

# ATLAS *NG*

## UNIVERSAL BROADCAST ANALYZER




-0 MI2207-



## **SAFETY NOTES**


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.

## **USER'S MANUAL VERSION**















Manual Version	Web Publication Date	Firmware Version
F1.0	May 2023	1.0.6

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

## SAFETY RULES

- \* The safety could not be assured if the instructions for use are not closely followed.
- \* Use this equipment connected only to systems with their negative of measurement connected to ground potential.
- \* The AL-103 external DC charger is a Class I equipment, for safety reasons plug it to a supply line with the corresponding ground terminal.
- \* This equipment can be used in Overvoltage Category I installations and Pollution Degree 2 environments.
- \* External DC charger can be used in Overvoltage Category II, installation and Pollution Degree 1 environments.
- \* When using some of the following accessories use only the specified ones to ensure safety:
  - Rechargeable battery
  - External DC charger
  - Car lighter charger cable
  - Power cord
- \* Observe all specified ratings both of supply and measurement.
- \* Remember that voltages higher than 70 V DC or 33 V AC rms are dangerous.
- \* Use this instrument under the specified environmental conditions.
- \* When using the power adaptor, the negative of measurement is at ground potential.
- \* Do not obstruct the ventilation system of the instrument.
- \* Use for the signal inputs/outputs, specially when working with high levels, appropriate low radiation cables.
- \* Follow the cleaning instructions described in the Maintenance paragraph.

## SAFETY SYMBOLS

	DIRECT CURRENT		ON (Supply)
	ALTERNATING CURRENT		OFF (Supply)
	DIRECT AND ALTERNATING		DOUBLE INSULATION (Class II protection)
	GROUND TERMINAL		CAUTION (Risk of electric shock)
	PROTECTIVE CONDUCTOR		CAUTION REFER TO MANUAL
	FRAME TERMINAL		FUSE
	EQUIPOTENTIALITY		EQUIPMENT OR COMPONENT TO BE RECYCLED

## DESCRIPTIVE EXAMPLES OF OVER-VOLTAGE CATEGORIES

- \* **Cat I:** Low voltage installations isolated from the mains.
- \* **Cat II:** Portable domestic installations.
- \* **Cat III:** Fixed domestic installations.
- \* **Cat IV:** Industrial installations.

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

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# UNIVERSAL BROADCAST ANALYZER

## ATLAS NG

### 1 INTRODUCTION

#### 1.1 Description

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

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



Figure 1.

The **ATLAS NG** is a universal analyzer that covers the most stringent requirements for broadcast professionals. It covers all standards developed by ISDB and the DVB consortium, as well as the ISDB and ATSC standard, including the next generation versions for these standards, like the ATSC 3.0 and DVB-S2X.

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



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

The **ATLAS NG** has a variety of input-output connectors that allows you to work with most of the broadcast signals: N-type universal, 1PPS, FC/APC, ASI-SDI, SFP+, HDMI, Ethernet among others. It can be connected to a network and be remotely managed very easily using a standard browser.

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

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



**Figure 2.**



[Introducing the ATLAS NG \(01:30s\)](#)







## 2 SETTING UP

### 2.1 Package Content

Check that your package contains the following elements:

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

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

### 2.2 Power

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

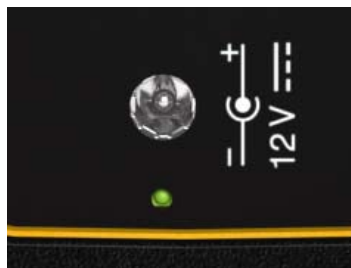


### 2.2.1 First Charge

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

### 2.2.2 Charging the Battery

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



**Figure 2.**

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:** Low charge level (below 30%).
- **Orange:** Medium charge level (above 30%).
- **Green:** High charge level (above 75%).
- **Blinking:** Battery not detected.
- **Off:** Battery is discharging.

