.

▶**Optional Accessories**

Parameter	Value	Additional Data
AD-061	Adapter 50/75 N/m - BNC/f	

7.2   TV Analyzer Mode

7.2.1   Supported Standards

► **DVB-T**

Parameter	Value	Additional Data
Modulation	COFDM	
Margin of power Measurement	-85 dBm - 15 dBm	22 dBµV - 122 dBµV
Power measurement accuracy	± 1,5 dB	
Sensibility	< -86,7 dBm	@1000 MHz QPSK 5/6 8K 8 MHz
Frequency resolution	1 kHz	
Measurement	Power, CBER, VBER, MER, PER, C/N and Link Margin	
Tuning Range	45 - 1000 MHz	
Standard compliant	European Standard for DVB-T	ETSI EN 300-744 v.1.6.1
	All European Standards for static and portable equipment and targeting upcoming Digital Europe e-book requirements	NorDig-Unified Test Specs ver2.5.0 DTG D-Book 8.0 IEC 62216

► **DVB-T2**

Parameter	Value	Additional Data
Profiles	T2-Base, T2-Lite	
Modulation	COFDM	
Margin of power Measurement	-85 dBm - 15 dBm	22 dBµV - 122 dBµV
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurement	Power, CBER, C/N, LBER, MER, Link Margin, BCH ESR, LDP Iterations and PER	Measurement of LBER below 1E-10
Tuning Range	45 - 1000 MHz	
Standard compliant	European Standard for DVB-T2	ETSI EN 302-755 v1.3.1
	All European Standards for static and portable equipment and targeting upcoming Digital Europe e-book requirements	NorDig-Unified Test Specs ver2.5.0 DTG D-Book 8.0 IEC 62216

► **ISDB-T**

Parameter	Value	Additional Data
Modulation	COFDM	
Margin of power Measurement	-85 dBm - 15 dBm	22 dBµV - 122 dBµV
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurement	Power, CBER, VBER, MER, PER, C/N, PER and Link Margin	
Tuning Range	45 - 1000 MHz	

Parameter	Value	Additional Data
Standard compliant	ARIB Transmission System for DTT Broadcasting	ARIB STD-B31 v2.2

► DVB-C

Parameter	Value	Additional Data
Modulation	QAM	
Margin of Power Measurement	-85 dBm - 15 dBm	22 dBμV - 122 dBμV
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurements	Power, BER, MER, PER, C/N, PER and Link Margin	
Tuning Range	45 – 1000 MHz	
Standard compliant	Digital Video Broadcating for cable systems	ETSI EN 300-429 v1.2.1
	NorDig-Unified Test Specification	ver 2.5
Symbol Rate	1700 - 7200 kbauds	

► DVB-C2

Parameter	Value	Additional Data
Modulation	QAM	
Margin of Power Measurement	-85 dBm - 15 dBm	22 dBμV - 122 dBμV
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurements	Power, CBER, MER, PER, C/N, LBER, BCH ESR, LDP Iterations, PER	
Tuning Range	45 - 1000 MHz	
Standard compliant	Digital Video Broadcating for cable systems	ETSI EN 300-769 v1.2.1

► J83 Annex B

Parameter	Value	Additional Data
Modulation	QAM	
Margin of Power Measurement	-85 dBm - 15 dBm	22 dBμV - 122 dBμV
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurement	Power, BER, MER, PER, C/N and Link Margin	
Tuning Range	45 - 1000 MHz	
Standard compliant	International Telecommunication Union standard	ITU-T J.83 v3.0

► ATSC 1.0

Parameter	Value	Additional Data
Modulation	8VSB	
Margin of Power Measurement	-85 dBm - 15 dBm	22 dBµV - 122 dBµV
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurement	Power, SER, VBER, MER, PER, C/N and Link Margin	
Tuning Range	45 - 1000 MHz	
Standard compliant	ATSC Digital Television Standard	ATSC A/53-part 2 (2011)

► ATSC 3.0

Parameter	Value	Additional Data
Modulation	COFDM	
Margin of Power Measurement	-85 dBm - 15 dBm	22 dBµV - 122 dBµV
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurement	Power, CBER, MER, PER, C/, LBER, BCH ES	
Tuning Range	45 - 1000 MHz	
Standard compliant	ATSC Digital Television Standard	ATSC A/321 (2016) ATSC A/322 (2017) ATSC A/330 (2016)

