# TV EXPLORER NG

## UNIVERSAL TV ANALYZER


-0 MI2248-

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.



# 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.

Some video tutorials are from the ATLAS NG manual, as certain functions are identical or very similar to those of the TV EXPLORER NG.

# USER'S MANUAL VERSION

| Manual Version | Web Publication Date | Firmware Version |
|---|---|---|
| F1.0 | September 2025 | 3.2.1 |

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

- Last firmware download: https://www.promaxelectronics.com/ing/products/tv-cable-satellite-signal-and-spectrum-analyzers/tv-explorer-ng/universal-tv-and-spectrum-analyzer/
- Updating instructions: "Updating the meter" on page 20

# 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.

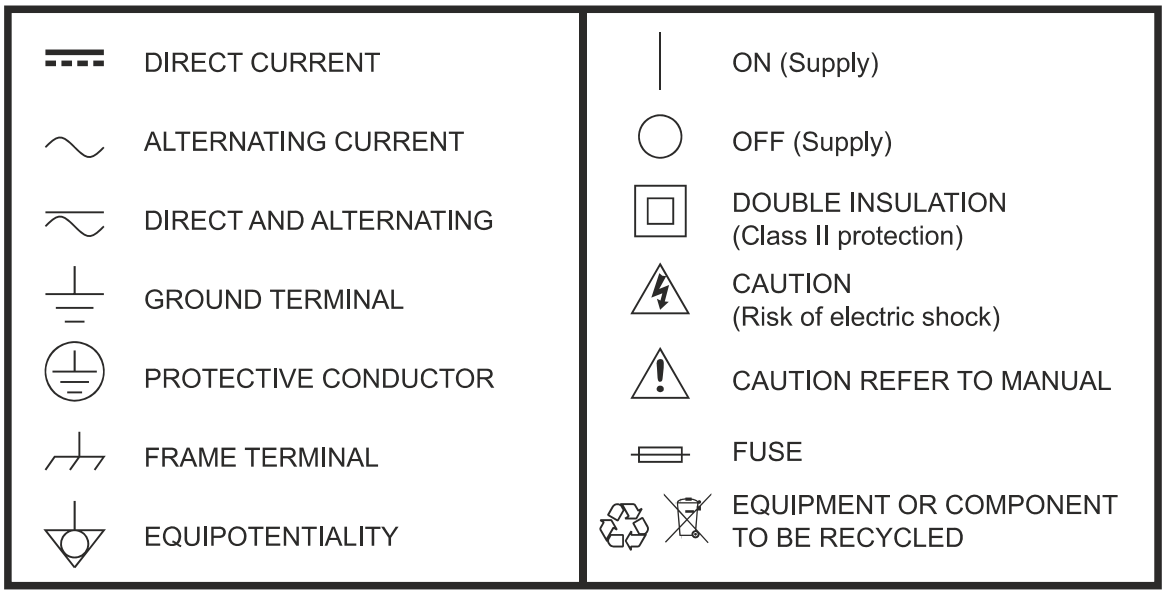
* When using the power adaptor, the negative of measurement is at ground potential.

* 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




## 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 TV ANALYZER

# TV EXPLORER NG

## 1 INTRODUCTION

### 1.1 TV EXPLORER NG: The Next Generation of Signal Analysis

The **TV EXPLORER NG** represents the natural evolution of the iconic TV EXPLORER, the field strength meter that played a key role in the digitalization of television broadcasting worldwide.

Designed and manufactured by PROMAX, drawing on decades of experience in the sector, this new device is perfectly suited to the present and future of the audiovisual industry, where high definition, hybrid television, and emerging transmission standards set the pace.

The **TV EXPLORER NG** has been conceived as a portable and rugged instrument, built to withstand the real conditions of everyday fieldwork. Its compact design, light weight, and long-lasting battery make it ideal for intensive field use, without compromising on modern connectivity. It features USB, Ethernet, and HDMI ports, remote access, and firmware update capabilities to ensure optimal performance at all times.


**Figure 1.**

**►Redesigned Interface: Intuitive and Customizable**

The **TV EXPLORER NG** features a new graphical interface based on dockable panels, allowing users to configure their workspace according to their specific needs. Its high-resolution multitouch screen and powerful multi-core processor ensure a fast, smooth, and modern user experience.

This ease of use does not compromise its analytical power: behind the user-friendly interface lies a high-precision professional instrument, designed for both field and lab work.

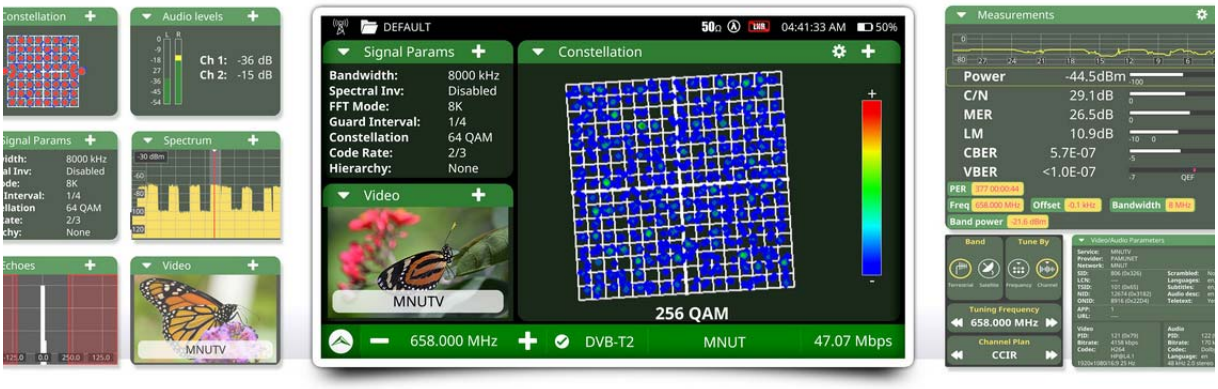


**Figure 2.**

[Main features (01:17s)](#)

SCAN

## 1.2 Advanced Features

Designed to meet the needs of installers, maintenance technicians, and operators working in demanding environments, the **TV EXPLORER NG** offers a high-level set of analysis and diagnostic tools capable of delivering precise, fast, and real-time measurements, reliably adapting to any type of signal or standard.

- Real-time measurement of all key parameters: frequency, level, C/N, MER, BER, constellation, spectrum, and echo.

- Fast and detailed spectrum analysis with zoom, markers, and hold functions.
- Automatic signal identification with intelligent detection.
- Screen and video captures, subtitle display, service information, EPG, and much more.
- Automatic generation of measurement reports, exportable for documentation or certification.

### ► Compatible with the Latest Broadcasting Standards

In an ever-evolving digital ecosystem, the **TV EXPLORER NG** has been developed to offer full compatibility with most current digital television standards, whether terrestrial, cable, or satellite:

- DVB-T/T2, DVB-C/C2, DVB-S/S2, with optional support for DVB-S2x
- ISDB-T/Tb, widely used in Latin American and Asian countries
- Support for ATSC 1.0 and ATSC 3.0*
- Support for HbbTV, hybrid television
- Smooth decoding of HEVC H.265 signals, even in UHD 4K HDR 10-bit resolutions, without performance loss

This wide range of compatibility makes the **TV EXPLORER NG** an ideal tool for both traditional and advanced environments, fully prepared for the television of the future.

### ► International Regulatory Compliance

The **TV EXPLORER NG** is not only technically advanced but also designed to comply with the main technical regulations and national standards in various countries, including:

- ICT-2 (Spain)
- RITEL (Colombia)
- DUCTOS (Chile)

This makes it a trusted tool for professional installers, integration companies, network operators, and maintenance technicians who require reliable and up-to-date equipment.

## 1.3 Ready for the Future

The **TV EXPLORER NG** has been entirely designed and manufactured in the European Union under the guidance of a multidisciplinary team of highly qualified engineers, designers, and technicians committed to technological excellence and operational reliability.

*. Only for **ATSC** version of **TV EXPLORER NG**

Every stage of development has been meticulously handled—from the initial concept and electronic design to final assembly and functional validation. Component and material selection has followed the strictest quality criteria, with all parts subjected to rigorous quality controls to ensure durability, precision, and stability under any working conditions.

This approach reflects PROMAX commitment to the European industry, embracing a responsible and sustainable innovation model that ensures traceability, close technical support, and complete control over the production process.

**► Commitment to Customer Support and Continuous Improvement**

PROMAX extensive experience in the telecommunications sector, built over more than half a century, allows us to offer not only a high-end product but also a professional, agile, and personalized after-sales service, tailored to the needs of installers, field technicians, and network operators.

In addition, the **TV EXPLORER NG** benefits from a regular software update plan that not only addresses potential issues but also adds new features, performance improvements, and compatibility with future standards. This extends the equipment life-span and ensures its technological relevance in a constantly evolving environment.

**Figure 3.**

Explorer NG: My loyal go-to tool (02:35s)

SCAN

# 2 SETTING UP

## 2.1 Package Content

Check that your package contains the following elements:

- **TV EXPLORER NG** Universal TV Analyzer.
- External DC charger.
- Mains cord for external DC charger.
- Car cable for external DC charger.
- F - BNC adapter (f/f).
- F - DIN adapter (f/f).
- F - F adapter (f/f).
- WiFi-USB dongle.
- Jack cable (4V) RCA.
- Transport belt.
- Carrying bag.
- Quick reference 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 **TV EXPLORER NG** is powered by a 7.4 V built-in rechargeable LiPo 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 4.**

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 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):

- 6 h 15 min. to achieve a 100% charge.

Battery life:

- In TV Analyzer mode: 4 hours (mode: UHD TV with DVB-T2 demodulation).
- Basic WiFi: 4 hours (2.4 GHz band).

### 2.2.4 Energy Saving

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

- **Automatic 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.
- **Screen timeout**: 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 "**Show battery remaining 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


**Figure 5. Front view.**

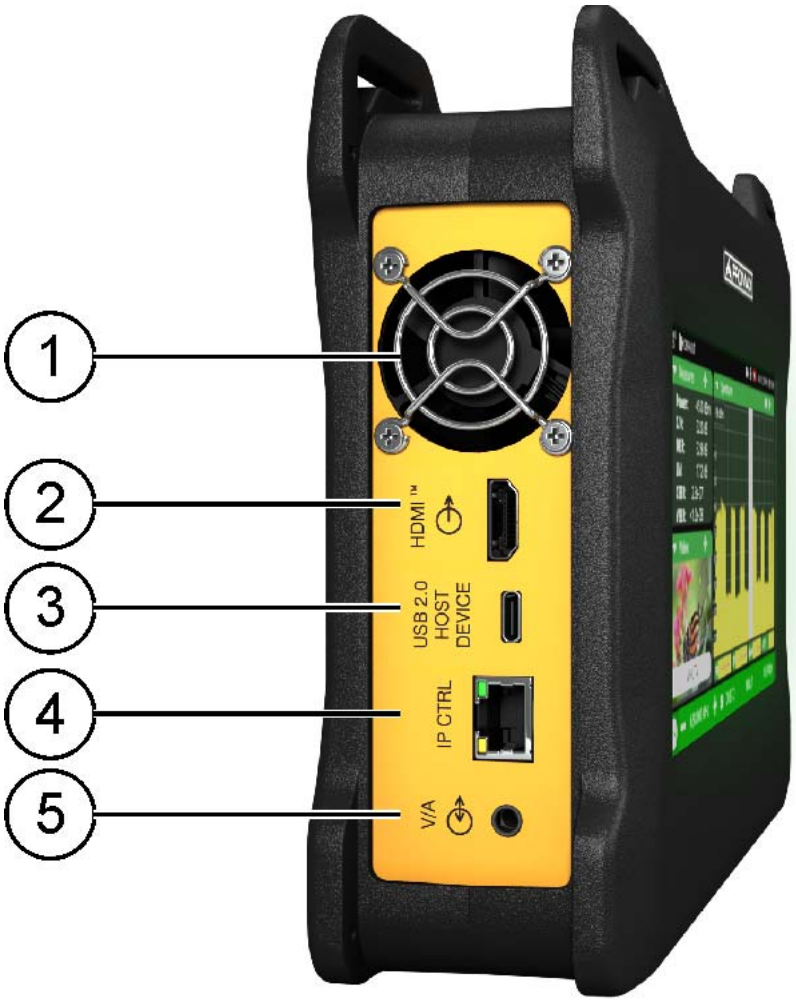


**Figure 6. Left Side View.**

1 Ventilation outlet.

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

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

4 RJ45 connection for remote management.

5 Analogue Video/Audio input/output.


**Figure 7. Right Side View.**

1 Ventilation outlet.

2 LED indicator for battery charge level.

3 Power input connector.


**Figure 8. Top View.**

1 On/Off button + status LED indicator. Press and hold for 1 second to power on, or just press to power off.

2 USB 3.0. For WiFi dongle, GPS receiver or USB memory.

3 BNC (f) connector. For inserting a cable with RF signal.

4 FC/APC (f) connector. For inserting a cable with optical signal.

## 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 status LED will light up to indicate that the device is powering on.

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 Home 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 home screen.

2 Press the "Appearance" icon  .

3 The option "**Automatic 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.**
- **When it does not complete the shutdown process.**

## 2.6 Icons

Icons on screen provide useful information about the equipment:

| Icon | Description | Icon | Description |
|---|---|---|---|
|  | Terrestrial band. |  | Satellite band. |
|  | Enabled folder. |  | Recording. |
|  | Attenuator: Optimum attenuation. |  | Signal Quality according to threshold: Correct quality. |
|  | Attenuator: Over attenuation. |  | Signal Quality according to threshold: Quality close to threshold. |
|  | Attenuator: Under attenuation. |  | Signal Quality according to threshold: Not acceptable quality. |
|  | Battery charging. |  | External supply: Disabled. |
|  | Battery in use. |  | Outdoor unit power supply: It shows selected voltage. |
|  | Low battery. It will shut down shortly. |  | Outdoor unit power supply: It shows selected voltage and 22 kHz signal activated. |

| Icon | Description | Icon | Description |
|---|---|---|---|
| 50Ω | RF Input Impedance: 50 Ohms. | EXT | Power supplied by an external source. It only measures the connector voltage. |
| 75Ω | RF Input Impedance: 75 Ohms. | | GPS enabled. |
| | Calibration warning. | | Optical calibration warning. |

## 2.7 Home Menu

To access the **Home** menu from any other screen press the PROMAX logo at the left bottom corner.

From the Home menu you can access the work modes as described below.

- TV Analyzer: Tool to analyze and demodulate terrestrial, satellite, CATV (for more details refer to "TV ANALYZER" on page 32).
- WiFi: Tool to analyze the WiFi band (for more details refer to "WIFI " on page 66).
- TV Monitor: It allows viewing and listening to the video/audio received through the AV input (3.5 mm jack connector).
- Manual: Access the quick guide and complete user's manual.
- Settings: Access the settings menu (for more details refer to "SETTINGS AND PREFERENCES" on page 22).

## 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 available options are:

- Workspace: Management of work folders.
- Task Planner: Management of scheduled tasks.
- USB: Management of USB connection type.
- GPS (option): Management of GPS for the Drive Test.
- WiFi: Management of WiFi network through the WiFi modem.
- HDMI™: Management of HDMI™ technology interface.
- Antenna: Settings of antenna field strength.
- Supply Output: Management of power supply for external devices.
- Optical power: Measurement of power in the optical band.
- Volume: Management of audio volume.
- Brightness: Management of screen brightness.
- Notifications area: Latest notifications displayed on screen.

For more details refer to "Top Menu" on page 27.

## 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 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 the second method.

**►How to access the 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. Tap briefly on an image to display it on the screen.
6. Tap and hold an image to view the options menu, which allows you to rename the image, delete it, preview it or copy it to a USB.

## 2.10 Use Case: Terrestrial RF Signal Tuning

The next section is a general explanation of how to tune a terrestrial RF signal, step by step. For more details refer to "TV ANALYZER" on page 32.

1. Connect the RF input signal cable to the RF input connector.
2. From the **Home** Menu press on **TV Analyzer** .
3. On the main window, press and select the **Spectrum** tool. On the small windows, you can select other tools, like the video tool to watch the demodulated signal or the measurements tool to check power and MER.
4. Swipe right from the left side or press on the bottom bar to display the tuning menu.
5. Select the **terrestrial band** .
6. Select **type of tuning**: Tune by frequency or Tune by channel .
   - **Tune by frequency**: Select a frequency to be tuned.
   - **Tune by channel**: User selects a channel to be tuned. Previously the user have to select a channel plan on the **Channel Plan** option. A channel plan contains a list of channels with settings for each channel (frequency, type

of signal, bandwidth, etc.). When tuning by channel it will apply the settings obtained from the channel plan in first place.

7 On **Signal Type** option select **Mode**:

- **Auto mode**: It identifies and tries to demodulate the signal automatically using the StealthID function (for more details refer to "►StealthID" on page 26).
- **Manual mode**: The user must enter the signal type and the parameters to identify and demodulate it.

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

9 Adjust the **reference level**.

10 Select channel or frequency to be tuned. You can select your frequency or channel by using the tuning menu or by dragging left or right on the screen and then tapping on the signal.

11 When on the signal, the tuning bar turns green if the signal is locked. If not locked, the tuning bar does not change and maintains the red colour.

12 If locked, it tries to demodulate it. At the video tool will show the image and at signal parameters tool will show all related parameters.

## 2.11 Use Case: Satellite RF Signal Tuning

The next section is a general explanation of how to tune a satellite RF signal, step by step. For more details refer to "TV ANALYZER" on page 32.

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

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

3 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.

4 Swipe right from the left side or press on the status bar to display the tuning menu.

5 Select the **satellite band** .

6 Select **type of tuning**: Tune by frequency or Tune by channel .

- **Tune by frequency**: The user selects a frequency to tune to (downlink or LNB). They must also select the signal tuning parameters: polarization (vertical, horizontal) and band (low, high).
- **Tune by channel**: The user selects a channel to be tuned. Previously the user have to select a channel plan on the **Channel Plan** option. A channel plan contains a list of channels with settings for each channel to be tuned

(frequency, type of signal, bandwidth, etc.). When tuning a channel it will apply these settings in first place.

7 On **Signal Type** option select **Mode**:

- **Auto mode**: It identifies and tries to demodulate the signal automatically using the StealthID function (for more details refer to "►StealthID" on page 26).
- **Manual mode**: The user must enter the signal type and the parameters to identify and demodulate it.

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

9 Adjust the **reference level**.

10 Select channel or frequency to be tuned. You can select your frequency or channel by using the tuning menu or by dragging left or right on the screen and then tapping on the signal. In the case of frequency tuning, the user can select either the Downlink frequency or the LNB tuning frequency.

11 When the cursor is on the signal, the bottom tool bar will turn green and will show a check sign if the signal is locked. If not locked, the bottom bar does not change its colour and the check sign is not shown.

12 If locked, it tries to demodulate it. On video tool shows the image and on signal parameters shows all related parameters.

## 2.12 Channel Plan Editor

A channel plan is a structured allocation of frequencies within a specific band of the radio spectrum. It consists of a list of channels with predefined settings for each one (frequency, signal type, bandwidth, etc.).

The device can tune to a signal either by frequency or by channel. When tuning by channel, the settings from the channel plan will be applied first.

The device comes preloaded with the most common channel plans (CCIR, OIRT, STDL, FCC...) and includes options to load additional ones (for more details, refer to "WORKSPACES" on page 73). If none of the predefined plans meet the user needs, a new one can be created or existing ones can be edited.

There are different ways to create and edit a channel plan from an existing one:

- Using the advanced tool "Channel exploration" (for more details refer to "Channel Exploration" on page 62).
- Download and edit the channel plan file from a computer. This method is described below.

**►How to edit a channel plan from a computer**

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 have not created any workspace 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 or USB-C port.
6. Press 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 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 "Import to workspace" 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 described in "Data Export to USB" on page 76 and disconnect the USB drive correctly to avoid data loss or damage to the device.

## 2.13 Updating the meter

In order to update your **TV EXPLORER NG** follow these steps:

1. Download the firmware from the TV EXPLORER NG 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 At this time (not before), insert the USB drive into the USB 3.0 port or the USB Type-C port. The meter will detect the USB and analyze the file it contains.

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.

12 At the end of the update process, check that the new release has been installed correctly. Verify that the **Release** field (in Settings -> Equipment Info) reflects the newly installed software version.

# 3 SETTINGS AND PREFERENCES

## 3.1 Settings Menu

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

Settings are classified according to these categories:

- **General**: Equipment information and customizing options.
- **TV Analyzer**: TV 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: Name of the equipment's user (set by user; protected by PIN code).
- Change PIN: It allows user to change the pin code. The default PIN is 1234.
- Product Id: Identifier name of the equipment.
- License: Information about the software licenses used.
- Generate report: It generates a report of the current status of the meter and it is exported to a pendrive that must be connected to the USB port.

**►Appearance**

- Automatic 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, German, French, Polish, Portuguese and Catalan. Once the new language is selected, the equipment changes automatically to the new language.
- Screen off: 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).
- AccentColor: It allows the user to select the secondary colour used to highlight certain interface elements such as bars, menus, etc. Available options: dark_red, deep_blue, and explorer_green.
- ColorizedIcons: It enables colouring of the icons according to the selected AccentColor.
- Show battery remaining time: It hides or shows the remaining battery time. Remaining battery time is displayed next to the battery level icon.
- Show hidden menu indicators: It activates the display of bars on the sides, indicating the presence of hidden menus. You need to drag from the bar toward the centre of the screen to display the menu.

### ►Date & Time 

- Time Format: It allows the user to change the time format (12 or 24).
- Continent/Ocean: 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).
- City/Region: It allows the user to select the capital of the country where the meter is.
- Network time: It allows you to enable or disable date and time synchronization with an internet time server.