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



### 2.2.3 Charge / Discharge Times

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

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

With the equipment on (slow charge):

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

Average discharge time (with external supply disabled):

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

### 2.2.4 Energy Saving

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

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

### 2.2.5 Smart Control Battery

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



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

### 2.2.6 Usage Tips

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

To extend battery life the user should follow these tips:

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



## 2.3 Equipment Details

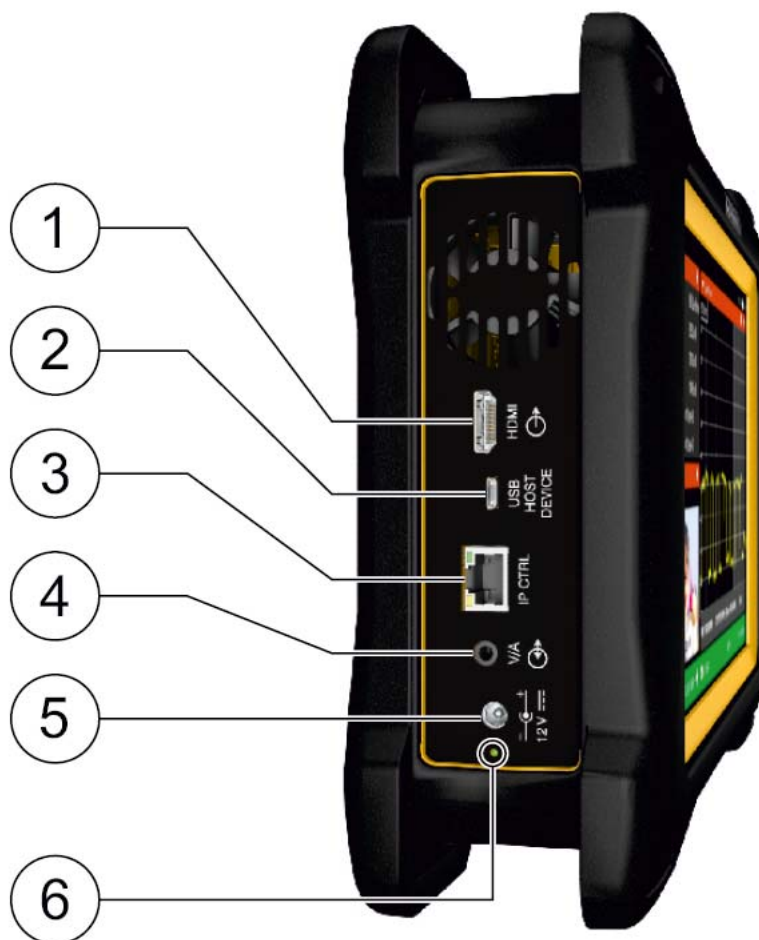


[Inputs and Outputs \(03:13s\)](#)