► Analogue TV

Parameter	Value	Additional Data
Tuning range	45 - 1000 MHz	
Frequency resolution	1 kHz	
Colour System	PAL, SECAM and NTSC	
Standard Supported	M, N, B, G, I, D, K and L	
Sensibility	40 dBµV for a correct synchronism	

► DVB-S

Parameter	Value	Additional Data
Modulation	QPSK	
Margin of Power Measurement	-80 dBm - 20 dBm	35 dBµV - 127 dBµV
Power measurement accuracy	± 1,5 dB	
Sensibility	-77 dBm	@2340 MHz SR= 27,5 MS/s
Frequency resolution	1 kHz	
Measurements	Power, CBER, VBER, MER, C/N and Link Margin	
Symbol Rate	1,1 - 80 Msym/s	
Tuning Range	250 – 2350 MHz	

► DVB-S2

Parameter	Value	Additional Data
Modulation	QPSK, 8PSK, 16APSK, 32APSK	
Margin of Power Measurement	-80 dBm - 20 dBm	35 dBµV - 127 dBµV (@27,5 MS/s)
Power measurement accuracy	± 1,5 dB	
Sensibility	-77 dBm	@2340 MHz SR= 27,5 MS/s
Frequency resolution	1 kHz	
Measurements	Power, CBER, LBER, MER, PER, C/N, BCH ESR and Link Margin	
Symbol Rate	500 ksym/s - 80 Msym/s	
Supporting	TS, GPS and GCS	
Tuning Range	250 – 2350 MHz	

► DSS

Parameter	Value	Additional Data
Modulation	QPSK	
Margin of Power Measurement	35 - 115 dBµV	
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurements	Power, CBER, VBER, MER, PER, C/N and Noise Margin	
Tuning Range	250 - 2350 MHz	

► DVB-S2x

Parameter	Value	Additional Data
Modulation	QPSK	
Margin of Power Measurement	-80 dBm - 20 dBm	35 dBµV - 127 dBµV (@27,5 MS/s)
Power measurement accuracy	± 1,5 dB	
Sensibility	TBD	
Frequency resolution	1 kHz	
Measurements	Power, CBER, VBER, MER, PER, C/N, BCH ESR and Link Margin	
Symbol Rate	200 ksym/s - 80 Msym/s	
Supporting	TS, GPS and GCS	
Tuning Range	250 - 2350 MHz	

► FM

Parameter	Value	Additional Data
Tuning range	45 - 1000 MHz	
Frequency resolution	1 kHz	
Accuracy of level measurement	± 1,5 dB	
Sensitivity	8 dBµV / -99 dBm	S+N/N = 12 dB
Measurement	Level, C/N	
RDS information	Available	

7.2.2 TV Analyzer Tools

► **Spectrum**

Parameter	Value	Additional Data
Tuning range	5 MHz - 3 GHz	
Markers	1	It shows frequency, level, frequency difference and level difference
Reference Level	Selectable	linked or not to attenuators
Attenuator	5 dB steps	Automatic / manual mode
Digital channels measurement	Power, C/N	Units: dBuV, dBmV, dBm
Measurement resolution	0,1 dB	
Measurement accuracy	± 1.5 dB	
Frequency accuracy	± 6 kHz	
Frequency resolution	255 Hz	
Accuracy of frequency reference	< 2 ppm	It includes initial deviation, temperature response, and aging during the first year.
Indicators	Saturation	
Markers	Absolute and referenced	
Scan rate	40 GHz/sec	
Displayed Average Noise Level (DANL)	156 dBm/Hz for f < 3 GHz	
	< 10 dBµV between 5 MHz - 12 MHz	For 100 kHz filter
	< 0 dBµV between 12 MHz - 2350 MHz	
Dynamic	70 dB	
Display Range - Noise floor	up to +23 dBm / 130 dBµV	
Terrestrial Band		
Tuning range	5 - 1000 MHz	
Tuning mode	Channel or frequency	
Tuning Accuracy	± 1 kHz	
Resolution Bandwidth (RBW)	2, 10, 20, 40, 100, 200, 1000 kHz	
Span		
Span settings	numeric value or predefined	
Span predefined values	10, 50, 200, 500, 995 MHz	
Minimum Span	10 kHz	
Maximum Span	995 MHz	
Amplitude		
Max input voltage	50 Vrms DC @100 Hz	with AL-103 AC adapter
	30 Vrms DC @100 Hz	
Max level input	15 dBm	5 - 20 MHz
	23 dBm	20 MHz - 6 GHz
Satellite Band		
Tuning range	250 - 2350 MHz	
Tuning mode	Channel or frequency	
Tuning accuracy	± 2.5 kHz	
Tuning Resolution	10 kHz	
Resolution Bandwidth (RBW)	10, 20, 40, 100, 200, 1000 kHz	
Measurement range	20 dBµV - 130 dBµV	