### ►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.
- IP NetMask: 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).
- DNS 1: 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.
- DNS 2: Select DNS2 (by default 8.8.4.4).

### ►Options 

It shows all the options that have been installed and also allows installing new options. To install a new option press on "+" and enter the option code. Available options are:

- DAB/DAB+ option. It is made up of:
  - DAB ETI Recording.
  - DAB Advanced.
  - DAB TII.
- Advanced FM option. It is made up of:
  - FM Advanced.
  - FM Histogram.
  - FM MPX Spectrum.
- Optical fibre option. It is made up of:
  - LNB Optical power.
  - RF to fiber converter.

For more details about the DAB/DAB+ option refer to "DAB/DAB+ OPTION" on page 101.

For more details about the FM Advanced option refer to "FM ADVANCED OPTION" on page 108.

For more details about the Optical option refer to "OPTICAL OPTION" on page 100.

If you are interested in any of these options please contact PROMAX (https://www.promaxelectronics.com/ing/contact-promax/).

►**Wizard** 

- Show wizard next at next start: It allows enabling or disabling the assistant that helps the user to set the meter. When enabled, the device will turn off, and when turned back on, it will display the assistant.
- Input name: User's name.
- Input e-mail: User's e-mail.
- Input phone number: User's phone.
- Subscription status: It allows the user to subscribe or unsubscribe from the updating service to keep the meter updated to the last software version available.

►**Software Update** 

- Last update version: It shows information about the current update installed on the meter.
- Update: It shows if there is an update available for download and install. Prior to do this, a memory device with the update file must be connected to the USB port.

For more details about the updating process refer to "Updating the meter" on page 20.

### 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.
- Attenuators linked to reference level: If enabled, when the user changes the reference level, the attenuation value is adjusted according to the selected reference level, and vice versa. If disabled, both values are independent, allowing the user to change the reference level without affecting the attenuation value, and vice versa.
- 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 and displays intermediate and downlink (DL) frequencies calculated from local oscillator. For example, it allows you to work with terrestrial radio-links or frequency converters.

### ►StealthID

It allows the user to select the set of signal types that the meter will use while auto identifying the signal.

To enable the StealthID tool, the user must select the Auto mode in the "Signal Type" option at the Tuning menu when working in "TV Analyzer".

When the StealthID tool is working trying to identify a signal in "TV Analyzer" mode, a magnifying glass will be displayed on the tuning bar next to the type of signal that is trying to identify. If it does not lock the signal, it will move on to the next type of signal, trying it cyclically with all the signal types that are "ON" in the "StealthID" settings.

Type of signals that can be automatically detected by the meter:

- Terrestrial
  - Annex B.
  - DVB-C
  - DVB-C2
  - DVB-T
  - DVB-T2
  - ISDB-T
  - ATSC / ATSC-3*

### ►Exploration configuration

Allows the user to select the levels and attempts to identify a channel during channel exploration (for more details refer to "Channel Exploration" on page 62).

- Minimum level for terrestrial signal (analog TV): It sets the minimum level for a terrestrial analogue signal to be identified when channel exploring.
- Minimum power for terrestrial signal (digital TV and DAB): It sets the

*. Only for **ATSC** version of **TV EXPLORER NG**.

minimum reference level for a terrestrial digital signal to be identified when channel exploring.

- Minimum level for FM signal: It sets the minimum power for a FM signal to be identified when channel exploring or datalogging.
- Number of attempts to lock terrestrial signal: This is the number of times the meter attempts to lock the signal of a terrestrial channel before moving on to the next channel.
- Number of attempts to lock satellite signal: This is the number of times the meter attempts to lock the signal of a satellite channel before moving on to the next channel.

### ►Datalogger configuration 


Allows the user to select the attempts and time when performing datalogging.

- Number of attempts to lock terrestrial signal: This is the number of times the meter attempts to lock the signal of a terrestrial channel before moving on to the next channel.
- Number of attempts to lock satellite signal: This is the number of times the meter attempts to lock the signal of a satellite channel before moving on to the next channel.
- Maximum time to make a terrestrial measurement (s): This is the maximum time the meter has to perform the measurement of a terrestrial signal.
- Maximum time to make a satellite measurement (s): This is the maximum time the meter has to perform the measurement of a satellite signal.
- Maximum time to make a FM measurement (s): This is the maximum time the meter has to perform the measurement of a FM signal.
- Maximum time to make an Analog / Generic measurement (s): This is the maximum time the meter has to perform the measurement of an analog / generic signal.
- Use Link Margin to optimize acquisition time: If this option is enabled, it uses the Link Margin measurement to improve the measurement time.

## 3.2 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 Settings

It allows you to manage the workspace folders where data and resources are stored.

For more information refer to "WORKSPACES" on page 73.

### ►Task Planner

It allows scheduling certain tasks to run at a specific date and time. It is currently available for screenshots.

Selecting this option opens a window with the available scheduled tasks. Pressing "Add Task" opens a window that allows scheduling a task with the following settings:

- Type: Select the type of task to schedule.
- Run every (min): If the task is repetitive, select the interval between tasks.
- Start date: Start date and time of the task.
- Expiration date: End date and time of the task.

When a task is scheduled, a calendar icon appears in the top information bar, indicating that there are pending tasks to be executed.

### ►USB Settings

It allows managing the devices connected to the USB 3.0 port and the USB 2.0 Type-C port.

The USB 2.0 Type-C port supports two types of connections: host or slave. The appropriate option must be selected based on the connected device and its interaction with the meter.

It also allows safely unmounting the memory connected to the USB 3.0 port by pressing SDA in order to prevent damage to the memory and its data.

### ►GPS Settings

It allows managing the GPS connected to the USB 3.0 port or the USB-C port.

If the antenna is connected to the meter, it displays a screen showing the detected satellites, status (synchronized or not), coordinates, and other data.

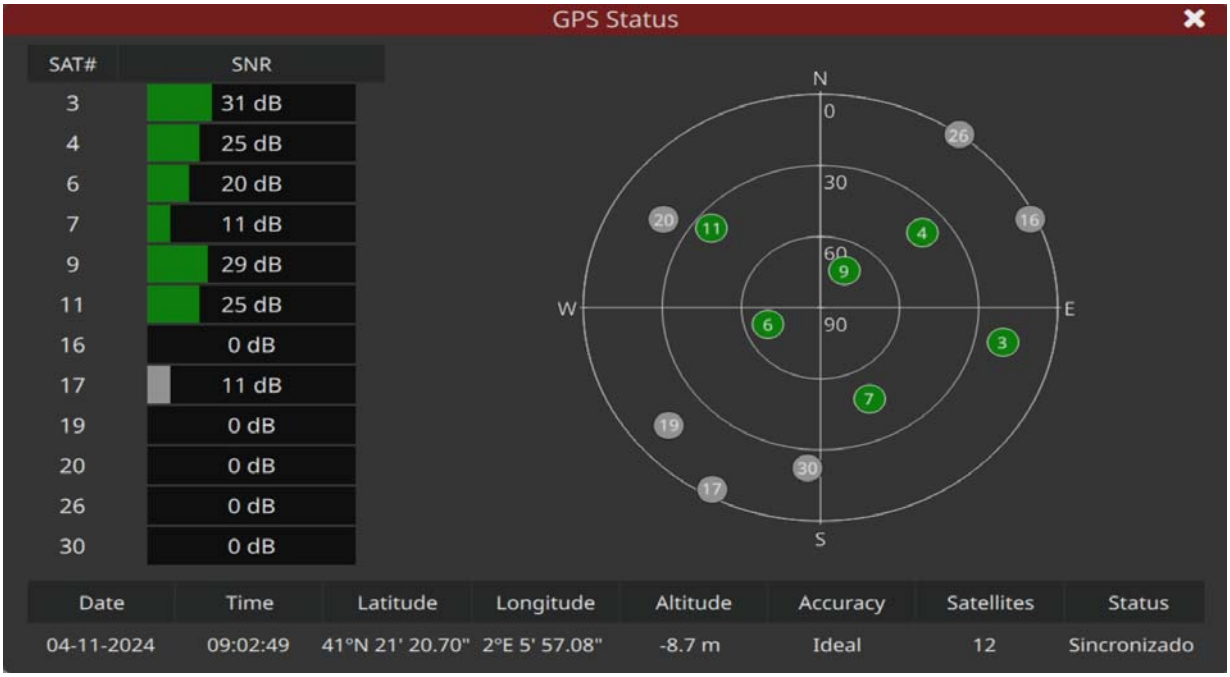


**Figure 9.**

### ►WiFi Settings

It manages the WiFi connection through the USB-WiFi adapter connected to the USB port.

1 Connect the USB-WiFi adapter (provided with the device) to the USB connector located at the top of the device. The adapter detects available WiFi networks.

2 Access the Top menu by swiping down from the top of any screen and tapping on the WiFi option to open the WiFi settings window with access parameters.

3 The WiFi configuration window displays the WiFi networks detected by the USB-WiFi adapter. It also allows enabling/disabling the DHCP protocol, which automatically assigns an IP to the device. If not using this protocol, the IP, mask, and gateway must be entered manually.

### ►HDMI Settings HDMI

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

### ►Antenna Settings 

It allows configuring the antenna field strength and input impedance at the RF input (N connector) of the meter, or also to select a file containing data about the antenna.

The input of the meter is designed to have 75 Ω. If the input is 50 Ω, a 50/75 Ω adapter should be used at the meter's input and then select the 50 Ω option.

When selecting 50 Ω, a software correction is done, to the impedance adapter.

### ► Supply Output Settings LNB

It allows you to enable or disable external power to supply voltage to external devices (5V, 12V, or 24V). If the **External** Voltage option is selected, it will measure the voltage present in the connector but will not apply any voltage.

### ►Volume Settings 

It allows you to increase or decrease the audio volume using a sliding bar.

Clicking on the icon on the left side of the slider mutes the audio output. Clicking on the icon on the right restores the volume to the level before it was muted.

### ►Brightness Settings 

It allows you to increase or decrease the screen brightness using a sliding bar.

Clicking on the icon to the left of the slider lowers the brightness to the minimum, while clicking on the icon to the right increases the brightness to the maximum.

### ►Notification Area

It allows you to view the most recent notifications that have appeared on the screen.

# 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 3000 MHz.

TV Analyzer Introduction (02:58s)

SCAN

The TV Analyzer screen is divided into 3 windows:

- main window
- left top window
- left bottom window

Each one of these windows can show a tool selected by the user. Some utilities are available only for certain types of signals.

Press on the triangle ▼ on any window to display the tools menu. Select one tool to be shown on the window.

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 tools available for the TV Analyzer are:

- Spectrum ("Spectrum" on page 37)
- Measurement ("Measurement" on page 39)
- Signal Parameters ("Signal Parameters" on page 41)
- Video ("Video" on page 42)
- Audio levels ("Audio levels" on page 43)
- Video/Audio parameters ("Audio/Video Parameters" on page 44)
- Constellation ("Constellation" on page 45)
- Echoes ("Echoes" on page 47)
- MER by Carrier ("MER by Carrier" on page 48)
- Spectrogram ("Spectrogram (Spectrum + Waterfall)" on page 49)
- Merogram ("Merogram (MER by carrier + Waterfall)" on page 51)

- Recording ("Recording" on page 52)
- Optical Power Meter ("Optical Power Measurement" on page 54)

The advanced tools available for the TV Analyzer are:

- Channel Exploration ("Channel Exploration" on page 62)
- Drive Test / Signal Monitoring ("Drive Test / Signal Monitoring" on page 56)
- Datalogger ("Datalogger" on page 63)
- Blind Scan ("Blind Scan" on page 65)

## 4.2 TV Analyzer Screen

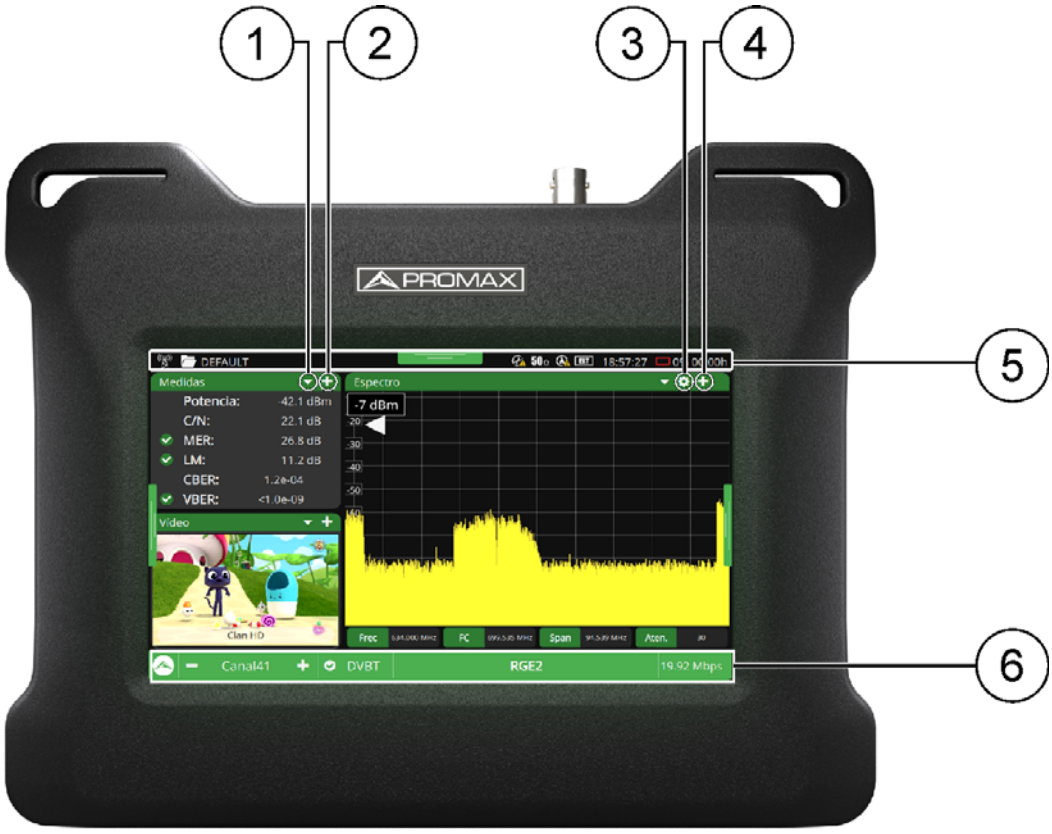


**Figure 10.**

1 Triangle ▼ (all windows): It displays a menu with all available tools. Select one tool to be displayed. The same tool cannot be in more than one window (for more details about tools refer to "Tools" on page 36).

2 Plus (+) sign (small windows): It maximizes the window, switching to the main window position.

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

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

5 Information Bar: It is the bar located at the top of the screen that displays additional information about the meter. Different icons may appear depending on the function in use (see "Icons" on page 14).

6 Status 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 refer to "Tuning Settings" on page 35). The Promax icon returns to the Home screen.

## 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...). Tuning Settings change according to the type of signal to tune.

- Band: It allows selecting between terrestrial or satellite frequency band.
- Tune by: It allows selecting between **tuning by channel** or **tuning by frequency**. If you select a channel or a channel plan it changes automatically to tuning by channel.
- Tuning Frequency: It allows selecting the frequency to tune. Select frequency value and frequency units (MHz, kHz, Hz) on the keypad. **Tune by Frequency** must be selected before enter the frequency.
- Channel Plan: It allows selecting a channel plan. A channel plan is a structured allocation of frequencies within a specific band of the spectrum. It consists of a list of channels with predefined settings for each one (frequency, signal type, bandwidth, etc.). Press on the "Channel plan" option to show a list of available channel plans.
- Channel: It allows selecting a channel from the channel plan. Press on the "Channel" option to show a list of available channels.
- Signal type: It displays the current standard and allows selecting another standard in the same band (terrestrial or satellite). Press on the "Signal type" option to show a list of available standards and to select the signal type working mode.
- Signal type Mode: Press on the "Signal type" option to select **Manual mode or Auto mode**. The Auto mode enables the StealthID in order to identify automatically the signal. In the Manual mode the user must select the standard of the signal type to be demodulated.
- Downlink frequency (satellite): It displays downlink (DL) frequency calculated from local oscillator value.
- Polarization (satellite): 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 (satellite): 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 (DVB-S/DVB-S2/DVB-S2x): Symbol Rate determines the rate at which symbols occur. A symbol may consist of one or more bits as determined by the modulation format.
- 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.
- Attenuation: 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.
- Capture mode: It allows specifying whether the content of the demodulated signal is TS or T2MI.
- Maximum trace hold: It records the outline of the spectrum when reaches the maximum level.
  - Enable: It enables the maximum trace hold.
  - Hide: It shows/hides the last maximum trace recorded.
  - Freeze: It holds and keeps on screen the last maximum trace.
- Minimum trace hold: It records the outline of the spectrum when reaches the minimum level.
  - Enable: It enables the minimum trace hold.
  - Hide: It shows/hides the last minimum trace recorded.
  - Freeze: It holds and keeps on screen the last minimum trace.
- PLP (DVB-T2/ATSC-3*).
- Profile (DVB-T2).
- Slice (DVB-C2).
- Layer (ISDBT).
- PLS (DVB-S2/DVB-S2x).
- DiSEqC commands (DVB-S/DVB-S2/DSS).

## 4.4 Tools

In the following sections, a description of each tool associated with the TV Analyzer is provided.

The tools are available in the dropdown menu located on the top bar of each panel of the TV Analyzer.

Some tools are only available for certain types of signals. Tools that are not available for the selected signal type will appear grayed out. When clicking on these option, a pop-up message will appear explaining why it is not available.

*. Only for **ATSC** version of **TV EXPLORER NG**

## 4.5 Spectrum

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

Spectrum (02:26s)

SCAN

**►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

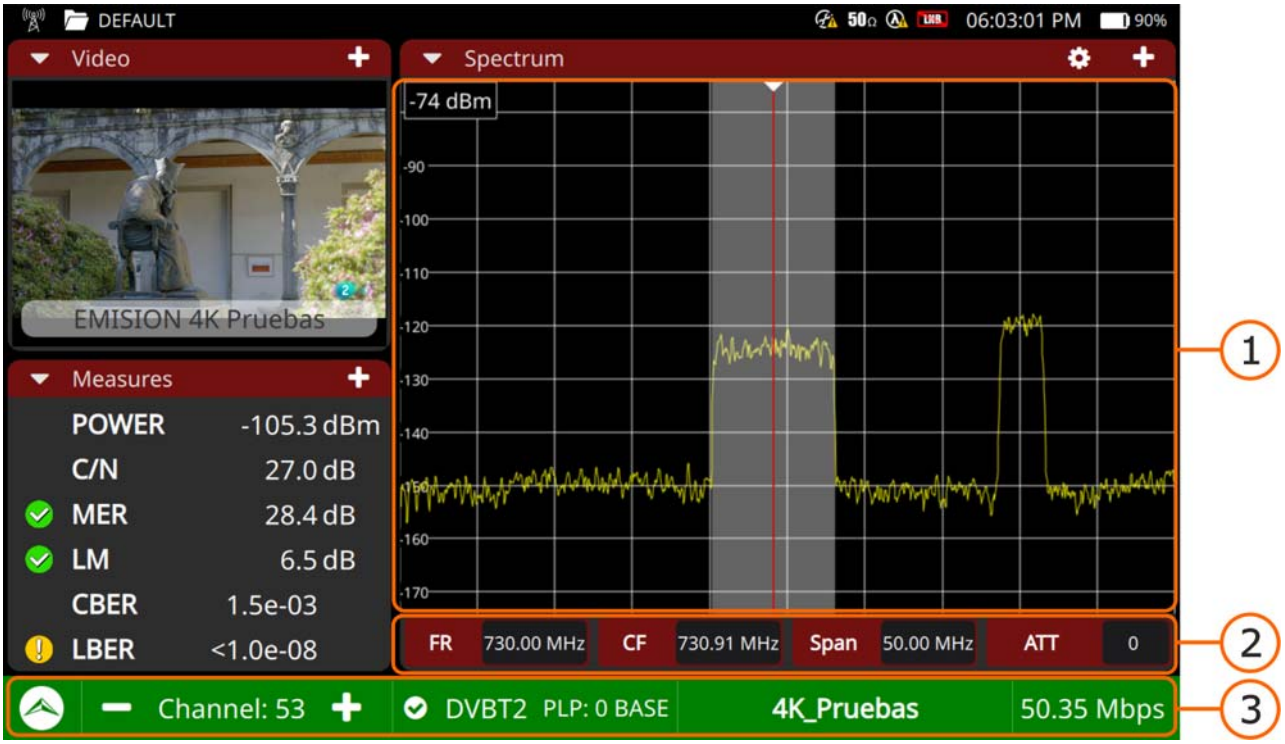


**Figure 11.**

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 Status Bar: When it turns green, it indicates that TS or ALP* is being received. In red, it indicates that the data stream is not being received. It also displays several fields, such as the network name and the total bitrate of the transport stream.

### ►Settings

Press on the gear to display the settings menu:

- 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.

*. Only for **ATSC** version of **TV EXPLORER NG**.

- dB/div: It allows modifying the number of dB per division on the vertical axis of the graph that displays the power. The available values are: x10, x5, x3, x2, x1.
- 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 bandwidth (span): It disables or enables the display of the tuned channel bandwidth.
- Center marker: It centers the selected frequency on the screen.