SCAN

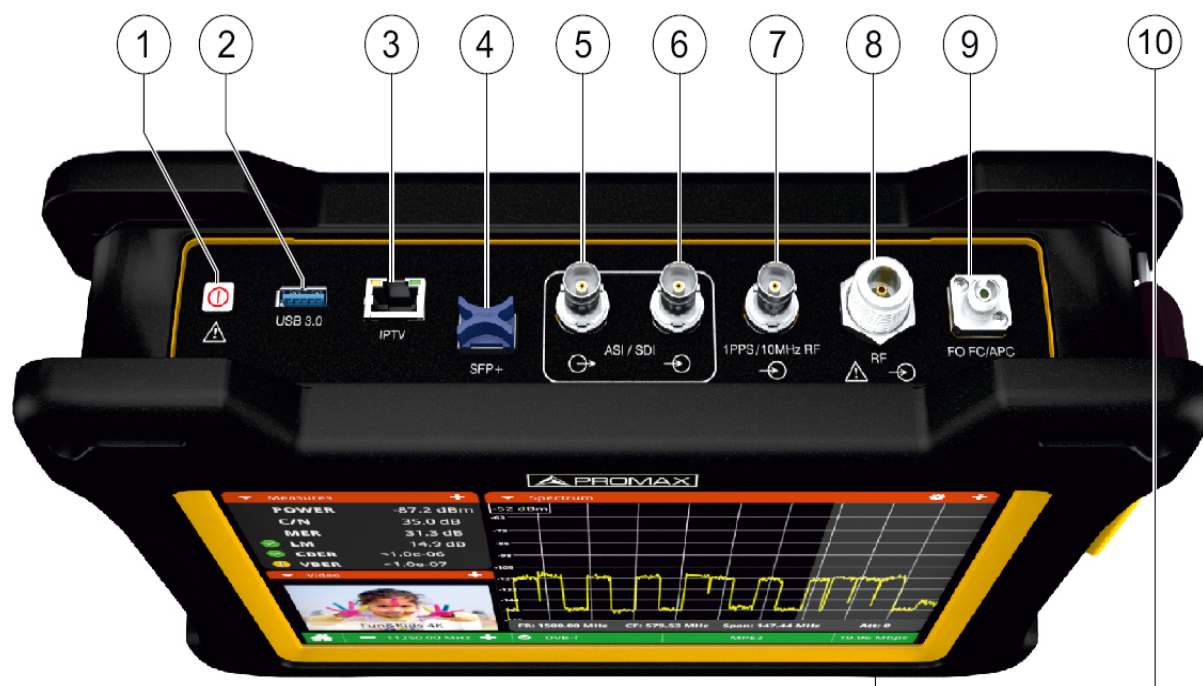


Figure 3. Front View.



**Figure 4. Left Side View.**

- 1** HDMI output for HDMI 1.4 (UHD 4K).
- 2** USB Host/Device connector (selectable).
- 3** RJ45 connection for remote management.
- 4** Analogue Video/Audio input/output.
- 5** Power input connector.
- 6** LED indicator for battery charge level.



**Figure 5. Top View.**

- 1** ON/OFF. Press for an instant to switch on/off.
- 2** USB 3.0 port for WiFi dongle, GPS receivers or USB drives.
- 3** RJ45 connector for IPTV or OTT signal analysis.
- 4** SFP+ transceiver compatible with GE and fiber optics.
- 5** ASI/SDI output signal.
- 6** ASI/SDI input signal.
- 7** Input for reference synchronism signal 1PPS or 10 MHz.
- 8** Radio frequency input signal (RF).
- 9** Fiber optics input\*.
- 10** CAM module slot.

\*. Available as option.



## 2.4 Switching On/Off


### ► Switching On:

- 1 Press the ON/OFF button placed on the top of the equipment for few seconds.
- 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 button:

- 1 Press the ON/OFF button placed on the top of the equipment for a few moments.

### ► Switching Off by software:

- 1 Press the switching off icon  at the main screen.
- 2 Select "Power Off" or "Reboot".

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

- 1 Press the Settings icon  from the main screen.
- 2 Press the Appearance icon .
- 3 The option "**Power Off**" allows the user to enable the automatic shutdown option. Select a waiting time (time without pressing any key and the meter not working) after which the equipment turns off automatically.

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

## 2.5 Reset

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
















When to **RESET**:

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


## 2.6 Icons

Icons on screen provide useful information about the equipment:

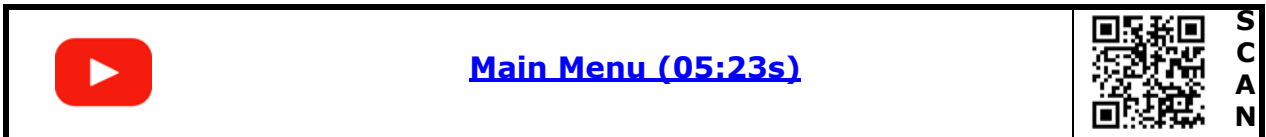
Icon	Description	Icon	Description
	Attenuator: The input signal has an adequate level.		Signal Quality according to threshold: Correct quality.
	Attenuator: The input signal is over-attenuated.		Signal Quality according to threshold: Quality close to threshold.
	Attenuator: The input signal is saturated.		Signal Quality according to threshold: Not acceptable quality.
<b>50<math>\Omega</math></b>	RF Input Impedance: 50 Ohms.		Outdoor unit power supply: Power off.
<b>75<math>\Omega</math></b>	RF Input Impedance: 75 Ohms.		Outdoor unit power supply: It shows selected voltage.
	Battery charging.		Outdoor unit power supply: It shows selected voltage and 22 kHz signal activated.
	Battery in use.		