Parameter	Value	Additional Data
Span		
Span settings	numeric value or predefined	
Span predefined values	10, 50, 200, 500, 1000 MHz, full	
Minimum Span	10 kHz	
Maximum Span	2100 MHz	
LNB		
Band	Ku / Ka / C	
Polarity	Horizontal / Vertical, Left / Right	

► Video

Parameter	Value	Additional Data
Codecs	MPEG-1	
	MPEG-2	HD, MP, HL up to 1080p6
	H.264	CBP, MP, High Profile Level 5.2 up to 1080p240 / 4Kp60
	H.265 4K UHD	MMP L5.1 8b/10b up to 4Kp60

► Audio

Parameter	Value	Additional Data
Codecs	MPEG-1	
	MPEG-2	
	AAC; HE-AAC	
	Dolby Digital (DD) and Dolby Digital + (DD+)	
	Dolby AC-4	

► Transport Stream

Parameter	Value	Additional Data
Communication Protocol	MPEG-2	
Packets	188 or 204 bytes	Automatic detection
Max. Bitrate	200 Mbit/s	
Max. Recording Bitrate	200 Mbit/s	
Recording	Internal memory or external USB	
Recording Internal Memory	8 GB	
TS Analyser		
Standards supported	DVB, ATSC, ISDB-T SCTE	
PSI Tables	PAT, PMT, NIT, CAT	Árbol jerárquico de tablas
SI Tables	NIT, BAT, SDT, EIT, TDT, TOT	Árbol jerárquico de tablas
Alarms	Alarm log	According to standard ETSI TR101 290 v1.2.1
Bitrate analyser	Data info and pie chart	
PIDs	Identied packet list	

► **Other Tools**

Parámetro	Valor	Datos Adicionales
Echoes	Available for DVB-T, DVB-T2, DVB-C, DVB-C2, ISDB-T	
Constellation	Available for DVB-T, DVB-T2, DVB-C, DVB-C2, DSS, DVB-S, DVB-S2, ISDB-T, J83 Annex B	
Shoulder Attenuation	Available	
MER by Carrier	Available	
Service Recording	Available	
Optical power measurement	Available	

► **Advanced Tools**

Parámetro	Valor	Datos Adicionales
Drive Test	Available	
TS Recording	Available	
ALP Recording	Available	
FM audio Recording	Available	

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7.3   Spectrum Analyzer Mode

Parameter	Value	Additional Data
Tuning range	5 MHz - 6 GHz	
Accuracy of frequency reference	< 2 ppm	It includes initial deviation, temperature response, and aging during the first year.
Frequency resolution	255 Hz	
Frequency accuracy	up to 3 GHz < ± 6 kHz 3 - 6 GHz < ± 11,9 kHz	
Scan rate	40 GHz/sec	
Frequency span	10 kHz to full span (5,95 GHz)	
Predefined span values	10, 50, 200, 500 MHz, 1 GHz, 3 GHz, 5.995 GHz	
Resolution Bandwidth (RBW)	2, 10, 20, 30, 40, 100, 200, 1000 kHz	
Display range - Noise floor	up to +23 dBm / 130 dBµV	
Measurement	Channel power	Configurable Bandwidth: - minimum: resolution bandwidth value - maximum: 5.95 GHz
Markers	4 markers	Absolute / referenced
Reference Level	Selectable	Linked or not to attenuators
Attenuators	Pasos de 5 dB	Modo manual
Scan time	250 ns a 0.149 s	
Amplitude		
Max input voltage	50 Vrms DC a 100 Hz	con alimentador AL-103
	30 Vrms DC a 100 Hz	
Max level input	15 dBm	5 - 20 MHz
	23 dBm	20 MHz - 6 GHz
Displayed Average Noise Level (DANL)	156 dBm/Hz for f < 3 GHz	
	150 dBm/Hz between 3 - 4.425 GHz	
	149 dBm/Hz between 4.425 - 6 GHz	
Uncertainty in level measurement	< ± 1.5 dB	
Measurement resolution	0.1 dB	