## 4.6 Measurement

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

Measurements (00:53s) SCAN

### ►Touch gestures

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

### ►Settings

Press on the gear ⚙ to display the settings menu:

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

► **Screen**

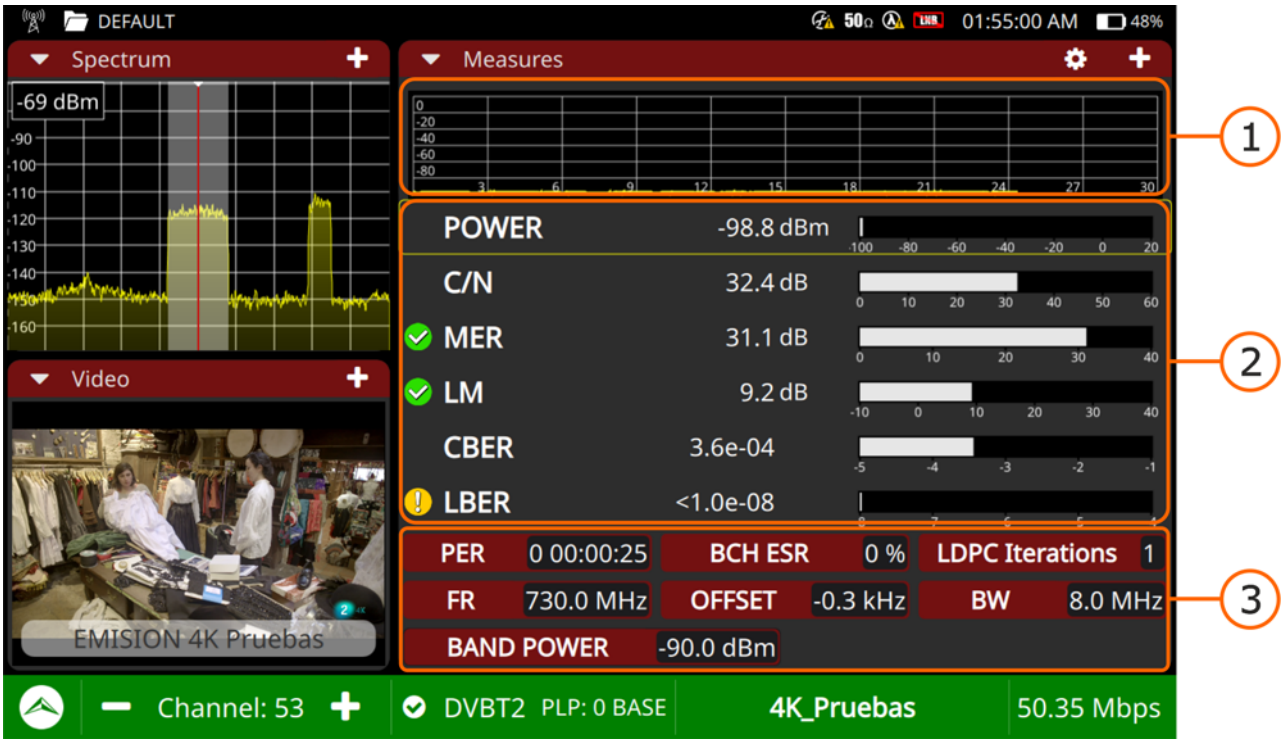


**Figure 12.**

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.).

## 4.7 Signal Parameters

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

Signal Parameters (00:32s)

SCAN

►**Screen**

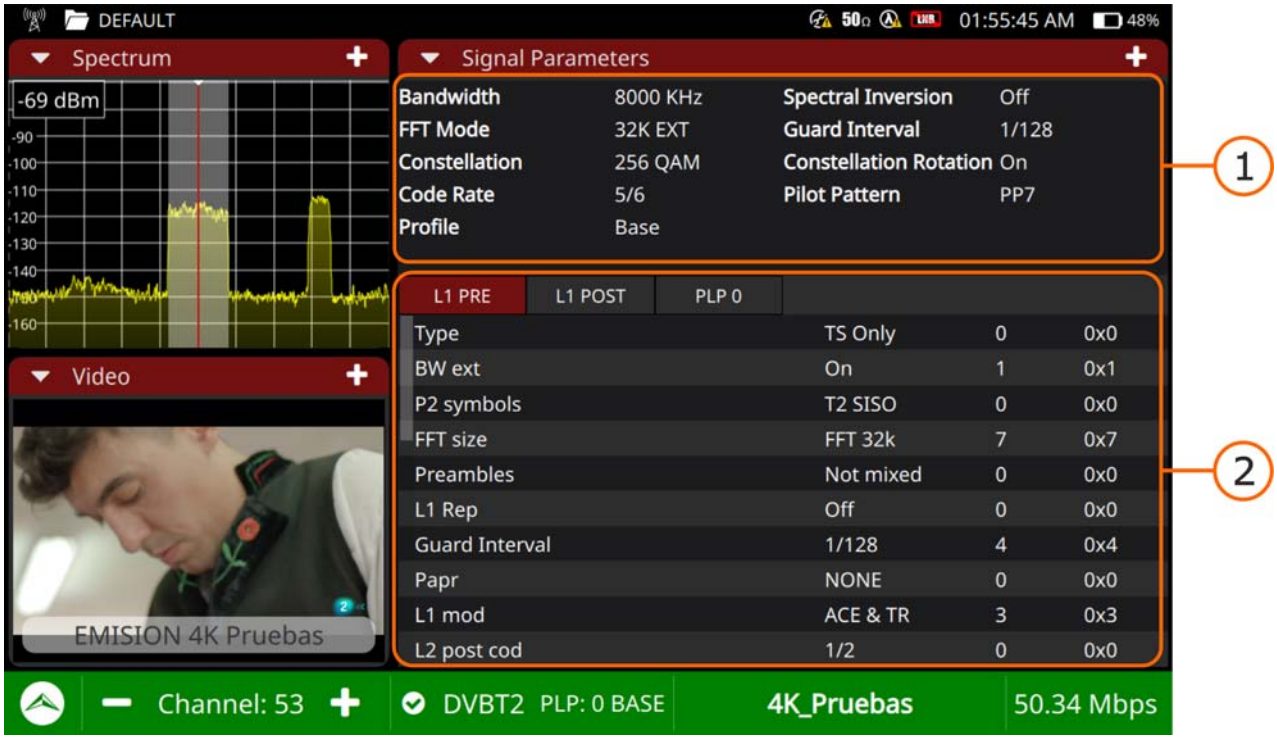


**Figure 13.**

1 General Panel: It displays the most relevant information.

2 Detail panel: It shows detailed data.

## 4.8 Video

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

Video (01:15s) SCAN

**►Screen**

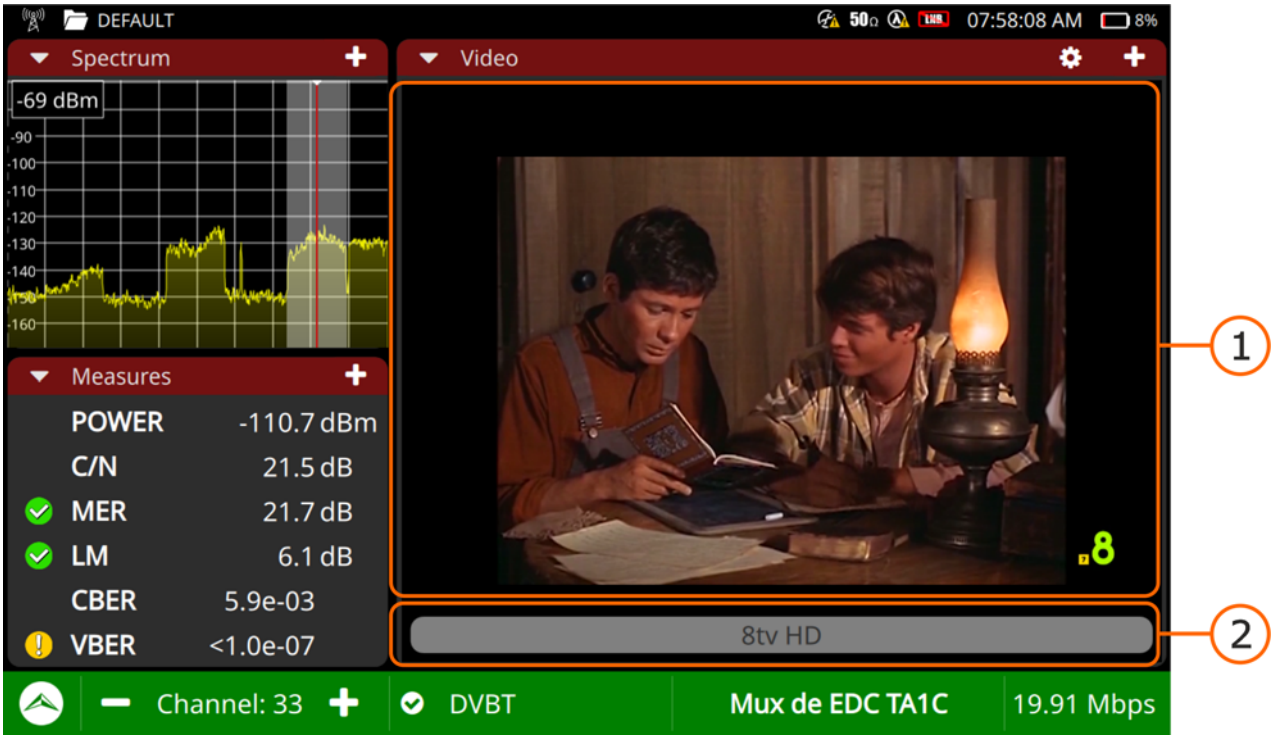


**Figure 14.**

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 the settings menu:

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

## 4.9 Audio levels

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

Audio levels (01:33s) SCAN

►**Screen**

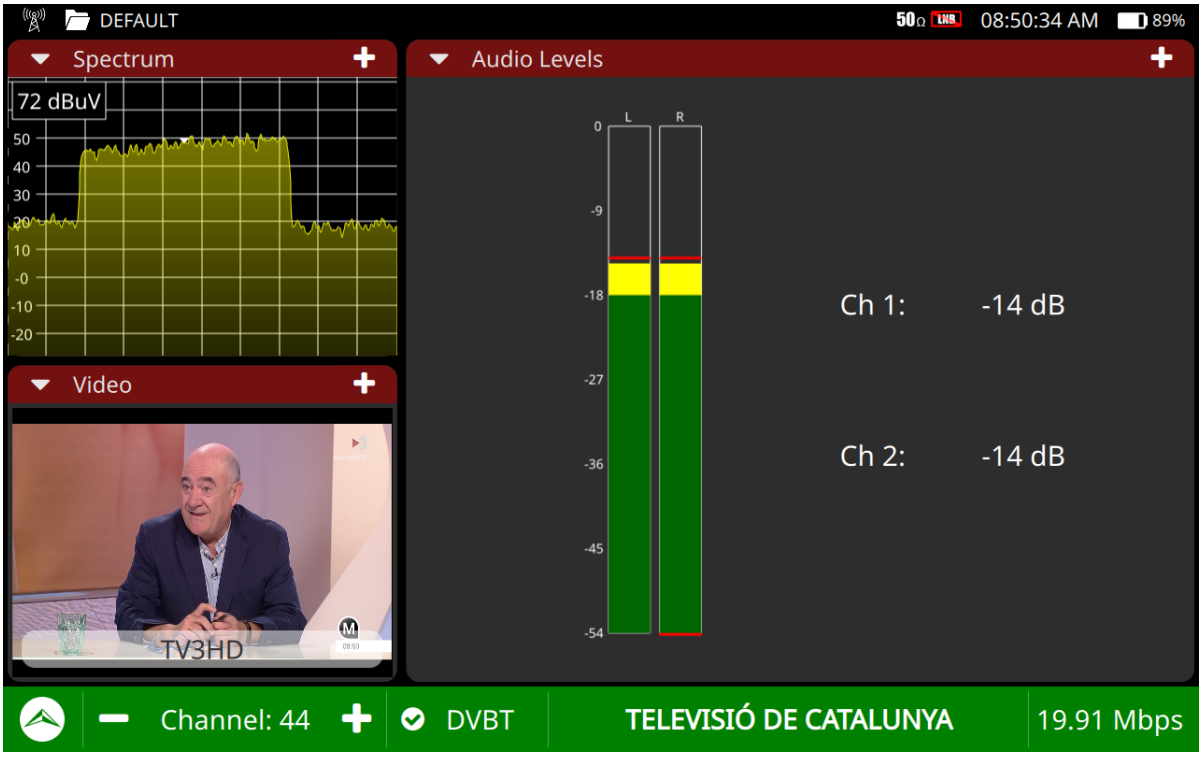


**Figure 15.**

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: Appropriate volume (-18 dB <-> -54 dB).

### ►Settings

Press on the gear to display the settings menu:

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

## 4.10 Audio/Video Parameters

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

Video Values (01:43s) SCAN

### ►Screen


**Figure 16.**

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.

## 4.11 Constellation

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

| | | |
|---|---|---|
| | Constellation (03:06s) | SCAN |

**►Settings**

Press on the gear to display the settings menu:

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

### ►Screen

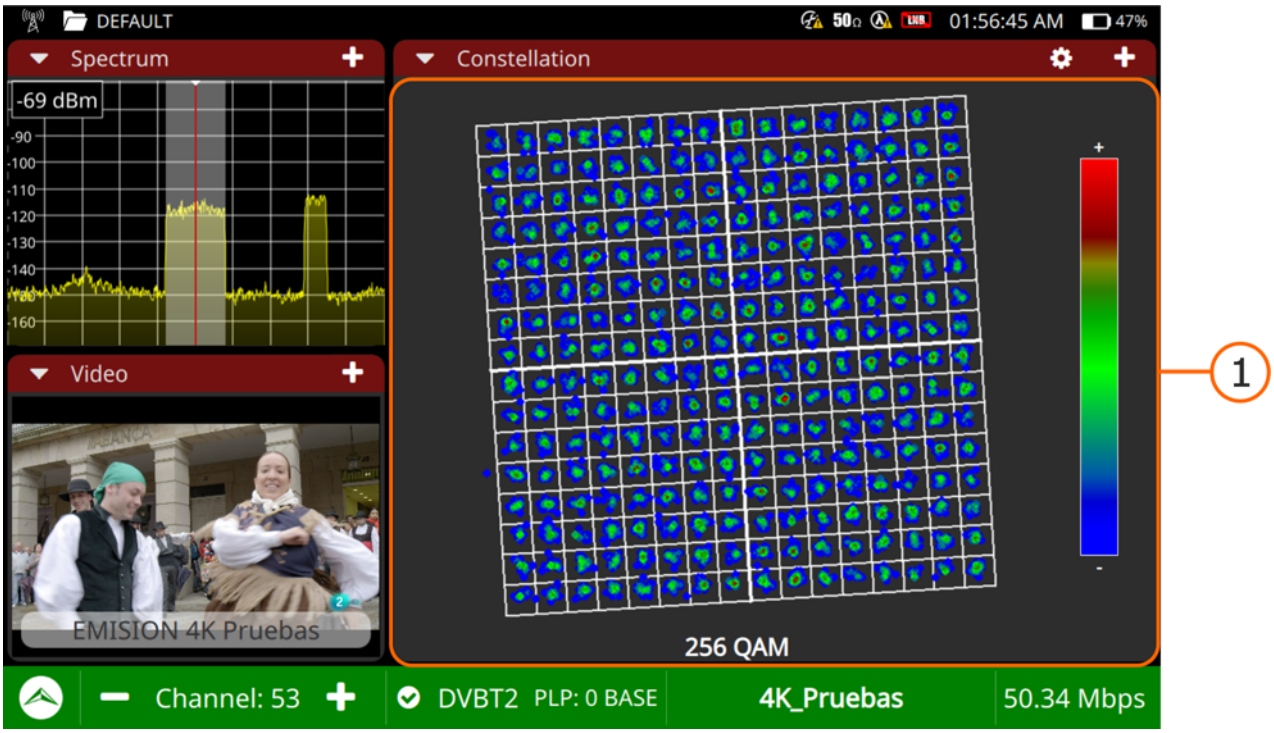


**Figure 17.**

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.

## 4.12 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 18.**

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 the settings menu:

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

## 4.13 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

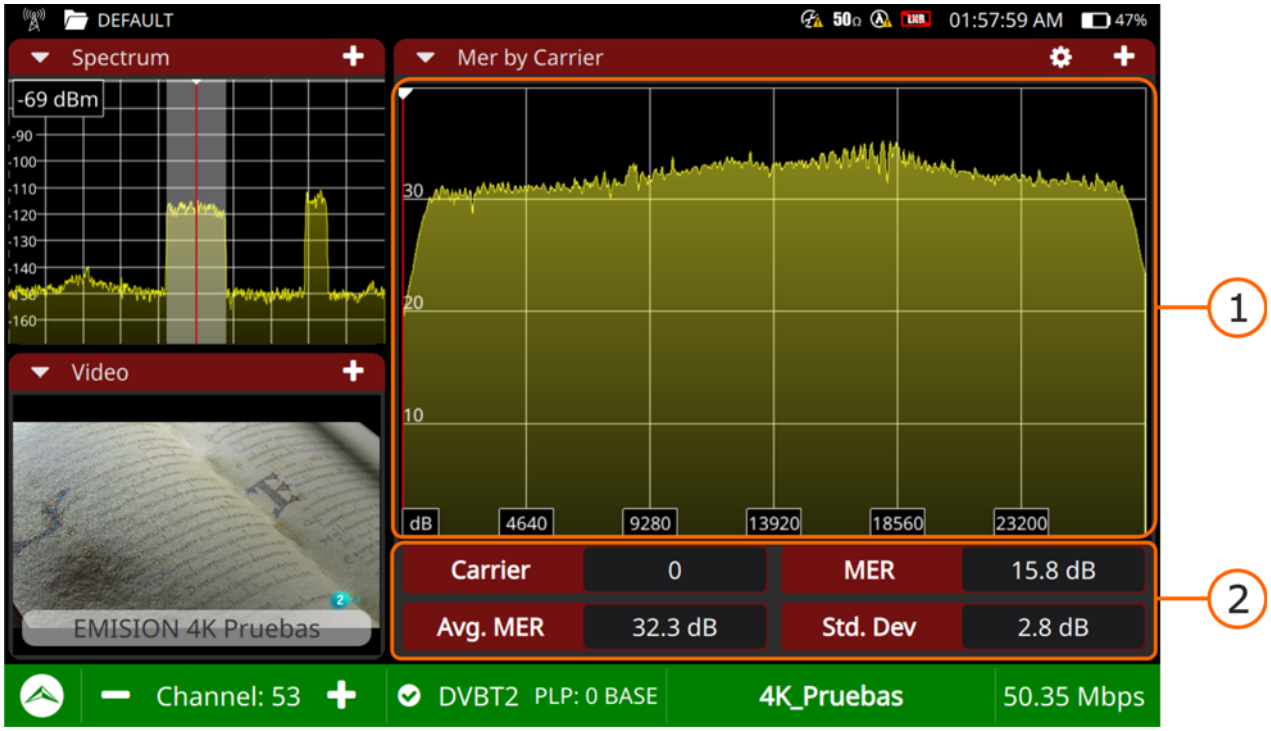


**Figure 19.**

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

2 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 the settings menu:

- 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.

## 4.14 Spectrogram (Spectrum + Waterfall)

The **Spectrogram** tool is a graph that displays the real-time evolution of the spectrum power level.

Spectrogram (01:55s)

SCAN

When changing any of the real-time chart configuration parameters such as span, center frequency, reference level, etc., the chart will reset and regenerate.

**►Touch gestures**

Tap: When tapping on the waterfall area, a legend will appear indicating the color corresponding to each level of power. When tapping on the spectrum area will select a carrier.

### ►Screen

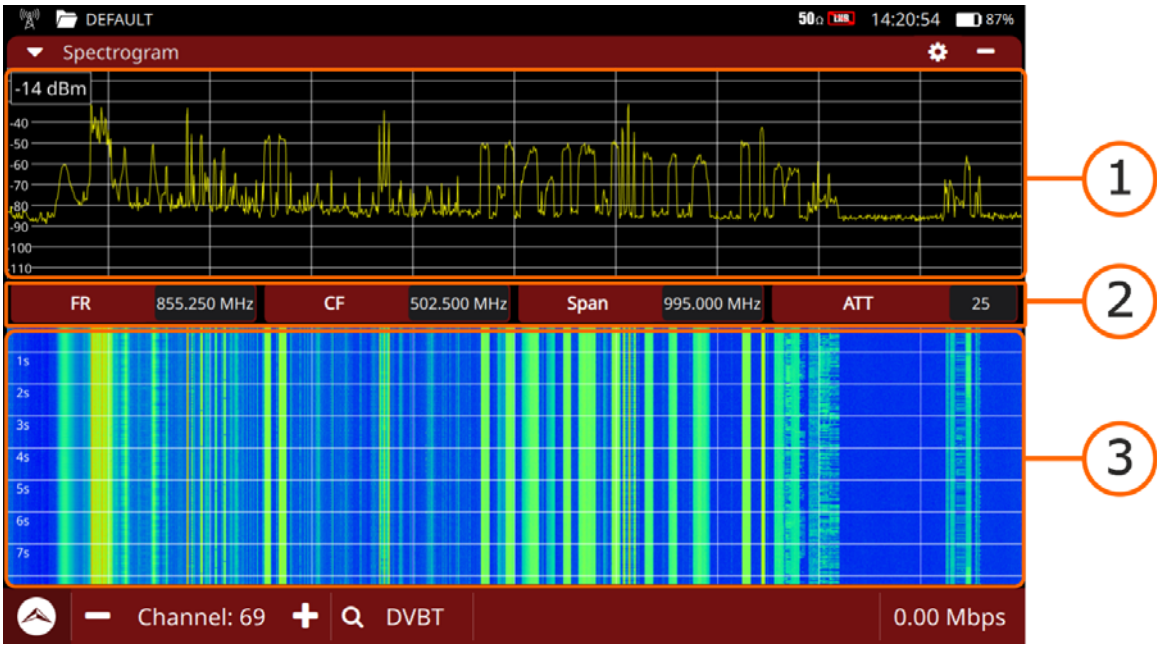


**Figure 20.**

1 Top window: the graph shows the spectrum received by the RF input, with the horizontal axis representing the selected frequency span and the vertical axis representing power.