## 2.7 Home Menu

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

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



-  TV Analyzer: Tool to analyze and demodulate terrestrial, CATV or FM signals (from 45 to 1000 MHz) and satellite (from 250 to 2350 MHz) (for more details refer to ["TV ANALYZER" on page 21](#)).
-  Spectrum Analyzer: Tool to tune and measure RF (power and C/N) signal from 5 MHz to 6 GHz.
-  IPTV: Tool to inspect in detail IPTV streams.
-  ASI: Tool to analyze Transport Streams.
-  SDI: Tool to analyze SD-SDI, HD-SDI and 3G-SDI.
-  Manual: Quick guide and complete user manual.
-  Settings: Access the settings menu (for more details refer to ["SETTINGS AND PREFERENCES" on page 15](#)).









You can also swipe down from top screen to show the "Inputs & outputs menu" to manage dataloggers, notifications, workspaces and also to adjust volume and brightness.



## 2.8 Practical examples

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









### 2.8.1 RF Terrestrial signal tuning

- 1 Connect the RF input signal cable to the RF input connector.
- 2 Press **Settings** .
- 3 Press **StealthID**  and select the type of signals you want to identify automatically when it is searching a signal (in this case should be terrestrial signals as DVB-T, DVB-T2, etc.).
- 4 Press  to return to the **Home** menu.
- 5 From the Home Menu press on the **TV Analyzer** .
- 6 On the main panel, press  and select the **Spectrum** tool. On the small panels, you can select other tools, like the video tool to watch the demodulated signal or the measurements tool to check power and MER.
- 7 Swipe right from the left side or press on the bottom bar to display the tuning menu.
- 8 Select the **terrestrial band** .
- 9 Select **type of tuning**: frequency  or channel .
- 10 If you tune by channel, then previously you have to select a channel plan that contains the channels in your area. In case you do not find a proper channel plan, you can add or create a new one.
- 11 Select **Span** (recommended value for terrestrial: 50 MHz).
- 12 Adjust the **reference level**.
- 13 Adjust your **frequency or select a channel**. You can also search your frequency or channel by dragging left or right on the screen.
- 14 When you are on the carrier, it must be automatically locked and the bottom tool bar should turn green. If is not locked, the bottom bar turns red.
- 15 If locked, it is automatically demodulated. On video tool shows the image and on signal parameters shows all related parameters.

### 2.8.2 RF Satellite signal tuning

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





- 2 Press **Settings** .
- 3 Press **StealthID**  and select the type of signals you want to identify automatically when it is searching a signal (in this case should be satellite signals as DVB-S, DVB-S2, etc.).
- 4 Press  to return to the **Home** menu.
- 5 From the Home Menu press on the **TV Analyzer** .
- 6 On the main panel, press  and select the **Spectrum** tool on the main panel. On the small panels, you can select another tools, like the video tool to watch the demodulated signal or the measurements tool to check power and MER.
- 7 Swipe right from the left side or press on the bottom bar to display the tuning menu.
- 8 Select the **satellite band** .
- 9 Select **type of tuning**: frequency  or channel .
- 10 If you **tune by frequency**, select the settings parameters: Supply voltage, polarization and satellite band.
- 11 If you **tune by channel**, then previously you have to select a channel plan that contains the channels for the satellite. In case you do not find a proper channel plan, you can add or create a new one. **Channels from channel plan have pre-set parameters** (supply voltage, polarization and satellite band), so they cannot be changed from the Tuning menu.
- 12 Select **Span** (recommended value for satellite: 100 MHz).
- 13 Adjust the **reference level**.
- 14 Adjust your **frequency** or select a **channel**. You can also search your frequency or channel by dragging left or right on the screen.
- 15 When the marker is on the carrier, it must be automatically locked and the bottom tool bar should turn green. If is not locked, the bottom bar turns red.
- 16 If locked, the signal is automatically demodulated. On video tool shows the image and on signal parameters shows all parameters related.