7.4 IPTV Mode

Parameter	Value	Additional Data
Source	RJ45	
Main features	Supports VLAN networks	
	Multicast discovery	
	Audio/video service play	
	T2MI reception	
	BTS reception	
	TS Analyzer	
Streaming simultaneous reception in real time	1	
Unicast	UDP Port Protocol: RTP, UDP	IP Packets: it is mandatory that each ethernet packet contains an integer number of TS packets which can be from 1 to 7.
Multicast	IP: 224.0.0.0 - 239.255.255.255 Ports: 1024 - 65535	
Protocols	IGMP v1, v2, v3 ARP ICMP DHCP	
Video play	H265 4K UHD (MP L5.1 8b/10b hasta 4kp60) H264 (CBP, MP, HP L5.2 hasta 1080p240 / 4Kp60) MPEG-2 (HD, MP, HL hasta 1080p6)	
Audio play	MPEG-1, MPEG-2 AAC, HE-AAC Dolby Digital (DD), Dolby Digital + (DD+) Dolby AC-4	
Charts	Packet rate Jitter histogram Inter packet arrival time	

Parameter	Value	Additional Data
Measurement	Received rate (packets/s)	
	Received packets	
	RTP missing packets	
	RTP out of order	
	Delay factor	Maximum time that a multicast stream packet is inside the receiving equipment's buffer. Measurement taken during the last second of data reception. Recommended value < 100 ms
	Media lost rate	Ratio of lost packets compared to the received packets from the multicast stream (RTP only). Recommended value < 0,005 packets/s
	MAX IPAT	
	FEC Status	
	Reordered RTP	
	Fixed Packets	
	Overflow	
	TS Packets info	
Network Traffic Measurement	Network rate	
	Network Packets	
	Packets with errors	
	IPER (ITU Y.1540) Recommended value (per quality service): class 0-4 < 1.0 E-4 class 5: unspecified class 6-7 < 1.0E-6	Population of interest: all Ethernet frames received on the interface.
Signal Parameters	Link speed	10 Mbit/s, 100 Mbit/s, 1Gbit/s
	Multicast group	
	UDP Port	
	Protocol: UDP, RTP	
	IP source	
	FEC (present, rows, columns)	
	TTL (time to live)	
	TOS	
	TS pacekts per frame	

7.5 ASI Mode

► **Transport Stream**

Parameter	Value	Additional Data
Reception	TS, T2MI (not decapsulated), BTS	Restricts TS to ASI input
Packets	188 or 204 bytes	Automatic detection
Video Info	Type, bitrate, format, aspect ratio, frequency, profile, PID	Bitrate info displayed in tables and pie chart
Service Info	Network, provider, NID, ONID, scrambled/free, TSID, SID, LCN	
Audio Info	Type, bitrate, format, frequency, mono/stereo, language, PID	
Max. Recording Bitrate	200 Mbit/s	
Recording	Internal memory or external USB	
Recording Internal Memory	8 GB	

► **Transport Stream Tables & Alarms**

Parameter	Value	Additional Data
PSI Tables	PAT	Program Association Table
	PMT	Program Map Table
	NIT	Network Information Table
	CAT	Conditional Access Table
SI Tables	NIT	Network Information Table
	BAT	Bouquet Association Table
	SDT	Service Description Table
	EIT	Event Information Table
	TDT	Time and Date Table
	TOT	Time and Date Table
Max. Bitrate	200 Mbit/s	
Alarms	Alarms log	According to ETSI standard TR101 290 v1.2.1