2 Settings window: It shows tuned frequency (FR), central frequency (CR), span and attenuation (ATT).

3 Bottom window (waterfall): Graph where the horizontal axis represents the same frequency span as in the top window, and the vertical axis represents time. To represent the power level, a range of colours is used, going from 0 dB (cool colour) to 40 dB (warm colour).

### ►Settings

Press on the gear to display the settings menu:

- 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.
- dB/div: It allows modifying the number of dB per division on the vertical axis of the graph that displays the power. The available values are: x10, x5, x3, x2, x1.
- Spectrogram duration: It defines the time window of the vertical axis that can be adjusted within a range from 1 to 60 minutes.

## 4.15 Merogram (MER by carrier + Waterfall)

The **Merogram** tool is a graph that shows the real-time evolution of the MER power level by carrier..

Merogram (01:58s)

SCAN

When changing any of the real-time chart configuration parameters such as span, centre frequency, reference level, etc., the chart will reset and regenerate.

**►Screen**

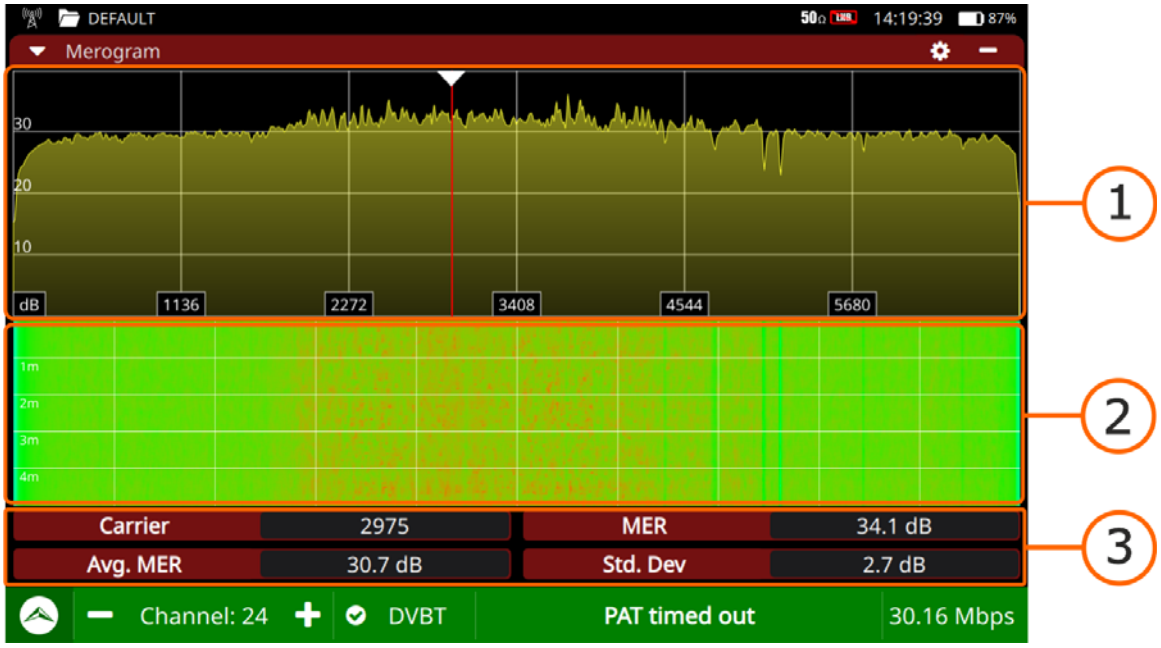


**Figure 21.**

1 Top window: a graph displays the horizontal axis representing the number of carriers and the vertical axis showing the MER level.

2 Intermediate window (waterfall): Graph where the horizontal axis represents the same number of carriers as in the top window, and the vertical axis represents time. A range of colours is used to represent the MER level, going from 0 dB (cool colour) to 40 dB (warm colour).

3 Bottom window: It shows the average MER (Avg. MER) for all carriers and its standard deviation (Std. Dev). 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: When tapping on the waterfall area, a legend will appear indicating the colour corresponding to each level of power. When tapping on the spectrum area will select a carrier.

### ►Settings

Press on the gear to display the settings menu:

- 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.
- Carrier: Select a carrier.
- Merogram duration: It defines the time window of the vertical axis that can be adjusted within a range from 5 to 60 minutes.

## 4.16 Recording

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

It also has the option to record raw signal in order to be analysed in case there was any problem locking the signal.

| | | |
|---|---|---|
| | Recording (01:09s) | SCAN |

### ►Screen

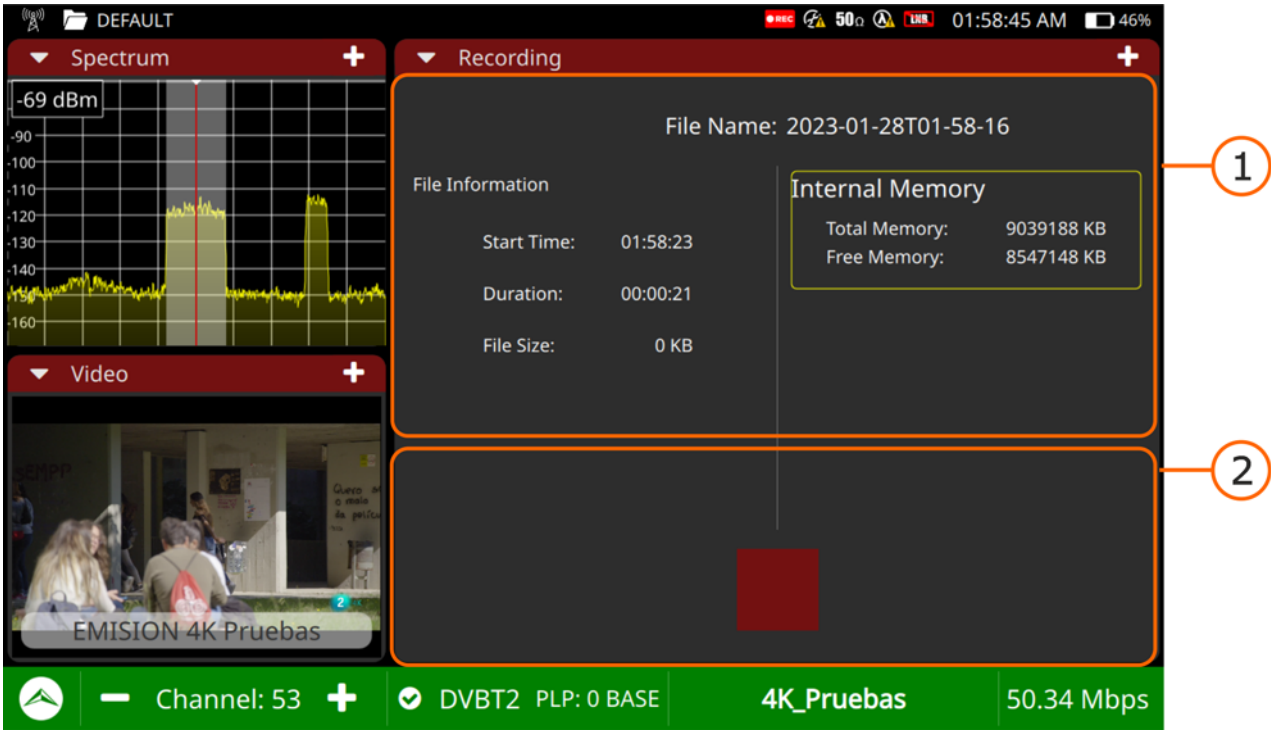


**Figure 22.**

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 circle it starts recording and when it is square it stops recording. Records are saved in the current workspace from where it can be exported to a pendrive (for more details refer to "WORKSPACES" on page 73). Check the Raw Recording checkbox and follow the instructions below to record a raw signal.

### ►Raw Recording Procedure

Raw recording is useful to analyze the signal in order to find any problems in the data stream that are not allowing to lock or demodulate the signal. It is very important to follow these steps to generate a proper raw record:

1 Disconnect the signal.

2 Check the "raw recording" option.

3 Start recording.

4 Connect the signal.

5 After a while, stop recording.

6 Access the Workspace (for more details refer to "WORKSPACES" on page 73) to get the recording. To access, deploy the Top Menu and select Workspace. Then select the current Workspace and in "Mode" select "TV Analyzer". Now press on "Recordings".

7 Press on the file to access the options menu and copy it to an USB.

8 Now the file can be analysed or send in order to find any problems that are not allowing to tune / demodulate the signal.

**►Touch gestures**

Tap: Tap the on/off button to start/stop recording or to check the raw recording checkbox.

## 4.17 Optical Power Measurement

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

Optical Power Measurement (01:00s)

SCAN

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 swiping down.

3 Select the Optical Power icon.

4 In the ENABLE field, select ON to start the measurement.

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

►**Screen**

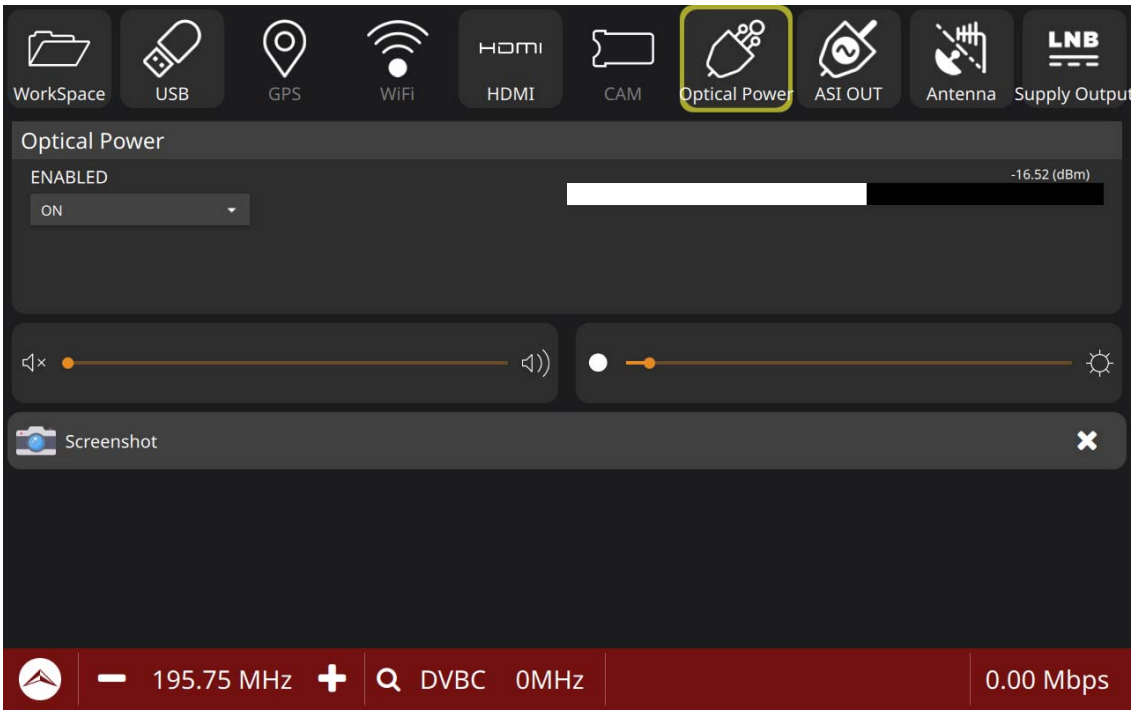


**Figure 23.**

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

To take measurements by optical band it is necessary to install the optical fiber option (for more details refer to "OPTICAL OPTION" on page 100).

## 4.18 Advanced Tools

In the next sections each advanced tool for the TV Analyzer is explained. These are the currently available:

- Drive Test / Signal Monitoring
- Channel Exploration
- Datalogger
- Blind Scan

**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.

## 4.19 Drive Test / Signal Monitoring

The **Drive Test / Signal Monitoring** tool allows monitoring different signal parameters over time.

If the "Drive Test" option is available ("DRIVE TEST OPTION" on page 116), it enables adding geo-positioning (GPS) to the signal measurements in order to map the coverage of a specific transmitter.

**Drive Test (07:06s)** SCAN

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

- Create a task
- Set the GPS receiver (only for Drive Test option)
- Run the task
- Export the task
- Exit

Next it is explained each one of these stages:

### ► Creating a 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 / Signal Monitoring** screen allows you to create a new task or select one already created.

3 Previously to create a task, tune a channel to use it as a reference (for more details refer to "Use Case: Terrestrial RF Signal Tuning" on page 17).

4 To create a new 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.
- Signal type: Select the type of signal to be monitored and other parameters related to it.
- Discard FM frequencies: Check this box to skip monitoring FM frequencies.

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

6 Now you can select the task just done and start it or exit the tool and run the task later.

7 To exit the Drive Test tool, access the Advanced Tools menu by swiping from the right side of the screen to the left and pressing on the cross next to "Drive Test".

► **Screen**

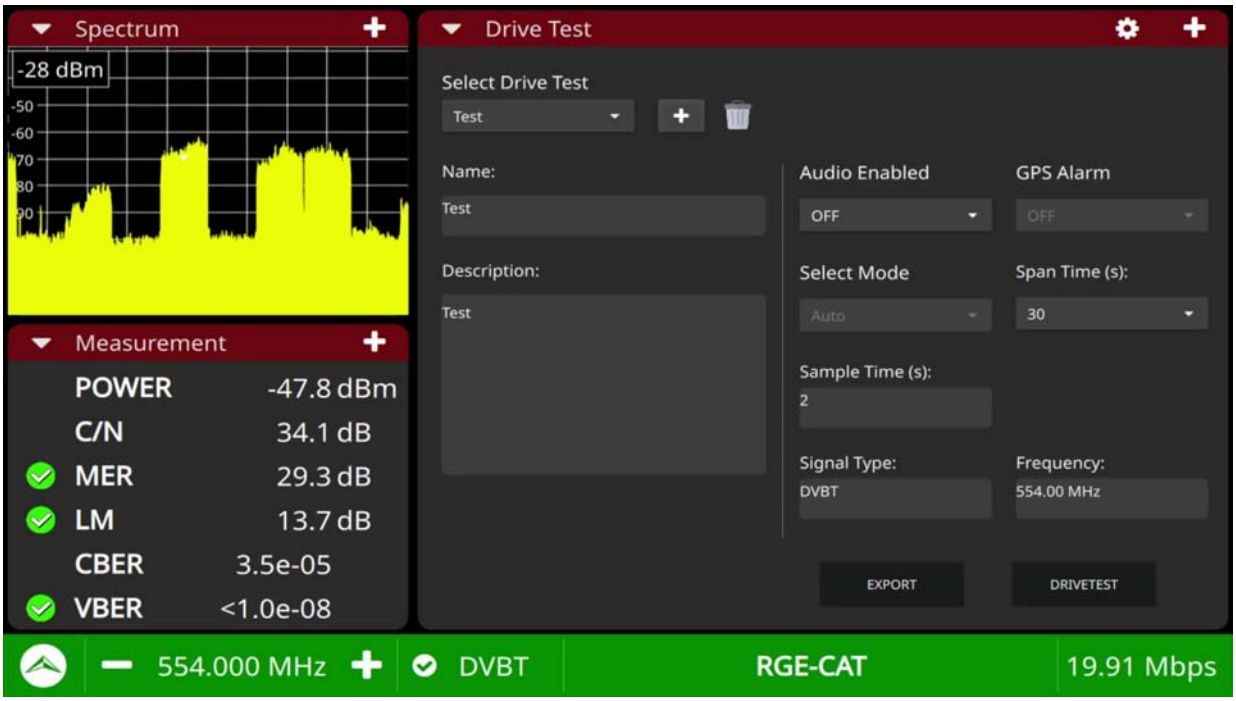


**Figure 24. Task screen**

► **Setting the GPS receiver (only for Drive Test option)**

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

2 Connect your GPS receiver to the USB 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 geo-position data.

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

► **Screen**

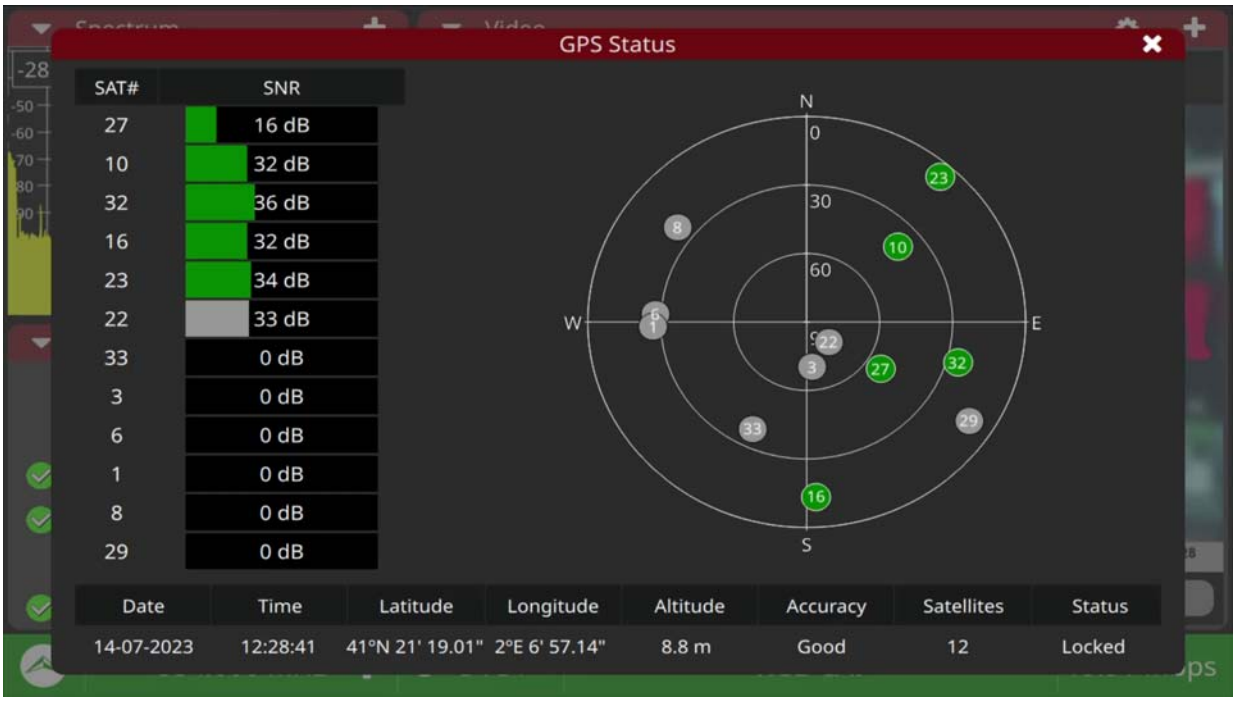


**Figure 25. GPS Status screen (only for Drive Test option)**

► **Running a 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 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 data plotted on the main panel. The left top panel will show the spectrum and the left bottom panel will show measurements. These panels cannot be changed.

5 To launch the drive test press on "Start". Warning messages will appear before the test, notifying that the data from the previous task will be deleted. A warning message will also appear if the GPS is not connected or has not locked. Press OK to proceed if you agree.

6 When starting, it first tunes the channel saved in the task and then starts plotting measurements over time. All data measurement (and geolocation if you have the Drive Test optin) 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 task. It shows a confirmation message to exit the task, followed by another to exit the tool. If you agree, press OK.

**►Screen**

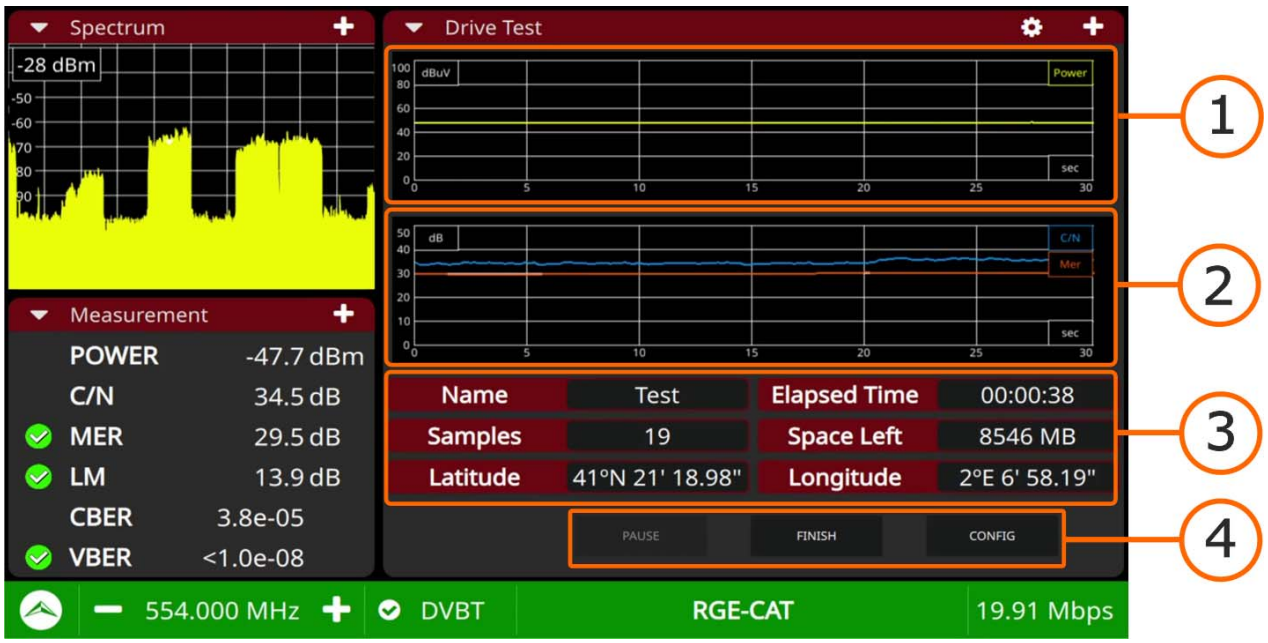


**Figure 26.**

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 (only for Drive Test option).