## 3 SETTINGS AND PREFERENCES

### 3.1 Settings Menu

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

	<a href="#">Settings Menu (02:19s)</a>	 SCAN
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Settings are classified according to these categories:

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

#### 3.1.1 General Settings

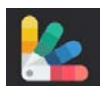
##### ► Equipment Information



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



## ► Appearance



- **Power Off:** It allows the user to select the time to power off, which is the time after which the equipment shuts down automatically unless an user press any key. Time options are: off, 1, 5, 10, 30 o 60 minutes.
- **Language:** Language used on menus, messages and screens. Available languages are: English, Spanish and Catalan. Once the new language is selected, the equipment changes automatically to the new language.
- **TFT Screen:** User can select a time after which the TFT screen turns off, but the equipment is still running normally. The screen turns on by pressing any key. Time options are: off, 1, 5, 10, 30 o 60 minutes.
- **Theme:** It is the colour palette used on screen (dark or light).
- **Battery Time:** It hides or shows the remaining battery time. Remaining battery time is displayed next to the battery level icon.

## ► Time & Date



- **Date Format:** It allows the user to change the time format (12 or 24).
- **Continent:** It allows the user to select continent where the meter is in order to determine if it is necessary to apply DST (Daylight Saving Time).
- **Country:** It allows the user to select the capital of the country where the meter is.
- **Network time:** It allows you to enable/disable syncing time from a network.

## ► Network



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

- **MAC:** Physical address of the equipment. It is unique and cannot be edited.
- **DHCP:** Enable this option to get the proper IP address when the unit is first connected to a network. That feature contributes to make things easier to installers when debugging network access.
- **IP:** IP Address of the equipment into the local network.
- **IPNetMask:** Subnet mask of the equipment (by default 255.255.255.0).



- Gateway: IP Address of the router into the local network (by default 10.0.1.1).
- DNS1: Option 1 of DNS (by default 8.8.8.8). DNS stands for Domain Name System and translates domain names into IP addresses so that computers can communicate with each other over the Internet.
- DNS2: Select DNS2 (by default 8.8.4.4).

#### ► Options



It shows all the options that have been installed.

#### ► Wizard



- Show wizard next restart: It allows the user to enable or disable the assistant that guides you when starting the meter.
- Input name: User's name.
- Input e-mail: User's e-mail.
- Input phone: User's phone.
- Input subscription: It allows the user to subscribe or unsubscribe from the updating service to keep the meter updated to the last software version.

#### ► Software Update



- Last Update Information: It shows information about the current update.
- Update: It shows if there is an update available for download and install.


### 3.1.2 TV Analyzer Settings

#### ► Measurements



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



- **Linked Reference Level:** It allows the user to enable/disable the automatic adjustment of the reference level.
- **Min. Ter. Level:** It sets the minimum level for a terrestrial analogue signal to be identified when channel exploring or datalogger.
- **Min. Ter. Power:** It sets the minimum power for a terrestrial digital signal to be identified when channel exploring or datalogger.
- **Min. Sat. Power:** It sets the minimum power for a satellite digital signal to be identified when channel exploring or datalogger.
- **Min. FM Level:** It sets the minimum power for a FM signal to be identified when channel exploring or datalogger.
- **Power Offset:** It adds this value to the power/level measurement. When this value is different to 0 dB, next to power/level measurement an asterisk (\*) is shown as a warning that offset is been applied.
- **Terrestrial Downlink:** If this option is enabled it allows you to set a local oscillator in terrestrial band from Settings  and it displays intermediate and downlink (DL) frequencies calculated from local oscillator. For example, it allows you to work with terrestrial radio-links or frequency converters.

### ► **Stealth-ID Options**



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

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





### 3.1.3 IPTV Settings

#### ► Network



Network parameters to receive IPTV signal.

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

#### ► Discovery



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

#### ► IGMPv3



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



### 3.1.4 Spectrum Analyzer Settings

#### ► SP Measurements



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

## 3.2 Signal Settings Menu

From this menu you can manage all signals input/outputs, notifications and also the audio volume and brightness of the equipment.

Swipe down to show the signal set-up menu:

- WorkSpace: It allows you to manage all data related to channel plans, dataloggers, recordings, screenshots, etc.
- USB Host: It shows information about the USB connected.
- USB OTG: It allows you to set the role and device mode of the USB.
- Ethernet: It shows info about the ethernet connection.
- GPS: It shows info about the GPS connected.
- WiFi: It shows info about the WiFi network.
- HDMI: It shows info about the HDMI input.