7.6 SDI Mode

Parameter	Value	Additional Data
Connector	SDI-3G	
Input	3 GBit/s	
Output	3 GBit/s	
Measurement	Statistical eye	
	CRC error	
Audio monitoring	Up to 16 channels AES3	
	Channel status	
	LPCM audio loudness meter	
Video/Audio formats	Autodetection	
	SD	SDI @ 270 Mbps: 4:3 4:2:2 525i/625i SDTV + embedded AES3 audio
	HD	SDI @ 1.5 Gbps: 16:9 4:2:2 up to 720p60/1080p30/1080i60 HDTV + AES3
	3G	SDI level A @ 3 Gbps: 16:9 4:2:2 up to 1080p60 HDTV + AES3

7.7 Options

► Fibre Optics

Parameter	Value	Additional Data
Descriptive Code	OP-006-PS	
Selective Optical Power Meter		
Connector	FC-APC/h	
Optical Measure bands	1310 nm ± 50 nm; 1490 nm ± 10 nm; 1550 nm ± 15 nm	
Optical Power Measurement Dynamic Range	- 49,9 dBm - +5 dBm	Accuracy ± 1 dB
Optical Power Measurement Range	800 - 1700 nm	Without optical filters
Isolation between optical bands	> 43 dB	
Optical to RF Converter		
RF Terrestrial conversion	Available	
RF Satellite conversion	Low-horizontal band Low-vertical band High-horizontal band High-vertical band	
Dynamic range of conversion	-10 dBm - +5 dBm	
RF terrestrial band converted	5 - 1000 MHz	Cable link and optical TDT
RF satellite band converted	950 - 5450 MHz	IF Satellite optical installations

► Advanced FM

Parámetro	Valor	Datos Adicionales
Descriptive Code	OP-006-FM	
Tuning range	45 - 1000 MHz	
Frequency resolution	1 kHz	
Accuracy of level measurement	± 1,5 dB	
Sensitivity	8 dBμV / -99 dBm	S+N/N = 12 dB
Measurement	Level, C/N, MPX power	
	Frequency offset, bandwidth	
	Frequency deviation: left (L), right (R), L+R, L-R, MPX, RDS, Pilot	
	Level: left (L), right (R), L+R, L-R, MPX	
RDS information	Available	

► DAB/DAB+

Parámetro	Valor	Datos Adicionales
Descriptive Code	OP-006-DAB	
Tuning range	45 - 1000 MHz	
Frequency resolution	1 kHz	
Accuracy of level measurement	± 1,5 dB	

Parámetro	Valor	Datos Adicionales
Measurement	Power, C/N, MER, CBER	
	MSC CBER, FIC CBER	
	Frequency offset, bandwidth	
	FIB Ratio	

8 MAINTENANCE

8.1   Instructions for Returning by Mail

Instruments returned for repair or calibration, either within or out of the warranty period, should be sent with the following information: Name of the Company, name of the contact person, address, telephone number, receipt (in the case of coverage under warranty) and a description of the problem or the service required.

8.2   Considerations about the Screen

This paragraph offers key considerations regarding the use of the colour screen, taken from the specifications of the manufacturer.

In the TFT display, the user may find pixels that do not light up or pixels that are permanently lit. This should not be regarded as a defect in the TFT. In accordance with the manufacturer quality standard, 9 pixels with these characteristics are considered admissible.

Pixels which are not detected when the distance from the surface of the TFT screen to the human eye is greater than 35 cm, with a viewing angle of 90° between the eye and the screen should not be considered manufacturing defects either.

It is advisable a viewing angle of 15° in the 6.00 o'clock direction in order to obtain the optimum visualization of the screen.

8.3   Cleaning Recommendations

The equipment consists of a plastic case and a TFT screen. Each element has its specific cleaning treatment.

►**Cleaning the Screen**

The TFT screen surface is VERY DELICATE. It has to be cleaned with a soft fabric cloth (cotton or silk), always making the same move from left to right and from top to bottom, without putting pressure on the screen.

The TFT screen has to be dry-cleaned or with a product specifically designed for TFT screens, by slightly dampening the cloth. NEVER use tap or mineral water, alcohol or conventional cleaning products, because they contain components that can damage the screen.