4 Options:

- Back: It accesses de task settings.
- Pause/Resume: It pauses or resumes the task.
- Finish: It ends the task.

5 Spectrum.

6 Measurement.

### ► Exporting data

1 Once the 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 task done to export its data.

3 Tap the "Export" button. It opens a windows that allows selecting where to download the data, between internal memory or a USB memory (sda). It also allows selecting 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

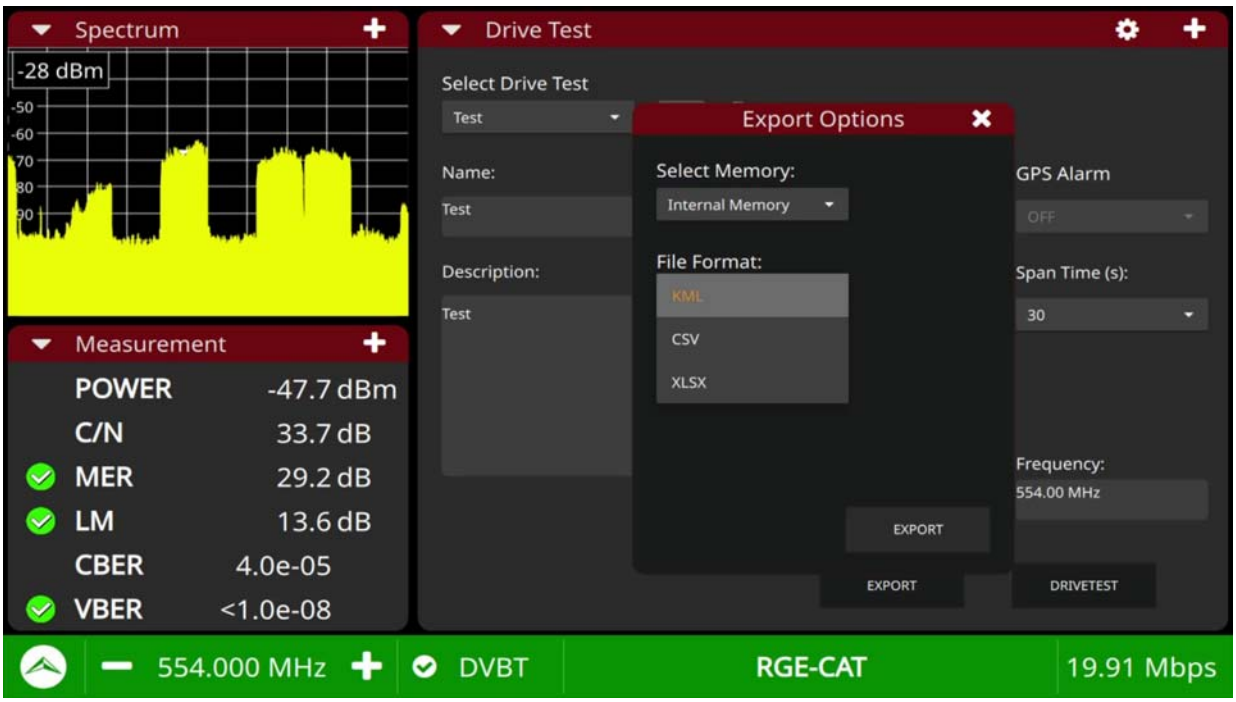


**Figure 27.**

### ► Exit the Drive Test task

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

2 To exit the Drive Test / Signal Monitoring tool there are two options:

- Press the Finish button at the Drive test / Signal Monitoring screen and click twice on OK.
- Swipe from the right side of the screen to the left and tap on the cross next to "Drive Test".

## 4.20 Channel Exploration

The Channel Exploration function performs a scan of the RF spectrum (terrestrial or satellite) using another previously selected channel plan as a template. It detects where there are active signals within that channel plan and on which channels a signal is being received. With this information, it scans those channels, looking for emissions and identifying them.

Channel Exploration (04:37s)

SCAN

### ► Operation

1. From the **Home** menu press "Settings".
2. From the "TV Analyzer" area on Settings, press on "Exploration Config".
3. From this section, the user can adjust the minimum levels for the system to try to identify the signal and the number of attempts to lock it (for more details, refer to "►Exploration configuration" on page 26).
4. Return to the Home screen and press "TV Analyzer".
5. Slide to the right from the left side of the screen to display the tuning settings or press any field related to tuning (frequency, span...).
6. Select the channel plan that will serve as a reference for scanning channels.
7. Now access the **Advanced Utilities** menu by sliding from the right side of the screen to the left and press "Channel Exploration" to start the scan.
8. When the scan starts, all the channels from the reference channel plan will appear on the screen. The screen will show how the system goes through channel by channel trying to detect and demodulate the signal on each one.
9. At the bottom there is a progress bar with the number of channels scanned and detected.
10. During the scan, to skip channels press on "Skip". If for any reason you want to abort the full scan and exit the tool, open the Advanced Utilities menu again and press the cross on "Channel Exploration".

11 When finished, each channel can present one of the following states, identified by these icons:

- Ok (channel identified): The channel power exceeds the threshold defined in the settings. It has been demodulated and identified.
- Unknown (low signal): The channel does not reach the power threshold defined in the settings.
- Error (channel not identified): The demodulator discards the channel, as it may exceed the power threshold but could not be demodulated or identified.

12 The identified channels are selected by default and will be saved in the channel plan when clicking the "Save" button. By clicking on a channel, the meter will display the channel spectrum in the "Spectrum" tool and attempt to lock onto it.

13 The remaining channels (unknown or incorrect) are discarded unless the user manually adds them. To manually add a channel, press and hold the channel for two seconds. Do the same to deselect it.

14 After selecting channels, press "Save" to save the new channel plan with a user-assigned name.

15 The newly created channel plan will become the active channel plan and will be available in the channel plan list.

## 4.21 Datalogger

The Datalogger function generates a file that stores the measurement results for each channel in the selected channel plan at a specific test point.

The test point represents the physical location of the connector to which the device is connected to perform the measurement.

The measurements taken can be exported later to a file for analysis.

Datalogger (03:14) SCAN

### ► Configuration and Creation of a new Datalogger

1 From Home, access the "Settings" option and then click on "Datalogger Config".

2 This screen displays all the parameters to configure the datalogger. For more details, please refer to "►Datalogger configuration" on page 27.

3 Next, in TV Analyzer mode, select the channel plan on which the datalogger will be performed.

4 Still in TV Analyzer mode, access the Advanced Utilities menu by swiping from the right side of the screen to the left, and then click on "Datalogger".

5 The Datalogger screen will open. Tap the "Test & Go" icon to start measuring and recording data.

### ► Running the Datalogger

1 After tapping "Test & Go," the datalogger will start. Upon initiation, a new datalogger and a measurement point will be automatically generated, both with generic names.

2 The screen will display the measurement process channel by channel, along with the tuning status of each channel in the form of an icon.

3 At the bottom of the screen, the name of the test point being measured will appear, along with a progress bar indicating the channel plan status (both as a percentage and by the number of channels, partial and total).

4 The "Skip" button allows you to interrupt the measurement process of the current channel (in case it is not of interest or if it gets stuck for an extended period).

5 Once completed, it will display a table with the results obtained.

### ► Results Table for the Datalogger Test Point

1 Once completed, a table will be displayed with the measurement results from the datalogger.

2 The results table displays the name of the test point, the date and time, and the results for each channel: name, type, power, C/N, MER, LM, CBER, LBER/ VBER, and STATUS.

3 At the bottom, there are three options: a trash can icon that deletes the test point and its results, the "reacquire" option that overlays new results onto the current ones, or "back," which returns to the datalogger screen.

### ► Edition and Export of Datalogger

1 From the Datalogger screen, tap on the "Select Datalogger" box to display the available dataloggers.

2 Select one datalogger.

3 The details related to the selected datalogger will appear: Name, description, channel plan, and test points.

4 The trash can icon next to the datalogger allows you to delete it.

5 The description field allows the user to enter free text.

6 The "Test Points" field displays all available test points. If you tap on the table icon next to a test point, it will show the results table for that test point.

7 The "Add Test Point" button allows you to add another test point to the selected datalogger and start a new measurement process that will be added to the current datalogger.

8 The "Export" button allows you to export a datalogger to a file. The export options let you choose between internal memory or external memory, as well as the file format, which can be PDF, CSV, or XLSX..

## 4.22 Blind Scan

The "Blind Scan" function uses an ML algorithm to automatically search for and detect available television channels within a specific frequency range, without any prior knowledge or configuration. This is typically done to identify all channels being broadcasted in a particular area.

Blind Scan (03:12s) SCAN

Although the "Blind Scan" function can find channels, it may also detect unwanted signals or those causing interference. Therefore, it is often necessary to manually filter or exclude certain channels based on their quality or content.

# 5 WIFI

## 5.1 Introduction

WiFi technology allows wireless connectivity and communication between devices in the 2.4 and 5 GHz frequency bands. These bands are also used by other technologies such as Bluetooth, wireless USB, home automation, cordless phones, security cameras, microwave ovens, etc., which can interfere with the device's signal.

For this reason, and due to the growing number of devices using wireless technology, a tool that deeply analyzes these types of signals is essential to detect problems and ensure quality in WiFi communication.

WiFi (04:52s) SCAN

The WiFi Analyzer screen is divided into 3 windows:

- main window
- left top window
- left bottom window

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

The tools available for the WiFi Analyzer are:

- WiFi Spectrum
- WiFi Scan
- WiFi Parameters
- Measurements.

## 5.2 Operation

1 Connect the USB WiFi adapter (supplied with the equipment) to the USB 3.0 port located at the top of the device. The adapter will detect WiFi networks.

2 Access the **Home** menu on the main screen. Tap on WiFi to access the WiFi band analysis tool.

## 5.3 WiFi Analyzer Screen

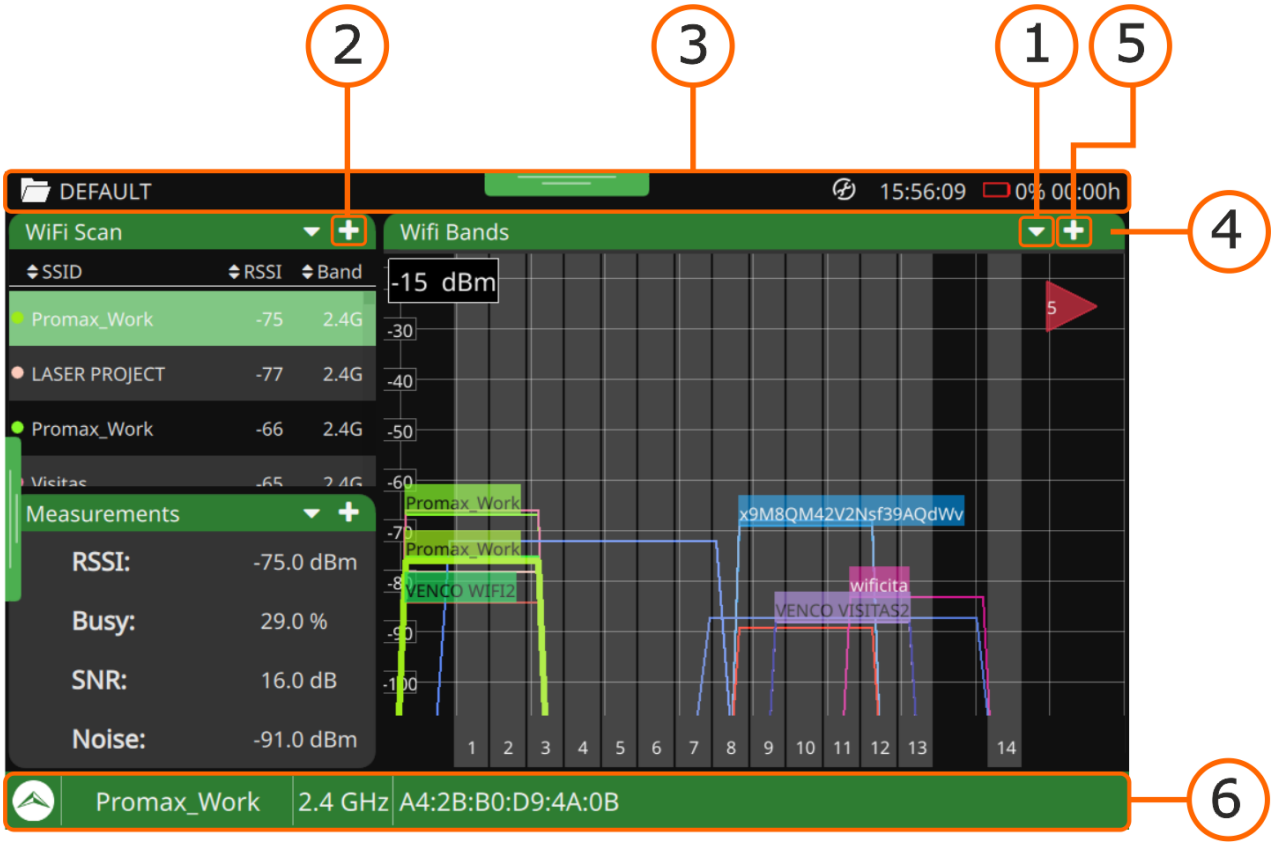


**Figure 28.**

1 Triangle ▼ (all windows): It displays a menu with all available tools. Select one tool to be displayed. The same tool cannot be in more than one window (for more details about tools refer to "Tools" on page 68).

2 Plus (+) sign (small windows): It maximizes the window, switching to the main window position.

3 Info bar: It is the bar at the top of the screen. From left to right, it displays: the name of the workspace, time, and battery level.

4 Gear ⚙ (main window): It displays a settings menu for the tool. It is available for some tools and only on the main window.

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

6 Status bar: Displays settings parameters such as band, access point name, and MAC address. It also provides access to WiFi settings (for more details, see the next section). The Promax logo returns to the Home screen.

## 5.4 WiFi Settings

To display the WiFi settings, swipe right from the left side of the screen or tap on the band in the status bar.

- WiFi Band: It allows you to select the 2.4 GHz WiFi band, the 5 GHz band, or both.

## 5.5 Tools

In the following sections, each tool of the WiFi Analyzer is explained. They are the following:

- WiFi Scanner
- WiFi Parameters
- WiFi Bands
- WiFi Measurements.

## 5.6 WiFi Scanner

The WiFi Scanner tool displays all detected access points along with their main parameters.

**►Touch gestures**

Tap: Selection of Access Point.

Vertical dragging: Vertical scrolling through the access points.

►**Screen**

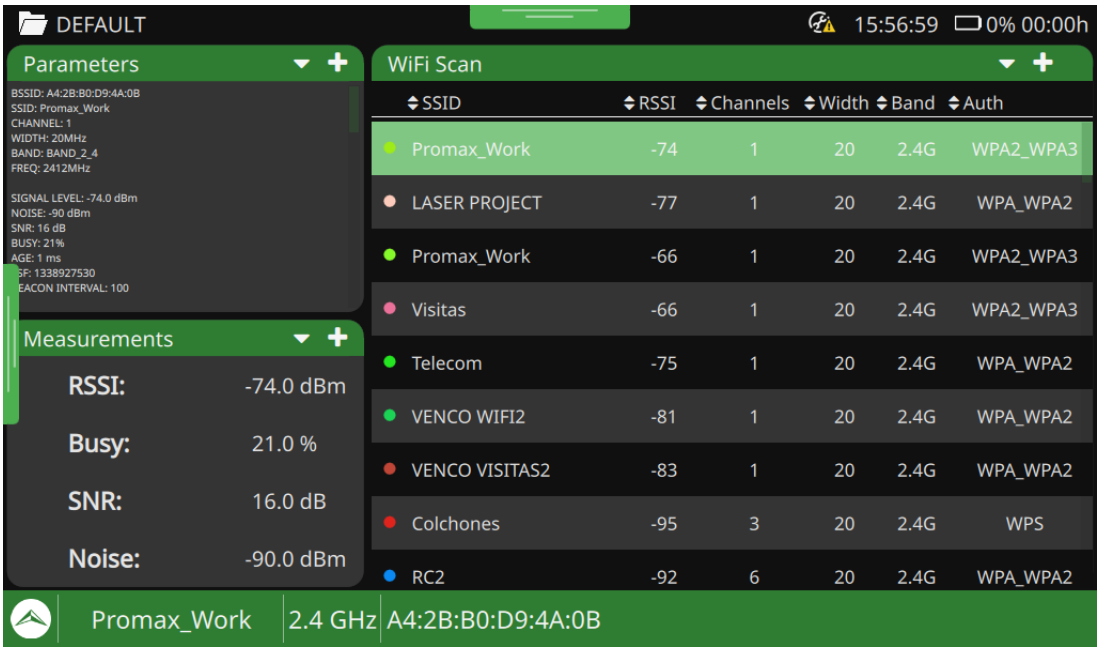


**Figure 29.**

- SSID (Service Set ID): Name of the access point (AP).
- RSSI: Power at which the AP is being received. This power is measured by the WiFi dongle.
- Channels: Central channel of the Access Point.
- Width: Width of the Access Point.
- Band: Band to which the access point belongs.
- Auth: Type of security used to access the Access Point.
- BSSID (Basic Service Set ID): MAC of the Access Point.
- Device: Name of the manufacturer of the device that provides the infrastructure. It is not always available.

## 5.7 WiFi Parameters

The WiFi Parameters tool displays a detailed report of the selected Access Point.

►**Touch gestures**

Vertical dragging: Vertical scrolling through the parameters.

### ►Screen

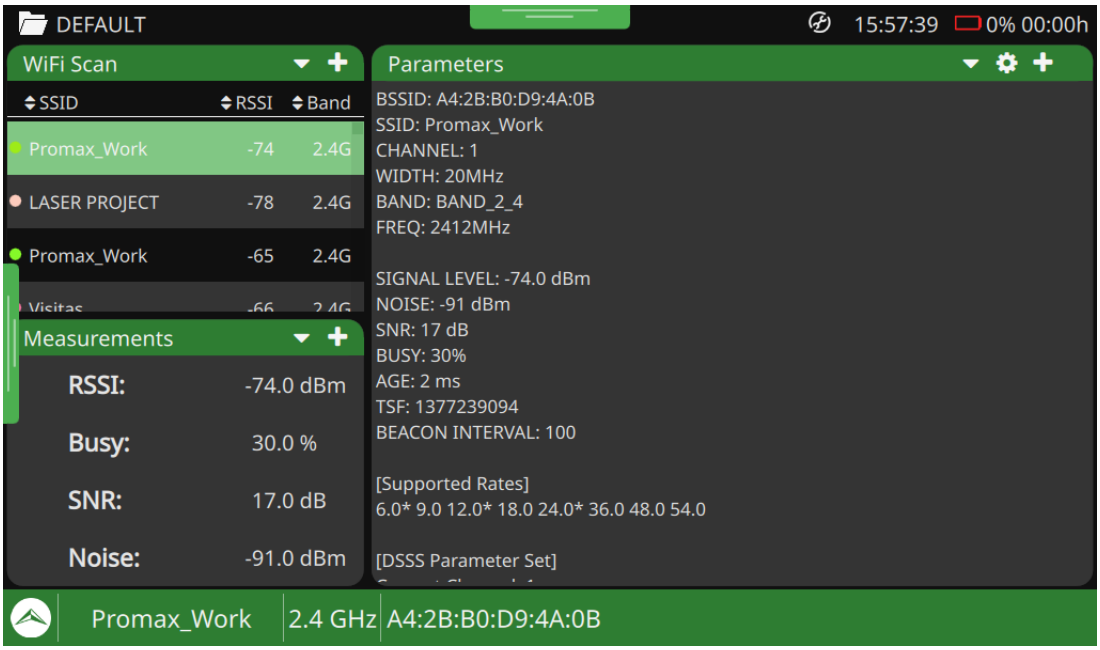


**Figure 30.**

1 Details of the selected access point.

### ►Settings

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

- Export: It allows exporting the information displayed on the screen to the internal memory.

## 5.8 WiFi Measurements

The WiFi Measurements tool displays information about the most relevant measurements of the selected access point and shows them on the screen.

### ►Touch gestures

Tap: Selection of measurement to display in the graph.