## 4 TV ANALYZER

### 4.1 Introduction

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



[TV Analyzer Basics \(02:58s\)](#)



SCAN

The TV Analyzer screen is divided into 3 panels:

- main panel
- secondary top panel
- secondary bottom panel

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

The available tools for the TV Analyzer are:

- Spectrum
- Measurement
- Video
- Video/Audio Parameters
- Signal Parameters
- Constellation
- Echoes
- Mer by Carrier
- Recording
- FM RDS Parameters
- TS tables
- TS Bitrate
- TS PIDs
- TS Alarms



## 4.2 TV Analyzer Screen



**Figure 6.**

- 1** Triangle ▼ (all panels): It displays a menu with all available tools. Select one tool to be displayed on the panel. The same tool cannot be in more than one panel (for more details about tools refer to ["Tools" on page 24](#)).
- 2** + sign (small panels): It maximizes the panel, switching to the big panel position.
- 3** Gear ⚙ (big panel): It displays a settings menu for the tool. It is available for some tools and only on the big panel.
- 4** + / - sign (big panel): It shows the panel in full-screen mode. To return to the previous view press on the minus sign.
- 5** Tuning bar: It shows tuning parameters like frequency/channel selected, signal info (standard, bandwidth...), network name and Transport Stream total bitrate. Also it gives access to Tuning Settings (for more details about tools refer to ["Tuning Settings" on page 23](#)). The House icon returns to the Home screen.



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

### 4.3 **Tuning Settings**

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

- **Band:** It allows selecting between terrestrial or satellite frequency band.
- **Tune by:** It allows selecting between tuning by channel or tuning by frequency.
- **Tuning Frequency:** It allows selecting the frequency to tune. Select numbers on the keypad and the frequency unit (MHz, kHz, Hz).
- **Channel Plan:** It allows selecting a channel plan from the ones available in the workspace.
- **Channel:** It allows selecting a channel from the channel plan.
- **Downlink frequency:** It displays downlink (DL) frequency calculated from local oscillator value.
- **Polarization:** It allows the user to select the signal polarization between Vertical or Horizontal. In tuning by channel mode this option can not be changed because is defined by the channel.
- **Sat Band:** It allows the user to select the High or Low band frequency for satellite channel tuning. In tuning by channel mode this option can not be changed because is defined by the channel.
- **Symbol Rate:** Symbol Rate determines the rate at which symbols occur. A symbol may consist of one or more bits as determined by the modulation format.
- **Signal type:** It displays the selected standard and allows selecting another standard in the same band (terrestrial or satellite).
- **Center Frequency:** It allows the user to edit the center frequency. The center frequency is the frequency at which the screen is centered.
- **Span:** It allows to edit the span, which is the frequency range displayed on screen on the horizontal axis. The current span value appears at the bottom.
- **Reference Level:** It allows the user to edit the reference level. The reference level is the power range represented on the vertical axis. The Reference Level can be changed directly swiping up or down.



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


## 4.4 Tools

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

- Spectrum
- Measurement
- Video
- Video Values
- Signal Parameters
- Constellation
- MER by Carrier
- Recording
- TS Tables
- TS Bitrate
- TS PIDs
- TS Alarms


### 4.4.1 Spectrum

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







[Spectrum \(02:26s\)](#)