Turn off the equipment to locate dirt on the screen. After cleaning, wait a few seconds before turning on.

►**Cleaning the Plastic Case**

The equipment has to be disconnected before cleaning the case.

The case must be cleaned with a solution of neutral soap and water, using a soft cloth dampened with this solution.

Before use, the equipment has to be completely dry.

Never clean with abrasive soaps, chlorinated solvents or aromatic hydrocarbons. These products may degrade the case.

i ADDITIONAL INFORMATION

i.1   Additional Documents

On the PROMAX website you can find additional information to go deeper in some aspects related to the field strength meter.

Name	Description	Link	
PROMAX Download Area	Documentation related to PROMAX equipment	http://www.promaxelectronics.com/ing/downloads/user-manuals	
ATLaS	Datasheet of ATLaS at the PROMAX website with links to all downloadable content	https://www.promaxelectronics.com/ing/products/tv-cable-satellite-signal-and-spectrum-analyzers/atlas/the-atsc-30-and-dvb-universal-broadcast-analyzer/	
Signals Description	Brief definition of all signals and parameters detected by the meter	http://www.promaxelectronics.com/ing/downloads/user-manuals/ranger-neo-3/high-class-field-strength-meter-and-spectrum-analyzer	
DiSEqC Commands	Description of DiSEqC commands for remote control of antennas	http://www.promaxelectronics.com/ing/downloads/user-manuals/ranger-neo-3/high-class-field-strength-meter-and-spectrum-analyzer	
Firmware	Last release of the updating file for the meter	https://www.promaxelectronics.com/ing/downloads/software-and-firmware/atlas/the-atsc-30-and-dvb-universal-broadcast-analyzer/	

i.2   Social Networks

Name	Link	
Twitter	@PROMAX_news	
Linkedin	https://www.linkedin.com/company/1493234/	
Facebook	https://www.facebook.com/promaxelectronics/	
YouTube	https://www.youtube.com/user/PROMAXElectronics	

ii MULTIMEDIA CONTENT

The following table shows all the links to video tutorials included in this manual:

Chapter	Title	Link	QR Code	
1. Introduction	Introducing the ATLAS NG	https://youtu.be/KYArk4qbBgc	▣	
2. Setting Up	Inputs and outputs	https://youtu.be/nxaKZi93W-Q		▣
2. Setting Up	Main Menu	https://youtu.be/VS-wk48tupI	▣	
3. Settings and Preferences	Settings Menu	https://youtu.be/H0ruPDo97pM		▣
4. TV Analyzer	TV Analyzer Basics	https://youtu.be/x9cYqCwDpOo	▣	
4. TV Analyzer	Spectrum	https://youtu.be/c6_NIUXoeuc		▣
4. TV Analyzer	Measurements	https://youtu.be/ZAvGjzLSqjk	▣	
4. TV Analyzer	Signal Parameters	https://youtu.be/ZAvGjzLSqjk?t=54		▣
4. TV Analyzer	Video	https://youtu.be/c4fA5oXJ7Go	▣	
4. TV Analyzer	Recording	https://youtu.be/aE4h9lktrgE		▣
4. TV Analyzer	Constellation	https://youtu.be/PIVX95fCgQE	▣	
4. TV Analyzer	Video Values	https://youtu.be/Ww84wTu9wwk		▣
4. TV Analyzer	MER by Carrier	https://youtu.be/bdgpY1_M2JQ	▣	
4. TV Analyzer	Echoes Analyzer	https://youtu.be/4Q1uxtyyn70		▣
4. TV Analyzer	Transport Stream Analyzer	https://youtu.be/MlIPQ-T__PE	▣	
4. TV Analyzer	Audio levels	https://youtu.be/38x7ozsjxjw		▣

Chapter	Title	Link	QR Code	
4. TV Analyzer	Shoulders Attenuation	https://youtu.be/HFEWls3zSeY		▣
4. TV Analyzer	Optical Power Measurement	https://youtu.be/d9H9NAMvPxc	▣	
4. TV Analyzer	Drive Test	https://youtu.be/Fa2WQocZU-s		▣
6. webControl	webControl	https://youtu.be/JtKQXymTRbg	▣	

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