### ►Screen

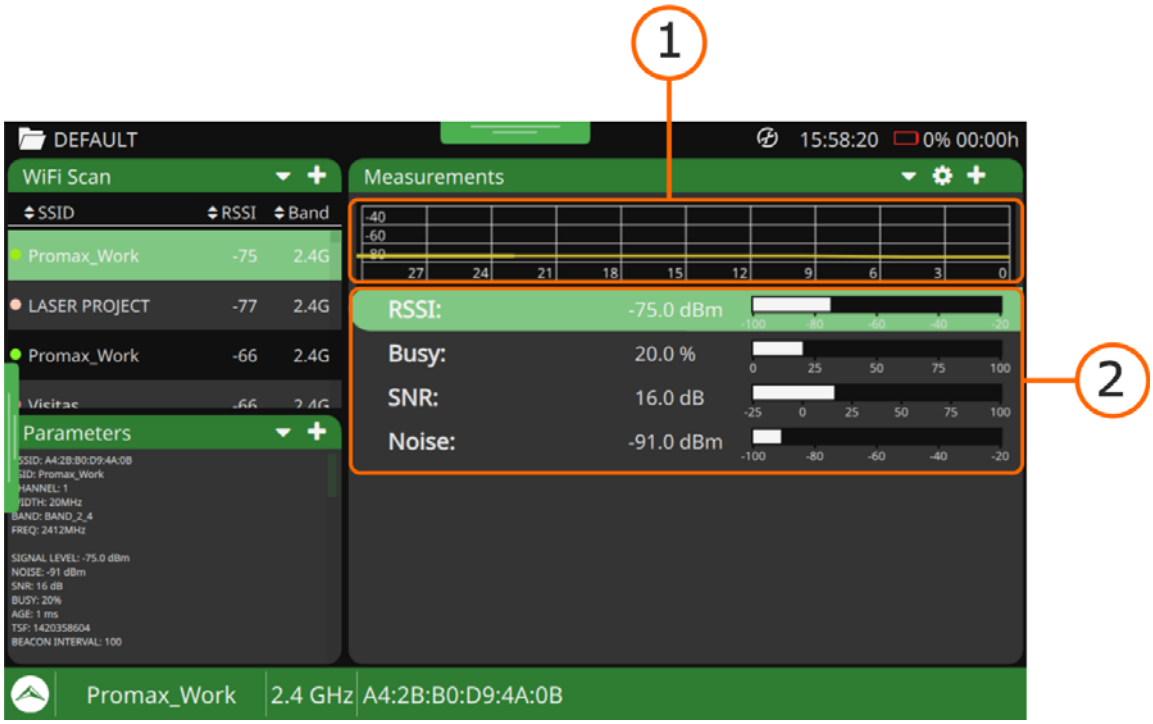


**Figure 31.**

1 Graph of the selected measurement.

2 Available measurements:

- RSSI (Received Signal Strength Indicator): Power of the selected Access Point measured by the USB WiFi adapter (also called "dongle"). The dongle measures the power of a single AP, while the meter measures the power of an area of the spectrum where multiple APs may exist. For this reason, and due to the different types of antennas used by both devices, the power measured by the dongle and by the spectrum may not match.

- Busy: Percentage of channel usage. This measurement is based on the time the channel is used. This measurement can help decide whether the channel can accommodate another AP.
- SNR (Signal to Noise Ratio): SNR measurement provided by the USB WiFi adapter for the selected channel / Access Point.
- Noise: Noise level of the selected Access Point.

### ►Settings

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

- Reset.

# 6 WORKSPACES

## 6.1 Description

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.

Each workspace contains a subfolder for each operation mode. The files generated during the use of each mode are saved in the corresponding subfolder. For example, if a screenshot is taken in SDI mode, the file with the captured screen image will be in the SDI subfolder, whereas if the capture is done in Spectrum Analyzer mode, it will be in that other subfolder.

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

Workspaces (04:59s) SCAN

## 6.2 Workspace Management

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

1. The active workspace appears in the upper left corner of the screen. This is the folder where all files generated during the use of the equipment are stored.
2. Swipe down from the top of any screen to access the Top menu.
3. From the Top menu select "Workspaces" to access the workspaces and resources management screen.
4. A screen will appear showing all available workspaces. The current workspace appears outlined by a box.
5. The side menu allows you to switch between "Workspaces" and "Resources". Select "Workspaces".
6. To create a new workspace press on the "Add" icon.

7 To access the options menu, press and hold your finger on a workspace. A pop-up menu will appear with the following options:

- Open: it opens the selected workspace for viewing and managing data.
- Load: it loads the workspace. From this moment on, all data will be saved in this workspace and the workspace name will appear in the upper left corner of each screen. **It is only possible to change the workspace by accessing the option from the Top menu of the Home screen.**
- New Workspace: it creates a new workspace (same function as the button "Add").
- Rename: it renames the selected workspace.
- Remove: it removes the selected workspace (except for the "default" workspace that cannot be removed).
- Export to USB: it copies the workspace to a memory connected to the USB port.

8 Select an option.

## 6.3 Data File Management

Next, it is described how to access and manage the files inside the workspace:

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 Workspace 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.

6 Select the working mode from the dropdown menu. The working mode is the mode in which the data was generated. The available working modes are:

- Main (Home screen).
- TV Analyzer.
- WiFi.
- TV Monitor.

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

- Tools
- CH Plans
- Dataloggers
- Drive Test
- Recordings
- Screenshots
- Quality

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

9 Files can be selected one by one by clicking on the box next to the file, or a multiple selection can be made by clicking on the box in the header.

10 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 a memory connected to the USB port.
- Preview Screenshot: The screenshot is displayed on the screen (it will also be previewed by clicking directly on the file).

11 Select the desired option from the menu.

**WARNING!** When exporting data, **do not disconnect the USB drive directly from the equipment**, as the information contained could be lost.

Follow the process described in the next section to ensure that the data is properly preserved.

►**Screen**


**Figura 32.**

1 Left Sidebar: 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. These files can be sorted by name, size, or date by clicking on the corresponding column.

## 6.4 Data Export to USB

The following describes how to export data from the equipment to a USB flash drive. It is important to follow these steps to ensure that the data is exported correctly:

1 Access the files to export as described in the previous section.

2 Connect a USB drive to the USB port located at the top of the equipment.

3 When the USB drive is connected, the system scans it for compatible files. During this process, a spinning wheel will appear above the USB icon. Until this scanning process is complete, operations involving the USB drive cannot be performed.

4 If the USB drive is detected, a notification will appear, and the option **USB (sda)** will show up in the left sidebar along with the icons for update and eject.

5 Open the workspace and select the file or files to export.

6 Press and hold the file or files to export until the option menu appears.

7 Select the "Export to USB" option.

8 The files will be copied to the USB drive. If they are large, a notification will indicate that the copy is in progress.

9 Once copied, click on **USB (sda)** in the left sidebar and then press the **Update** icon. The screen should refresh and display the files that were just copied.

10 If everything is correct, click on the **Eject** icon to disconnect the USB drive.

11 Remove the USB drive from the equipment.

12 Connect the USB drive to a PC to access data.

## 6.5 Resources Management

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 enabled 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 left side menu allows you to switch between "Workspaces" and "Resources". Select "Resources".

4 Select the operation mode from the dropdown menu. The available working modes are:

- TV Analyzer.
- WiFi

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

- Tools
- CH Plans
- Quality

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

7 Files can be selected one by one by clicking on the box next to the file, or a multiple selection can be made by clicking on the box in the header.

8 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 selected files to the USB memory plugged into the USB port of the meter.
- Import to Workspace: It copies the selected files to the enabled workspace.

9 Select the desired option from the menu.

## 6.6 Case of use: Accessing saved data

*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 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 Operation 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 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.

## 6.7 Case of use: Loading a Workspace

*I want to load a workspace called "test" where I have saved all the measurements taken at an installation. How do I do it?.*

1 Go to the Home menu by clicking on the Promax icon located in the bottom-left corner. **It is only possible to load a workspace by accessing the option from the Top menu of the Home screen.**

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

3 Tap on the "Workspace" option. The Workspace screen will appear.

4 Press and hold the workspace you want to load until a pop-up menu appears.

5 In the pop-up menu, select the "Load" option.

6 A message will appear indicating that the workspace has been loaded.

7 From now on, the workspace loaded is the enabled workspace where all screenshots, measurements, and data generated is stored.

8 The name of the enabled workspace will appear in the top-left corner of all screens.

# 7 WEBCONTROL

## 7.1 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.

## 7.2 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 Home screen, access the preferences options by pressing the "Settings" button. Go to the "Network" option where you'll find the configuration parameters for connecting to the network.
- WiFi network: Connect the USB WiFi adapter to the USB 3.0 port. Access the Top menu by swiping from top to bottom of the screen. Select the WiFi option 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 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. To view or edit this IP address, go to Settings -> Network.

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

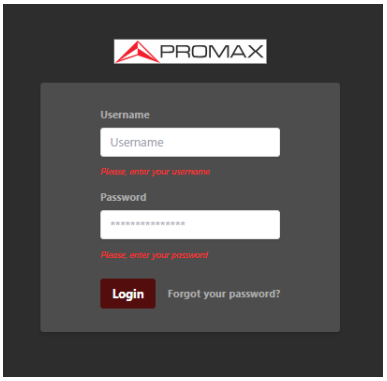


**Figure 33.**

4 Enter user and password and press "Login" to access the webControl.

5 User and password by default are:

- **Role: administrator**
  - User: admin
  - Password: admin
- **Role: guest (without write permissions)**
  - User: guest
  - Password: guest

6 The AD user (administrator) can interact freely with the device as if he were physically in front of it. The GU user (guest) can only observe the device without being able to interact with it.

**NOTE:** The webControl uses ports 80.

In the browser, JavaScript must be enabled in order to use the webControl.

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).

## 7.3 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.

The meter can be used simultaneously both remotely and locally.

► **Screen**

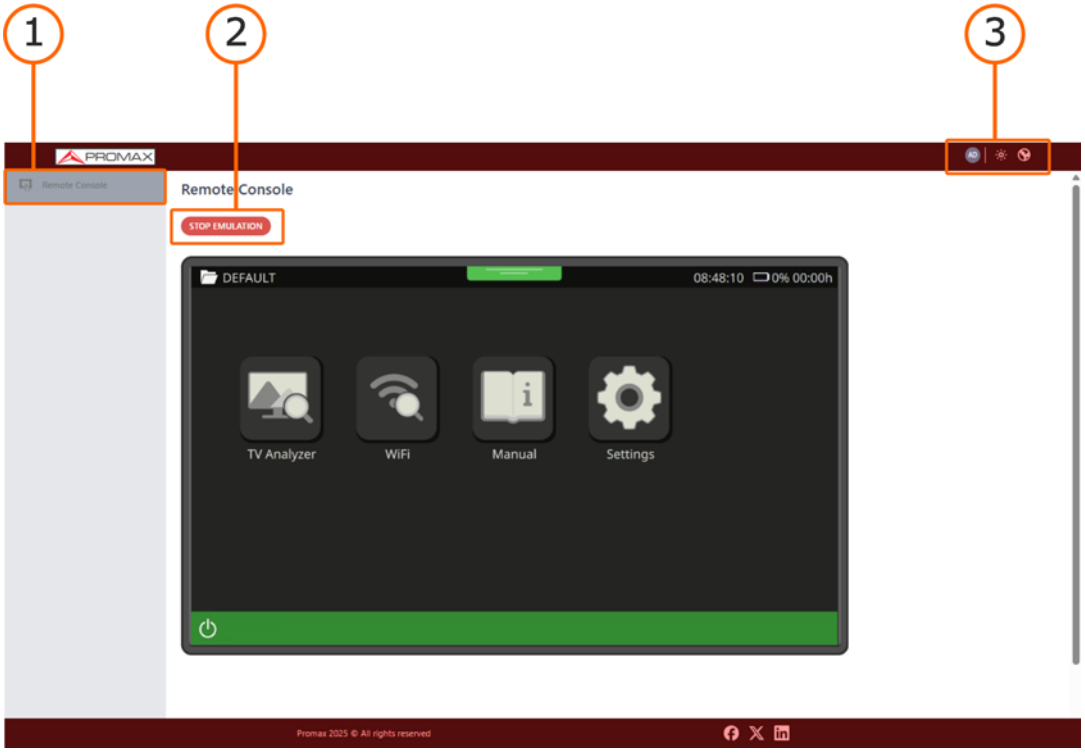


**Figure 34.**

1 Selected function (Console).

2 Start / Stop console emulation button. To start emulation press on "start emulation". To end the emulation press on "stop emulation".

3 Setting options:

- User (AD/GU): reboot equipment / about / logout.
- Theme (light / dark).
- Language (English / Spanish).

# 8 SPECIFICATIONS TV EXPLORER NG

## 8.1 General

### ► Inputs and Outputs

| Parameter | Value | Additional Data |
|---|---|---|
| | | |
| **RF Input** | | |
| **Connector** | BNC 75 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 | female |
| **Optical Power Measurement Range** | 800 - 1700 nm | |
| | | |
| **Analogue Video Input** | | |
| **Input Connector** | Multipole Jack | Zin=75 Ω |
| **Sensibility** | 1 Vpp | 75 Ω; positive video |
| | | |
| **Analogue Audio Input** | | |
| **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** | 1 speaker (mono) | |
| | | |
| **USB Interface 3.0** | | |
| **Connector** | USB type A | |
| **File systems supported** | FAT32, exFAT, NTFS, ext3, ext4 | |
| **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 | |
| **File systems supported** | FAT32, exFAT, NTFS, ext3, ext4 | |
| **Features** | Two modes: master or device | |
| | Master: mass storage host, USB CDC | For GPS, probes |
| | Device: Virtual COM | Remote control of the equipment through remote commands |
| | | |

| Parameter | Value | Additional Data |
|---|---|---|
| **IP Interface (control IP)** | | |
| **Connector** | RJ45 | Labeled IP CTRL |
| **Type** | Ethernet 10 / 100 Mbps / 1 Gbps | |
| **Communication Software** | webControl | |
| | Remote commands | |
| | SNMP protocol | |
| | SFTP protocol | |
| | | |
| | | |
| **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;<br>USB virtual COM;<br>WiFi | |
| **Remote control** | JSON: sending and receiving remote commands with JSON files | All interfaces |
| | webControl: web technology using a standard browser | RJ45, WiFi interfaces (open port: 80; allow javascript in the web browser) |
| | SNMP protocol | Interfaces: RJ45, WiFi |
| | SFTP protocol | user: atlas; password: password |
| | | |
| **Monitor Display** | | |
| **Monitor** | 7" TFT touch panel | |
| **Aspect Ratio** | 4:3 | |
| **Format** | 1024 x 600 dots | (RGB); (W) x (H) |
| **Brightness** | 380 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<br>According DiSEqC 2.x |
| **LNB Band** | Ku / Ka / C | |
| **Polarity** | Horizontal / Vertical, Right / Left | |

## ►Operation Modes

| Parameter | Value | Additional Data |
|---|---|---|
| **TV Analyzer** | Available | |
| **WiFi** | Available | |
| **TV Monitor** | Available | |

## ►Channel Plans

| Parameter | Value | Additional Data |
|---|---|---|
| **CCIR** | Available | |
| **OIRT** | Available | |
| **STDL** | Available | |
| **FCC** | Available | |
| **EIA** | Available | |

## ►Datalogger

| Parameter | Value | Additional Data |
|---|---|---|
| **Stored Data** | Signal type, 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.<br>For DVB-T2, DVB-C2 or ATSC 3.0* signals it saves information from all PLPs.<br>In case of Satellite signal it also saves polarization. |
| **Timestamp** | Date and time at each measured channel | |

*. Only for **ATSC** version of **TV EXPLORER NG**

## ►Mechanical Features

| Parameter | Value | Additional Data |
|---|---|---|
| **Dimensions** | TBD | (W) x (H) x (D) |
| **Weight** | TBD | Without installed options |
| **Volume** | TBD | |

## ►Power Supply

| Parameter | Value | Additional Data |
|---|---|---|
| **Internal Battery** | 7.4 V; 12.2 Ah | LiPo Smart battery |
| **Battery Operation Time** | between 3 and 4 hours | With smart power management |
| TV Analyzer mode | 4 hours aprox. | con UHD TV y demodulación DVB-T2 |
| WiFi mode | 4 hours aprox. | at 2,4 GHz band |
| **Charging time** | 6 h 15 min (100%) | 5 h (80%) |
| **External Voltage** | 12 ± 2 V DC | |
| **Consumption** | 30 W | |
| **Energy saving** | Auto power off<br>TFT Off | Configured by user |

## ►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 AL-103** | External DC charger | |
| **1x CA-005** | Mains cord for external DC charger | |
| **1x AA-103** | Car cable for external DC charger | |
| **1x CB-097** | Rechargeable Li-Po battery | built-in |
| **1x AD-055** | F - BNC (f/f) adapter | (m: male; f: female) |
| **1x AD-056** | F - DIN (f/f) adapter | |
| **1x AD-057** | F -F (f/f) adapter | |
| **1X AW010** | WiFi-USB dongle | |
| **1x CC-046** | Jack cable (4V) RCA | |
| **1x DC-309** | Transport belt | |
| **1x DC-310** | Carrying bag | |
| **1x DG0453** | Quick reference guide | |

## ►Optional accessories

| Parameter | Value | Additional Data |
|---|---|---|
| **1x DC- 229** | Transport suitcase | |

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

## 8.2 TV Analyzer Mode

### 8.2.1 Supported Standards

► **DVB-T**

| Parameter | Value | Additional Data |
|---|---|---|
| **Modulation** | COFDM | |
| **Margin of power Measurement** | -85 dBm to +23 dBm | +20 dBµV to +130 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 | |
| **C/N** | TBD | |
| **MER** | TBD | |
| **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<br>DTG D-Book 8.0<br>IEC 62216 |

► **DVB-T2**

| Parameter | Value | Additional Data |
|---|---|---|
| **Profiles** | T2-Base, T2-Lite | |
| **Modulation** | COFDM | |
| **Margin of power Measurement** | TBD | |
| **Power measurement accuracy** | ± 1,5 dB | |
| **C/N** | TBD | |
| **MER** | TBD | |
| **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<br>DTG D-Book 8.0<br>IEC 62216 |

► **ISDB-T**

| Parameter | Value | Additional Data |
|---|---|---|
| **Modulation** | COFDM | |
| **Margin of power Measurement** | -87 dBm to +23 dBm | +20 dBµV to +130 dBµV |
| **Power measurement accuracy** | ± 1,5 dB | |

| Parameter | Value | Additional Data |
|---|---|---|
| **C/N** | TBD | |
| **MER** | TBD | |
| **Sensibility** | TBD | |
| **Frequency resolution** | 1 kHz | |
| **Measurement** | Power, CBER, VBER, MER, PER, C/N, PER and Link Margin | |
| **Tuning Range** | 45 - 1000 MHz | |
| **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** | -87 dBm to +23 dBm | +20 dBµV to +130 dBµV |
| **C/N** | TBD | |
| **MER** | TBD | |
| **Power measurement accuracy** | ± 1,5 dB | |
| **Sensibility** | -67dBm | 995 MHz/256QAM/SR=6,95MS/s |
| **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** | -87 dBm to +23 dBm | +20 dBµV to +130 dBµV |
| **C/N** | TBD | |
| **MER** | TBD | |
| **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** | | |
| **Power measurement accuracy** | ± 1,5 dB | |

| Parameter | Value | Additional Data |
|---|---|---|
| **C/N** | TBD | |
| **MER** | TBD | |
| **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 |

### ► Analogue TV

| Parameter | Value | Additional Data |
|---|---|---|
| **Tuning range** | 45 - 1000 MHz | |
| **Frequency resolution** | 1 kHz | |
| **Power measurement accuracy** | ± 1,5 dB | |
| **Colour System** | PAL, SECAM and NTSC | |
| **Standard Supported** | M, N, B, G, I, D, K and L | |
| **Sensibility** | 40 dBµV for a correct synchronism | |
| **C/N** | TBD | |

### ► DVB-S

| Parameter | Value | Additional Data |
|---|---|---|
| **Modulation** | QPSK | |
| **Margin of Power Measurement** | | |
| **Power measurement accuracy** | ± 1,5 dB | |
| **C/N** | | |
| **MER** | | |
| **Sensibility** | | |
| **Frequency resolution** | 1 kHz | |
| **Measurements** | Power, CBER, VBER, MER, C/N and Link Margin | |
| **Symbol Rate** | 1,1 - 80 Msym/s | |
| **Tuning Range** | 250 – 3000 MHz | |

### ► DVB-S2

| Parameter | Value | Additional Data |
|---|---|---|
| **Modulation** | QPSK, 8PSK, 16APSK, 32APSK | Long frames and short frames |
| **Margin of Power Measurement** | | |
| **Power measurement accuracy** | ± 1,5 dB | |
| **C/N** | >= 50 dB | |
| **MER** | | |
| **Sensibility** | | |
| **Frequency resolution** | 1 kHz | |
| **Measurements** | Power, CBER, LBER, MER, PER, C/N, BCH ESR and Link Margin | |

| Parameter | Value | Additional Data |
|---|---|---|
| **Symbol Rate** | 500 ksym/s - 80 Msym/s | The TS provided by the demodulator will only be processed if the bitrate is below 200 Mbit/s. |
| **Supporting** | TS, GPS and GCS<br>MODCODs<br>CCM, ACM and VCM | |
| **Tuning Range** | 950 – 2150 MHz | |

### ► DSS

| Parameter | Value | Additional Data |
|---|---|---|
| **Modulation** | QPSK | |
| **Margin of Power Measurement** | | |
| **Power measurement accuracy** | ± 1,5 dB | |
| **C/N** | >= 50 dB | |
| **Sensibility** | TBD | |
| **Frequency resolution** | 1 kHz | |
| **Measurements** | Power, CBER, VBER, MER, PER, C/N and Noise Margin | |
| **Tuning Range** | 950 - 2150 MHz | |

### ► DVB-S2x

| Parameter | Value | Additional Data |
|---|---|---|
| **Modulation** | QPSK, 8PSK, 8APSK-L, 16APSK, 16APSK-L, 32APSK, 32APSK-L, 64APSK, 64APSK-L, 128APSK, 256APSK, 256APSK-L | Long frames and short frames |
| **Margin of Power Measurement** | -80 dBm to +20 dBm (@27,5 MS/s) | +35 dBµV to +127 dBµV (@27,5 MS/s) |
| **Power measurement accuracy** | ± 1,5 dB | |
| **C/N** | >= 50 dB | |
| **MER** | Max: 30 dB; Min: 0 dB | Freq: 1500 MHz; SR= 27,5 MS/s; CR=1/2 |
| **Sensibility** | TBD | |
| **Frequency resolution** | 1 kHz | |
| **Measurements** | Power, CBER, LBER, MER, C/N, BCH ESR, PER and Link Margin | |
| **Symbol Rate** | 200 ksym/s - 80 Msym/s | The TS provided by the demodulator will only be processed if the bitrate is below 200 Mbit/s. |
| **Supporting** | TS, GPS and GCS<br>CCM, VCM y ACM<br>MODCODs | |
| **Tuning Range** | 950 - 2150 MHz | |

### ► ATSC 1.0*

| Parameter | Value | Additional Data |
|---|---|---|
| **Modulation** | 8VSB | |
| **Margin of Power Measurement** | -87 dBm to +23 dBm | +20 dBµV to +130 dBµV |
| **Power measurement accuracy** | ± 1,5 dB | |
| **C/N** | >= 50 dB | |
| **MER** | Max: 42 dB; Min: 14 dB | Freq: 698 MHz |
| **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** | -87 dBm to +23 dBm | +20 dBµV to +130 dBµV |
| **Power measurement accuracy** | ± 1,5 dB | |
| **C/N** | >= 50 dB | |
| **MER** | Max: 40 dB; Min: -4 dB | Freq: 698 MHz; BW=6 MHz; mode=8K |
| **Sensibility** | TBD | |
| **Frequency resolution** | 1 kHz | |
| **Measurement** | Power, CBER, MER, PER, C/, LBER, BCH ES | |
| **Tools** | ALP Recording | |
| **Tuning Range** | 45 - 1000 MHz | |
| **Standard compliant** | ATSC Digital Television Standard | ATSC A/321 (2016)<br>ATSC A/322 (2017)<br>ATSC A/330 (2016) |

## 8.2.2 TV Analyzer Tools

### ► Spectrum

| Parameter | Value | Additional Data |
|---|---|---|
| **Tuning range** | 5 MHz - 2150 MHz | |
| **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 |

*. Only for **ATSC** version of **TV EXPLORER NG**

**. Only for **ATSC** version of **TV EXPLORER NG**

| Parameter | Value | Additional Data |
|---|---|---|
| **Advanced functions** | Trace max hold | |
| | Trace min hold | |
| | dB / div: 10, 5, 2, 1 dB | |
| **Measurement resolution** | 0,1 dB | |
| **Measurement accuracy** | ± 1.5 dB | |
| **Frequency resolution** | | |
| **Accuracy of frequency reference** | | |
| **Terrestrial sweep** | | |
| **Satellite sweep** | | |
| **Indicators** | Saturation | |
| **Markers** | Absolute and referenced | |
| **Scan rate** | 40 GHz/sec | |
| **Displayed Average Noise Level (DANL)** | | |
| | | |
| | | |
| **Dynamic** | | |
| **Display Range** | | |
| **Return lost (RL)** | | |
| | | |
| | | |
| **Terrestrial Band** | | |
| **Tuning range** | 5 - 1000 MHz | |
| **Tuning mode** | Channel or frequency | |
| **Frequency Accuracy** | | |
| | | |
| **Resolution Bandwidth (RBW)** | 100 kHz | |
| **Span** | | |
| Span settings | numeric value or predefined | |
| Span predefined values | 10, 20, 50, 100, 200, 500, 995 MHz | |
| Minimum Span | 10 kHz | |
| Maximum Span | 995 MHz | |
| **Amplitude** | | |
| Max input voltage | | |
| | | |
| Max level input | | |
| | | |
| **Satellite Band** | | |
| **Tuning range** | 950 - 2150 MHz | |
| **Tuning mode** | Channel or frequency | |
| **Frequency Accuracy** | | |
| | | |
| **Resolution Bandwidth (RBW)** | 100 kHz | |
| **Span** | | |
| Span settings | numeric value or predefined | |
| Span predefined values | 10, 20, 50, 100, 200, 500, 1000 MHz, full | |
| Minimum Span | 10 kHz | |
| Maximum Span | 2750 MHz | |
| **LNB** | | |

| Parameter | Value | Additional Data |
|---|---|---|
| Band | Ku / Ka / C | |
| Polarity | Horizontal / Vertical, Left / Right | |

## ► Video

| Parameter | Value | Additional Data |
|---|---|---|
| **Codecs** | | |
| | 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<br>HE-AAC | |
| | Dolby Digital (DD)<br>Dolby Digital + (DD+) | |
| | Dolby AC-4<br>Dolby AC-4 ATMOS | |

## ► Transport Stream

| Parameter | Value | Additional Data |
|---|---|---|
| **Communication Protocol** | MPEG-2 | |
| **Packets** | 188 or 204 bytes | Automatic detection |
| **Max. Bitrate** | 150 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 |

*. Only for **ATSC** version of **TV EXPLORER NG**

## ► Other Tools

| Parameter | Valor | Additional Data |
|---|---|---|
| **Echoes** | Available for DVB-T, DVB-T2, DVB-C2, ISDB-T, ATSC 3.0* | |
| **Constellation** | Available for DVB-T, DVB-T2, DVB-C, DVB-C2, DSS, DVB-S, DVB-S2, ISDB-T, J83 Annex B, ATSC 3.0** | |
| **MER by Carrier** | Available | |
| **Optical power measurement** | Available | |

| Parameter | Valor | Additional Data |
|---|---|---|
| **TS Recording** | Available | |
| **Spectrogram** | Available | |
| **Merogram** | Available | |

*. Only for **ATSC** version of **TV EXPLORER NG**

**. Only for **ATSC** version of **TV EXPLORER NG**

### ► Advanced Tools

| Parameter | Value | Additional Data |
|---|---|---|
| **Channel exploration** | Available | |
| **Datalogger** | Available | |
| **Task Planner** | Available | |
| **Blind Scan (Discover SAT)** | Available | Discovers transport packet streams from satellite spectrum and creates a channel plan. |

## 8.3 WiFi Mode

| Parameter | Value | Additional Data |
|---|---|---|
| **Interface** | Dongle-Wifi connected to USB port | Dongle must be validated by PROMAX |
| **Standards** | Wireless standard 802.11 ac/a/b/g/n | 802.11ac 2x2 compliant with MU-MIMO |
| **Max. data rates** | 54 Mbps for 802.11g<br>300 Mbps for 802.11n<br>866,7 Mbps for 802.11ac | |
| **ISM bands** | 2.412 - 2.484 GHz<br>5.150 - 5.850 GHz | |
| **Measurements** | | |
| RSSI (dBm) | Range: -100 dBm to -20 dBm | Received Signal Strength Indicator |
| Occupied AP (%) | 0 - 100% | |
| SNR (dB) | Available | Signal to noise ratio |
| Noise (dBm) | Available | |

## 8.4 Options

### ► Fibre Optics

| Parameter | Value | Additional Data |
|---|---|---|
| **Descriptive Code** | OP-002-PS | |
| **Selective Optical Power Meter** | | |
| **Connector** | FC-APC | female |
| **Optical Measure bands** | 1310 nm ± 50 nm;<br>1490 nm ± 10 nm;<br>1550 nm ± 15 nm | |
| **Optical Power Measurement Dynamic Range** | - 49,9 dBm to +5 dBm | Accuracy ± 0,5 dB |

### ► DAB / DAB+

| Parameter | Value | Additional Data |
|---|---|---|
| **Descriptive Code** | OP-002-DAB | |
| **Tuning range** | 45 - 1000 MHz | |
| **Frequency resolution** | 1 kHz | |
| **Margin of Power measurement** | -95 dBm - +20 dBm | Accuracy ± 1,5 dB |
| **Sensitivity** | -95 dBm | |
| **Tools** | TII, Echoes, Constellation, MERxCARRIER | |
| | ETI complete record | |
| **Measurement** | Power, C/N, MER, CBER | Max. measurement MER = 40 dB |
| | MSC CBER, FIC CBER | |
| | Frequency offset, bandwidth | |
| | FIB Ratio | |

### ► Advanced FM

| Parameter | Value | Additional Data |
|---|---|---|
| **Descriptive Code** | OP-002-FM | |
| **Tuning range** | 45 - 1000 MHz | |
| **Frequency resolution** | 1 kHz | |
| **Accuracy of level measurement** | ± 1,5 dB | |
| **MPX deviation** | Up to 100 kHz | Accuracy < ± 2 kHz |
| **MPX power** | | Up to 100 kHz<br>Accuracy < ± 0.2 dB |
| **Sensitivity** | 8 dBµV / -99 dBm | S+N/N = 12 dB |
| **Tools** | Histogram | ITU-R SM. 1268-4 all samples and accumulated.<br>ITU-R SM. 1268-2 all samples and accumulated. |
| | MUX spectrum | |
| **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 | |

| Parameter | Value | Additional Data |
|---|---|---|
| **RDS information** | Available | |

# 9 MAINTENANCE

## 9.1 Shipping Instructions

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.

## 9.2 Considerations about the Screen

This paragraph offers key considerations regarding the use of the color 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.

## 9.3 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 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 OPTICAL OPTION

This annex contains operating instructions for the next option:

- OP-002-PS: Selective measurement of Optical Power.

The optical input measures the total power transmitted through the fiber optic cable. With this option the equipment can measure each of the three wavelengths (lambdas) that are transmitted through the fiber optic cable.

## i.1 Optical option Installation

1. From **Home** press on **Settings**.
2. Press on **Options** on the **General** settings row.
3. The Options screen shows a list of the tools that are already installed.
4. The Optical option consists of the **Optical Power** tool.
5. If this tool does not appear on the screen, it means that the Optical option is not installed. To install this option, press the "+" and enter the option code.
6. The option code for the Optical option is a unique code for the meter. Contact PROMAX if you are interested in this option (https://www.promaxelectronics.com/ing/contact-promax/).

## i.2 Selective measurement of Optical Power

1. Connect the fiber optic cable to the FC-APC input connector.
2. From **Home** press on **TV Analyzer** .
3. Swipe down from the top of the screen to display the Top menu.
4. Select the **Optical Power** option from the Top menu. Select **ON** in the field **Enabled**.
5. In the Select lambda (nm) field, choose one of the three available wavelengths (lambda) (1310, 1490, and 1550 nm).
6. On the right side, a power meter for each lambda appears. It should display the power for the selected lambda.

# ii DAB/DAB+ OPTION

## ii.1 Description

This annex contains operating instructions for the next option:

- OP-002-DAB: Measurement for DAB and DAB+ digital radio.

The DAB (Digital Audio Broadcasting) is a digital radio standard, designed for both home and portable receivers to broadcast terrestrial and satellite audio and also data. It works with Band III and frequencies.

The DAB+ is an evolution of DAB using the AAC + audio codec. It also includes Reed-Solomon error correction, which makes it more robust. DAB receivers are not compatible with DAB+ receivers.

ETI (Ensemble Transport Interface) is the output stream for a DAB/DAB+ multiplexer. The ETI is divided in several layers with information about the radio signal. It is similar to the transport stream obtained when multiplexing a TV signal.

The DAB+ option has some exclusive tools such as the ETI record. It is also able to decode and show images (slideshow) that some broadcasters sent to complement audio services.

Also some standard tools such as Echoes, Constellation and MER by carrier are also available on DAB/DAB+.

DAB and DAB+ Analysis (11:06s) SCAN

## ii.2 Installing DAB/DAB+ option

1 From the **Home** menu press on **Settings**.

2 Press on **Options** at General Settings section.

3 The Options screen shows a list of tools already installed.

4 The DAB/DAB+ option is made up of three tools. These tools should appear on the list:

- **DAB Advanced**
- **DAB ETI Recording**
- **DAB TII**

5 If these tools are not on screen, then the DAB/DAB+ option is not installed. To install this option press on "+" and enter the option code.

6 The option code for the DAB/DAB+ option is a unique code for the meter. Contact PROMAX if you are interested in this option (https://www.promaxelectronics.com/ing/contact-promax/).

## ii.3 DAB/DAB+ Tuning

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

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

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

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

5 Select the **terrestrial band** .

6 Select **type of tuning**: Tune by frequency or Tune by channel .

- **Tune by frequency**: User selects a frequency to be tuned.
- **Tune by channel**: User selects a channel to be tuned. Previously the user have to select a channel plan on the Channel Plan option. A channel plan contains a list of channels with settings for each channel (frequency, type of signal, bandwidth, etc.). When tuning by channel it will apply the settings obtained from the channel plan in first place.

7 On **Signal Type** option select **Mode**:

- **Auto mode**: It identifies and tries to demodulate the signal automatically using the StealthID function (for more details refer to "►StealthID" on page 26).
- **Manual mode**: The user must enter the signal type and the parameters to identify and demodulate it.

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

9 Adjust the **reference level**.

10 Select channel or frequency to be tuned. You can select a frequency or channel by using the tuning menu or by dragging left or right on the screen and then tapping on the signal.

11 When on the signal, the tuning bar turns green if the signal is locked. If not locked, the tuning bar does not change and maintains the red colour.

12 If locked, it tries to demodulate it. At the video tool will show the image and at signal parameters tool will show all related parameters.

## ii.4 DAB Advanced Measurements

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

2 On the main panel, press ▼ and select the **Measurement** tool.

3 The **DAB Advanced** tool shows extra measurements for the DAB/DAB+ signal.

**►Screen with DAB Advanced measurements**

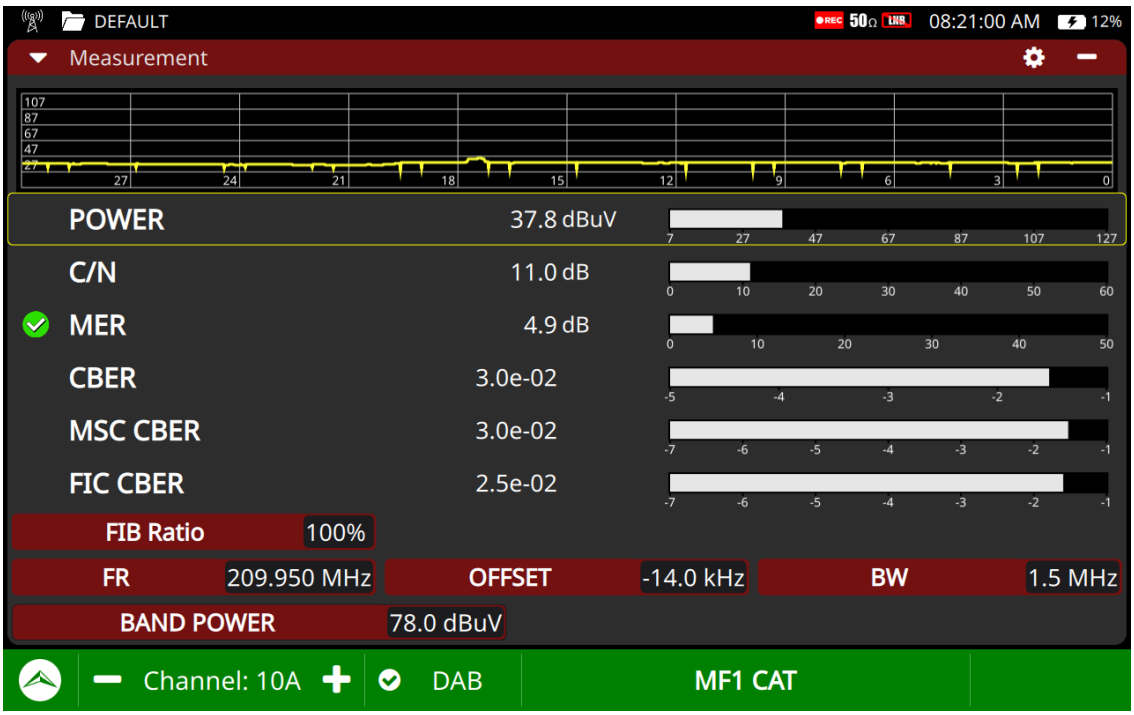


**Figure 35.**

**► DAB / DAB+ advanced measurements**

- **MSC CBER**: CBER for MSC (*Main System Channel*). It is part of ETI containing audio and images.

- **FIC CBER**: CBER for FIC (*Fast Information Channel*). It is part of ETI containing information about the configuration of the ETI itself, such as number and type of services.
- **CBER**: Bit error ratio for DAB/DAB+ channel (it includes all the ETI content).
- **FIB Ratio**: FIC quality ratio. It is calculated from wrong packets detected by CRC. 100% is the top quality level.

**►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).

## ii.5 DAB ETI Recording

The DAB ETI recording tool allows recording the DAB ETI (Ensemble Transport Interface) which is the data stream that carries all the radio stations and information within a DAB/DAB+ signal.

It also has the option to record raw signal in order to be analysed in case there was any problem locking the signal.

Recording (01:09s) SCAN

### ►Screen

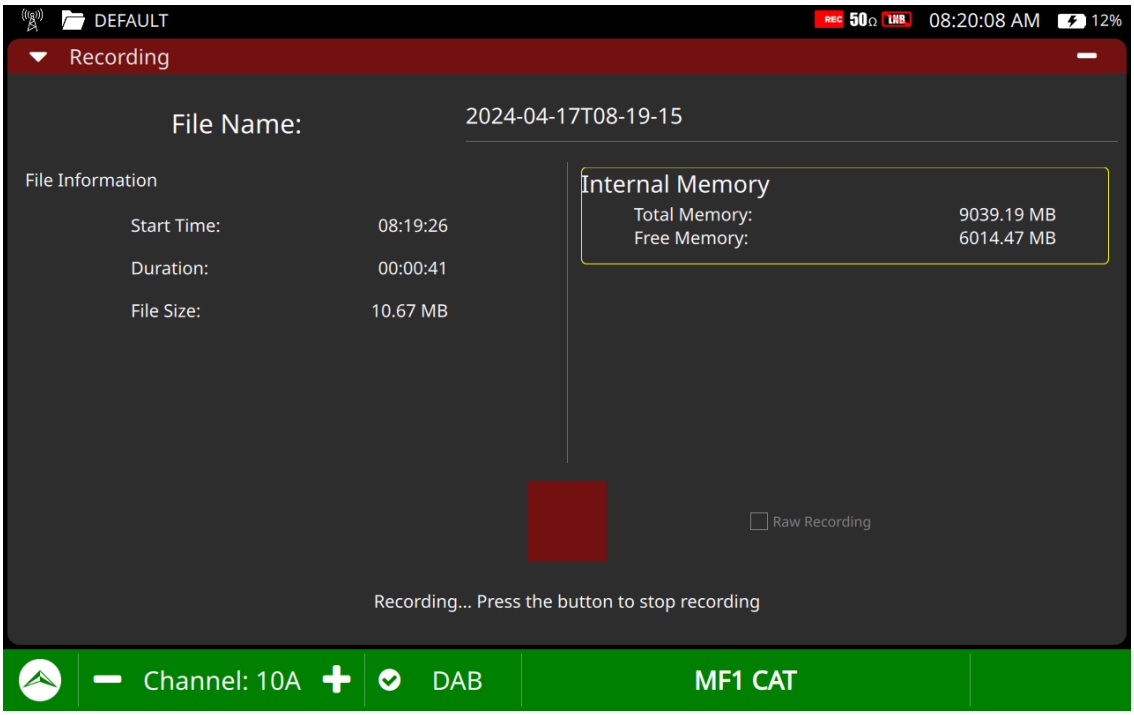


**Figure 36.**

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. The name of the file is generate from the current date and time.

2 On/Off button: It shows a red button to start/stop recording. When the button is a cercle it starts recording. When the button is square it stops recording. Records are saved in the current workspace. To record a raw signal check the box "Raw Recording" and follow the instructions below.

### ►Raw Recording Procedure

Raw recording is useful to analyze the signal in order to find any problems in the data stream that are not allowing to lock or demodulate the signal. It is very important to follow these steps to generate a proper raw record:

1 Disconnect the signal.

2 Check the "raw recording" option.

3 Start recording.

4 Connect the signal.

5 After a while, stop recording.

6 Access the Workspace (for more details refer to "WORKSPACES" on page 73) to get the recording.

7 Deploy the Top Menu and select Workspace. Then select the current Workspace and in "Mode" select "TV Analyzer". Now press on "Recordings".

8 Press on the file (eti format) to access the options menu and copy it to an USB.

9 Now the file can be analysed or send in order to find any problems that are not allowing to tune / demodulate the signal.

**►Touch gestures**

Tap: Tap the on/off button to start/stop recording or to check the raw recording checkbox.

## ii.6 DAB TII

The DAB TII tool shows information that identifies transmitters (TII) from the ETI locked. The graph on screen shows PRS and null symbols.

**►Screen**

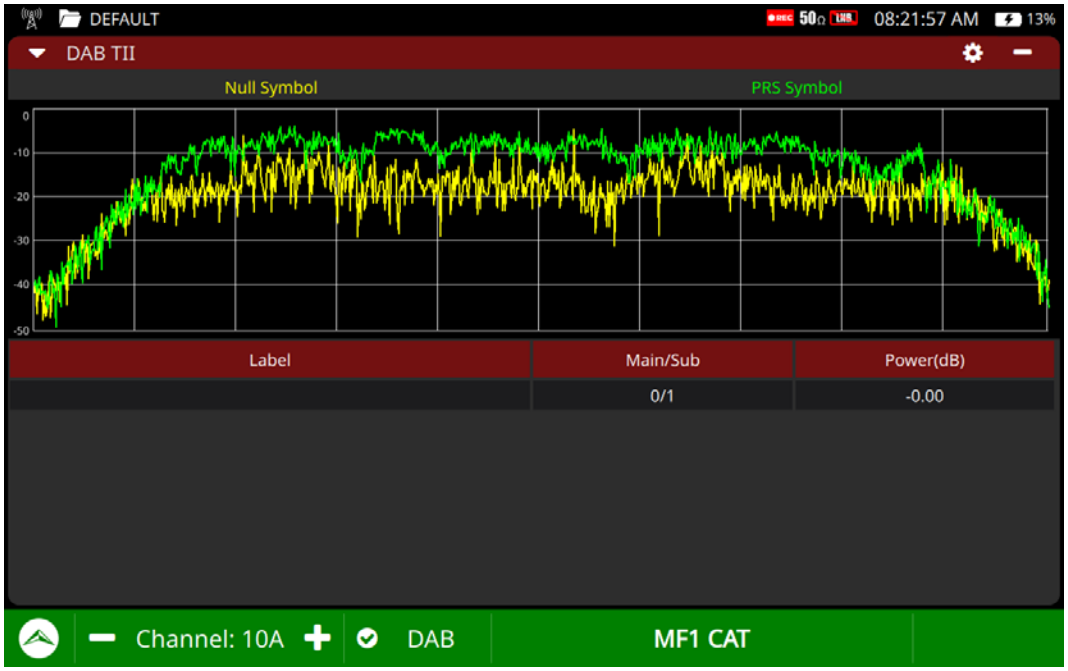


**Figure 37.**

1 PRS symbol spectrum (green) and null (yellow). Using the Settings menu you can display each one separately. It also allows you to select the display of the null symbol with or without transmitter information.

2 Transmitters data. Transmitters are ordered from highest to lowest power. It also allows you to select one of the transmitters by tapping on it. Data shown are as follows:

- Transmitter Identification label.
- Main identifier (Main) and sub-identifier (Sub) of the transmitter.
- Power of transmitter in relation to most powerful transmitter.

**►Touch gestures**

Tap: Select a transmitter.

**► Settings**

Press on the gear to display settings:

- Show: It allows displaying on screen the PRS symbol, the Null symbol or both.
- Null Symbol: It allows showing the Null symbol with or without TII.

# iii FM ADVANCED OPTION

## iii.1 Description

This annex contains operating instructions for the next option:

- OP-002-FM: Advanced measurements for FM analogue radio.

The Advanced FM demodulates and uses advanced features and tools for FM measurement.

Some of the included measurements are the signal level for the demodulated multiplex and the deviations of the subcarriers that form the multiplex. The added utilities display the FM multiplex spectrum and the FM histogram deviation.

Advanced FM (03:38s) SCAN

The Advanced FM screen is divided into 3 windows:

- main window
- left top window
- left bottom window

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

## iii.2 Advanced FM option Installation

1 From **Home** press on **Settings**.

2 Press on **Options** on the **General** settings row.

3 The Options screen shows a list of tools that are already installed.

4 The Advanced FM option is made up of three tools. These tools should appear on the list:

- **FM Advanced**
- **FM Histogram**
- **FM MPX Spectrum**

5 If this tool does not appear on the screen, it means that it is not installed. To install this option, press the "+" and enter the option code.

6 The option code is a unique code for the meter. Contact PROMAX if you are interested in this option (https://www.promaxelectronics.com/ing/contact-promax/).

## iii.3 FM Tuning

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

2 From the **Home** menu, press on **TV Analyzer** .

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

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

5 Select the **terrestrial band** .

6 Select **type of tuning**: Tune by frequency or Tune by channel .

- **Tune by frequency**: Select a frequency to be tuned.
- **Tune by channel**: User selects a channel to be tuned. Previously the user have to select a channel plan on the Channel Plan option. A channel plan contains a list of channels with settings for each channel (frequency, type of signal, bandwidth, etc.). When tuning by channel it will apply the settings obtained from the channel plan in first place.

7 On **Signal Type** option select **Mode**:

- **Auto mode**: It identifies and tries to demodulate the signal automatically using the StealthID function (for more details refer to "►StealthID" on page 26).
- **Manual mode**: The user must enter the signal type and the parameters to identify and demodulate it.

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

9 Adjust the **reference level**.

10 Select channel or frequency to be tuned. You can select your frequency or channel by using the tuning menu or by dragging left or right on the screen and then tapping on the signal.

11 When on the signal, the status bar turns green if the signal is locked. If not locked, the tuning bar does not change and maintains the red colour.

12 If locked, it tries to demodulate it. At signal parameters tool will show all related parameters.

## iii.4 FM Advanced measurements

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

2 On the main window, press ▼ and select the **Measurement** tool.

3 The **FM Advanced** tool shows advanced measurements for the FM signal.

**►Screen**

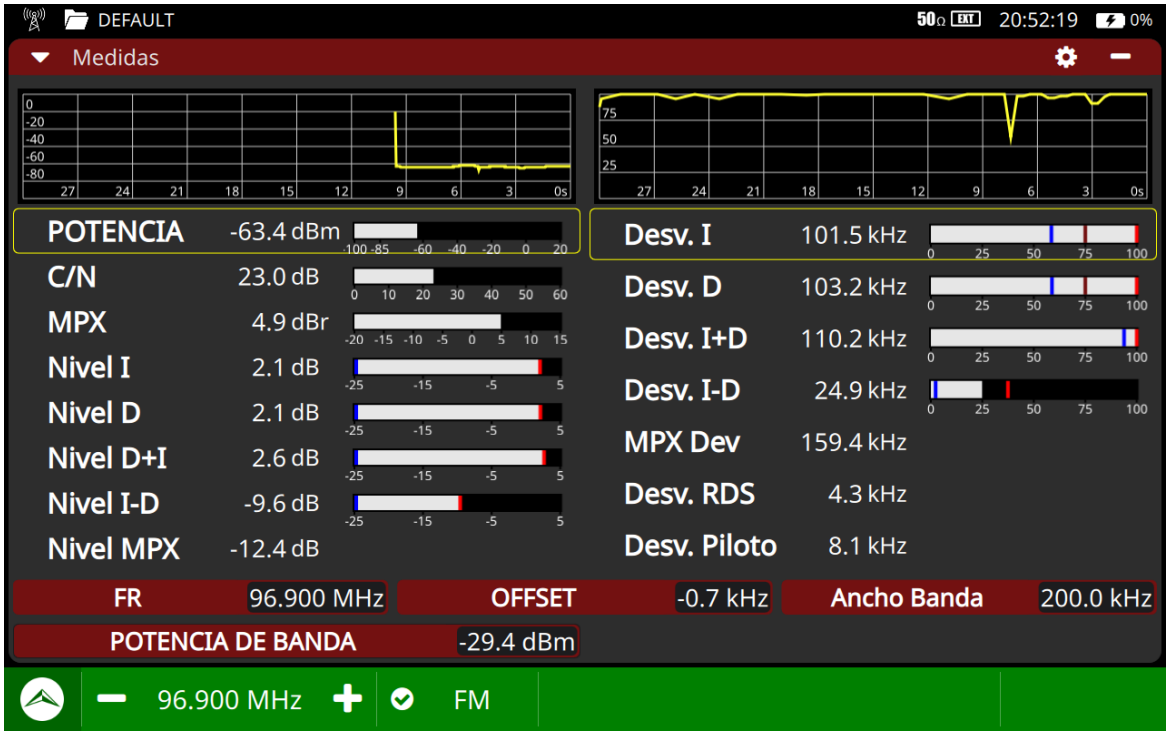


**Figure 38.**

**► FM Advanced Measurements**

- **MPX**: FM Multiplex level (dBr = dB relative to reference level).
- **Level L**: Left channel level.
- **Level R**: Right channel level.

- **L+R Level**: L+R component level (left + right), also known as mono, for MPX.
- **L-R Level**: L-R component level (left + right), also known as stereo, for MPX.
- **MPX Level**: FM Multiplex level (dBr = dB relative to reference level).
- **L Dev**: Frequency deviation caused only by L channel (once decoded).
- **R Dev**: Frequency deviation caused only by R channel (once decoded).
- **L+R Dev**: Frequency deviation caused only by L+R (or mono) component of MPX.
- **L-R Dev**: Frequency deviation caused only by L-R (or stereo) component of MPX.
- **MPX Dev**: Deviation of whole band pass filtered MPX.
- **RDS Dev**: Frequency deviation caused only by RDS subcarrier.
- **Pilot Dev**: Frequency deviation caused only by stereo pilot (19 kHz tone) component of MPX.
- **Offset**: Frequency offset between the transmitter and the received tuned frequency.

**►Touch gestures**

Tap: Select the measurement to be monitored on screen.

**►Settings**

Press on the gear to display settings:

- Reset: It restarts measurements.
- Visual options: It shows level or power measurement on the main window.

## iii.5 Tools

In the following sections, each specific tool for Advanced FM is explained. They are as follows:

- RDS FM Parameters
- FM Histogram

- FM MPX Spectrum

## iii.6 RDS FM Parameters

RDS (Radio Data System) is a system that allows FM radio stations to transmit additional digital data alongside the conventional audio signal. This data can be received by compatible devices, such as car radios or home audio equipment, which display additional information on the receiver's screen.

**►Screen**

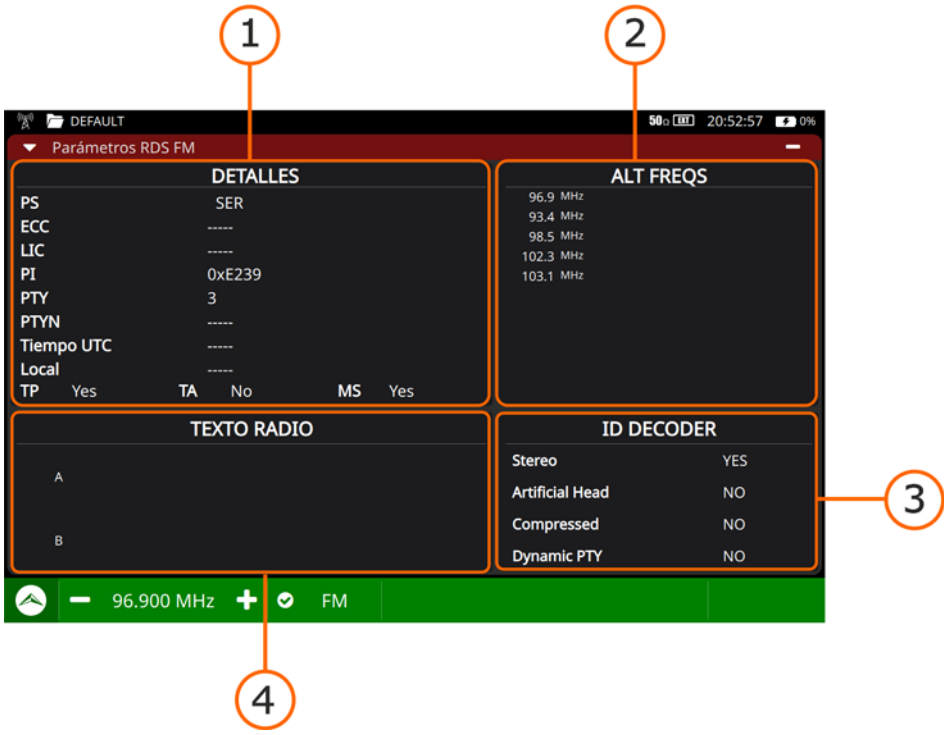


**Figura 39.**

1 Detailed information.

- PS: Program Service Name. The name of the radio station.
- ECC: Extended country code.
- LIC: Language Identification Code.
- PI: Programme Identification.
- PTY: Program Type.
- UTC Time: Universal time.
- Local: Local time.
- TP: Traffic program.
- TA: Traffic announcement.

- MS: Music/Spoken switcher.

2 Alternative frequencies.

3 Radio text.

4 Decoder identification.

## iii.7 FM Histogram

The FM histogram shows a graph with the distribution of measurements of deviations in FM multiplexing.

**►Screen**

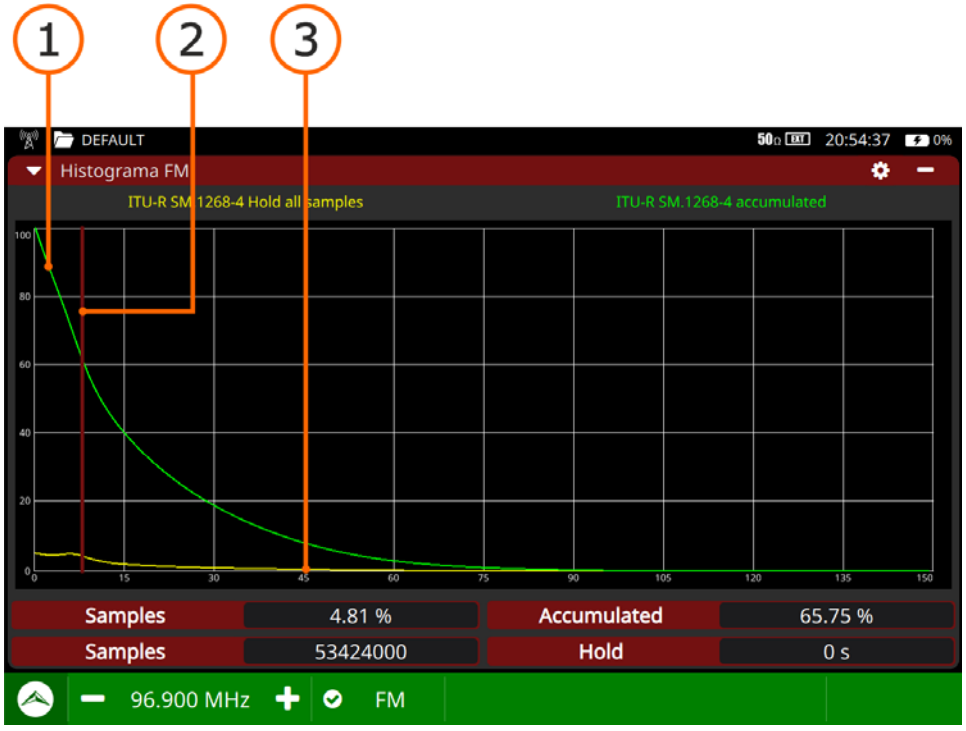


**Figura 40.**

1 Green line: Cumulative percentage of sample values for FM MPX deviation (measured according to the selected standard).

2 Red vertical line: Selected threshold for FM MPX deviation (typical value: 75 kHz). Press left-right to adjust the threshold.

3 Yellow line: Percentage of FM MPX deviation values (measured according to the selected standard).

4 Measurements:

- Samples: Percentage and total number of FM MPX deviation samples equal to the threshold (yellow graph).
- Cumulative: Percentage of FM MPX deviation samples that are equal to or above the threshold (green graph).
- Hold: Sample retention time.

**►Touch gestures**

Tap: Threshold selection.

**►Settings**

Press on the gear to display settings:

- Retain samples
  - All: Take samples continuously.
  - Time: Take samples for a limited period of time.
- Time: Selection of the time period for taking samples.
- Standard
  - All samples: Histogram calculated according to the ITU-R SM 1268-4 standard. It accumulates all frequency deviation values in the histogram.
  - Max 50 ms: Histogram calculated according to the ITU-R SM 1268-2 standard. It measures the maximum frequency deviation value over 50 ms and accumulates it in the histogram.
- Reset: It clears and resets the histogram.

## iii.8 FM MPX Spectrum

The FM MPX Spectrum utility displays the FM multiplex spectrum over a frequency range of 100 kHz. It shows all the subcarriers that make up the FM multiplex. It provides an overview of the FM multiplex that can help identify issues.

►**Screen**

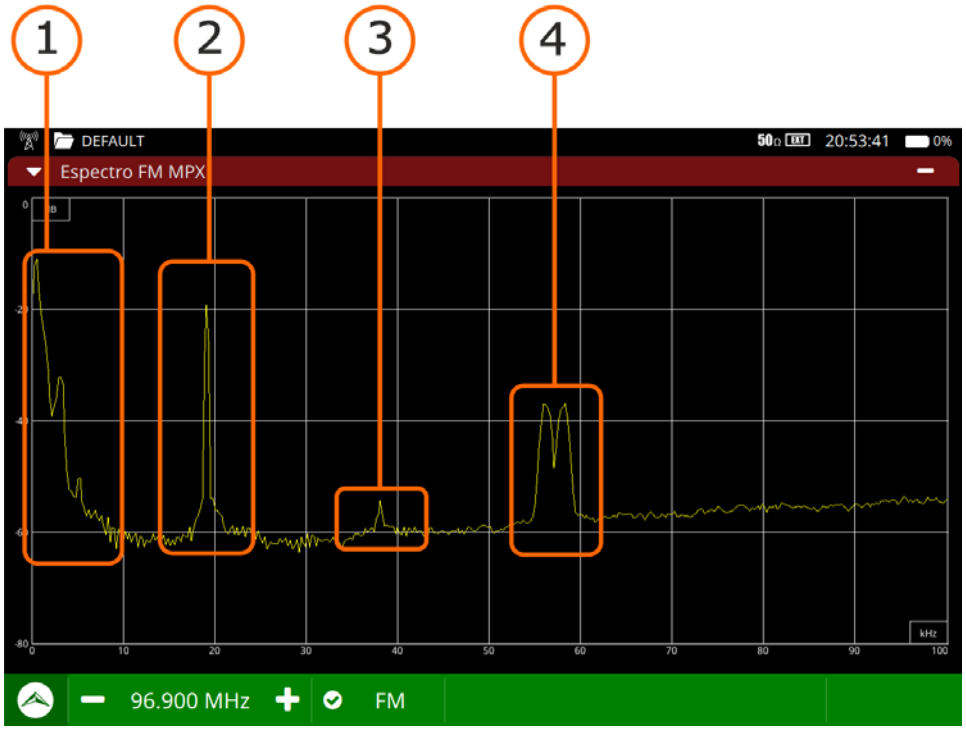


**Figura 41.**

1 Sub-carrier L+R.

2 Stereo pilot.

3 Sub-carrier L+R.

4 Sub-carrier RDS.

# iv DRIVE TEST OPTION

## iv.1 Description

This annex contains operating instructions for the next option:

- OP-002-GPS: GPS for Drive Test.

The **Drive Test** option allows monitoring different signal parameters over time, geo-positioned using GPS coordinates, in order to map the coverage of a specific transmitter.

Drive Test (07:06s)

SCAN

## iv.2 Drive Test option Installation

1. Connect the GPS antenna to the USB port of the device. No additional software installation is required.
2. From the "TV Analyzer" mode, access the "Advanced Tools" menu by swiping left from the right side of the screen.
3. Select the "Drive Test" option.
4. For more details on how this tool works, refer to "Drive Test / Signal Monitoring" on page 56.

# v ADDITIONAL INFORMATION

## v.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 | |
| **TV EXPLORER NG** | Product page of the TV EXPLORER NG on the PROMAX website with access to all downloadable content | https://www.promaxelectronics.com/ing/products/tv-cable-satellite-signal-and-spectrum-analyzers/tv-explorer-ng/universal-tv-and-spectrum-analyzer/ | |
| **DiSEqC Commands** | Description of DiSEqC commands for remote control of antennas | https://www.promax.es/downloads/manuals/English/diseqc-commands.pdf | |
| **Firmware** | Last firmware release | https://www.promaxelectronics.com/ing/products/tv-cable-satellite-signal-and-spectrum-analyzers/tv-explorer-ng/universal-tv-and-spectrum-analyzer/ | |

## v.2 Social Networks

| Name | Link | |
|---|---|---|
| **Twitter** | @PROMAX_news | |
| **Linkedin** | https://www.linkedin.com/company/promax-electronica/ | |
| **Facebook** | https://www.facebook.com/promaxelectronics/ | |
| **YouTube** | https://www.youtube.com/user/PROMAXElectronics | |

# vi MULTIMEDIA CONTENT

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

| Chapter | Title | Link | QR Code |
|---|---|---|---|
| **1. Introduction** | Main features of the TV EXPLORER NG | https://youtu.be/t4HxIrKdGuc | |
| **1. Introduction** | Explorer NG: My loyal go-to tool | https://youtu.be/IBLJdUTDkOU | |
| **4. TV Analyzer** | TV Analyzer Introduction | 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** | Spectrogram | https://youtu.be/mbNizyQL1-0 | |
| **4. TV Analyzer** | Merogram | https://youtu.be/fjHxDvTLrCQ | |
| **4. TV Analyzer** | Echoes | https://youtu.be/4Q1uxtyyn70 | |
| **4. TV Analyzer** | Audio levels | https://youtu.be/38x7ozsjxjw | |
| **4. TV Analyzer** | Optical Power Measurement | https://youtu.be/d9H9NAMvPxc | |

| Chapter | Title | Link | QR Code | |
|---|---|---|---|---|
| **4. TV Analyzer** | Drive Test | https://youtu.be/Fa2WQocZU-s | | |
| **4. TV Analyzer** | Channel Exploration | https://youtu.be/0WnmD922znk | | |
| **4. TV Analyzer** | Blind Scan | https://youtu.be/c0IbmIlHFe0 | | |
| **6. Workspaces** | Workspaces | https://youtu.be/GalvHQw5w9Y | | |
| **7. webControl** | webControl | https://youtu.be/JtKQXymTRbg | | |
| **ii. DAB/DAB+** | DAB and DAB+ Analysis | https://youtu.be/UUa25AFdDWM | | |
| **iii. FM Advanced** | Advanced FM | https://youtu.be/ZKGHtfFsbqY | | |

## vii INDEX

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