S  
C  
A  
N



#### ► 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.

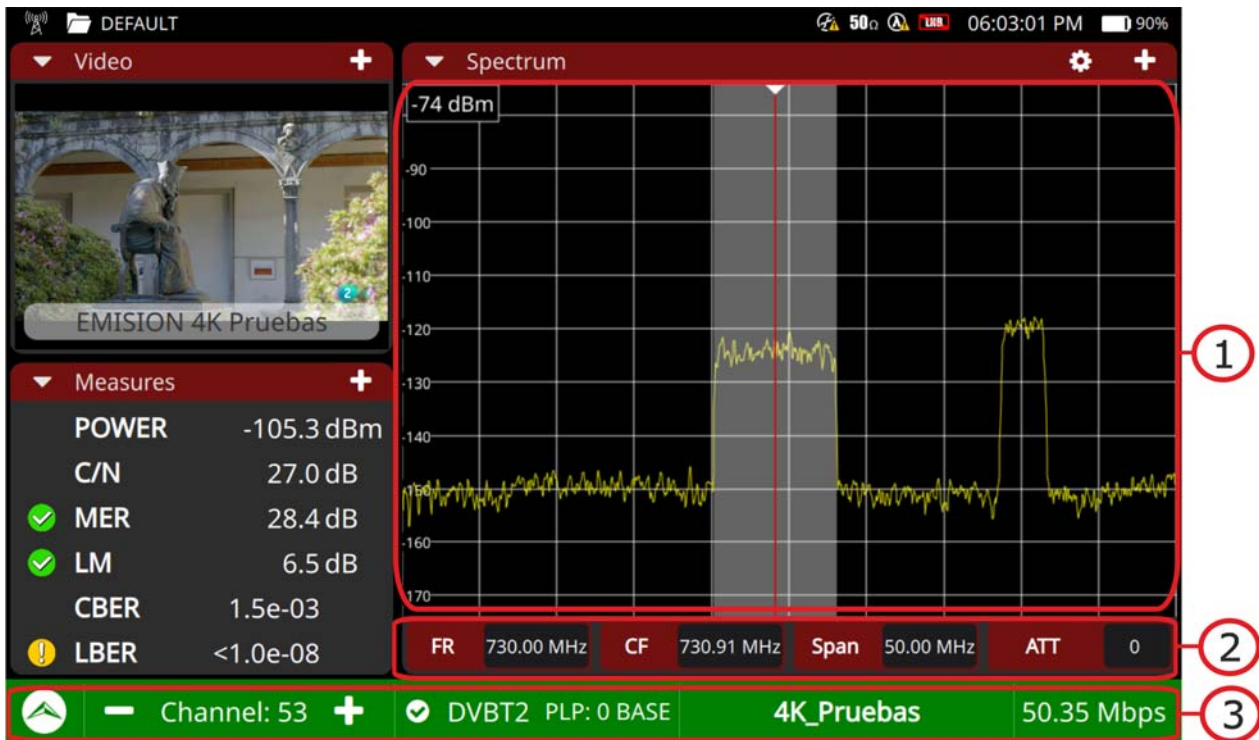


Horizontal drag (tuned signal): It moves the signal over the frequency.



Vertical drag: It changes reference level.


## ► Screen



**Figure 7.**

- 1** Spectrum: The red vertical line shows the frequency been tuned. At either side there are two dotted white lines that define the signal bandwidth over which the meter is trying to identify the tuned signal. When the signal is tuned, the meter auto identifies it. The dotted lines change to a full white band falling over the tuned signal.
- 2** .Spectrum bar: There are four fields that give quick information about the tuned frequency in this order: frequency tuned, the center frequency in the spectrum window, the span and the attenuator selected. Pressing on any of this buttons opens that field in the tuning menu.
- 3** Tuning bar: It turns green showing the signal has been identified and demodulated. It shows the network name and transport stream total bitrate.

## ► Settings

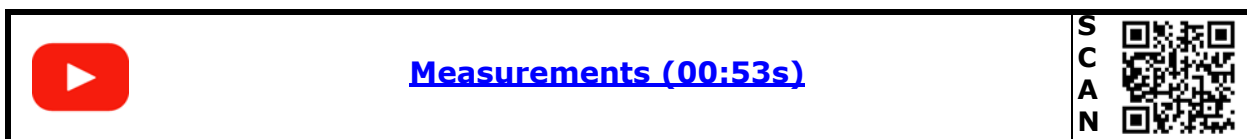
Press on the gear  to display a settings menu for this tool:



- **Line Mode:** It defines the spectrum trace mode: Line, solid or gradient. Line shows only the spectrum outline. Solid shows the spectrum with a yellow background. Gradient shows the spectrum with a gradient of yellow background.
- **Marker:** It defines how to display the marker: Line, marker or horizontal.
- **Resolution filter:** It defines the resolution bandwidth filter value. Resolution filters available are: 2 kHz (only terrestrial band), 10 kHz, 20 kHz, 30 kHz, 40 kHz, 100 kHz, 200 kHz and 1000 kHz. According to filter selected maximum and minimum span changes.
- **Visible span:** It disables or enables span.
- **Center marker:** It centers the selected frequency on the screen.

#### 4.4.2 Measurement

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



##### ► Touch gestures



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

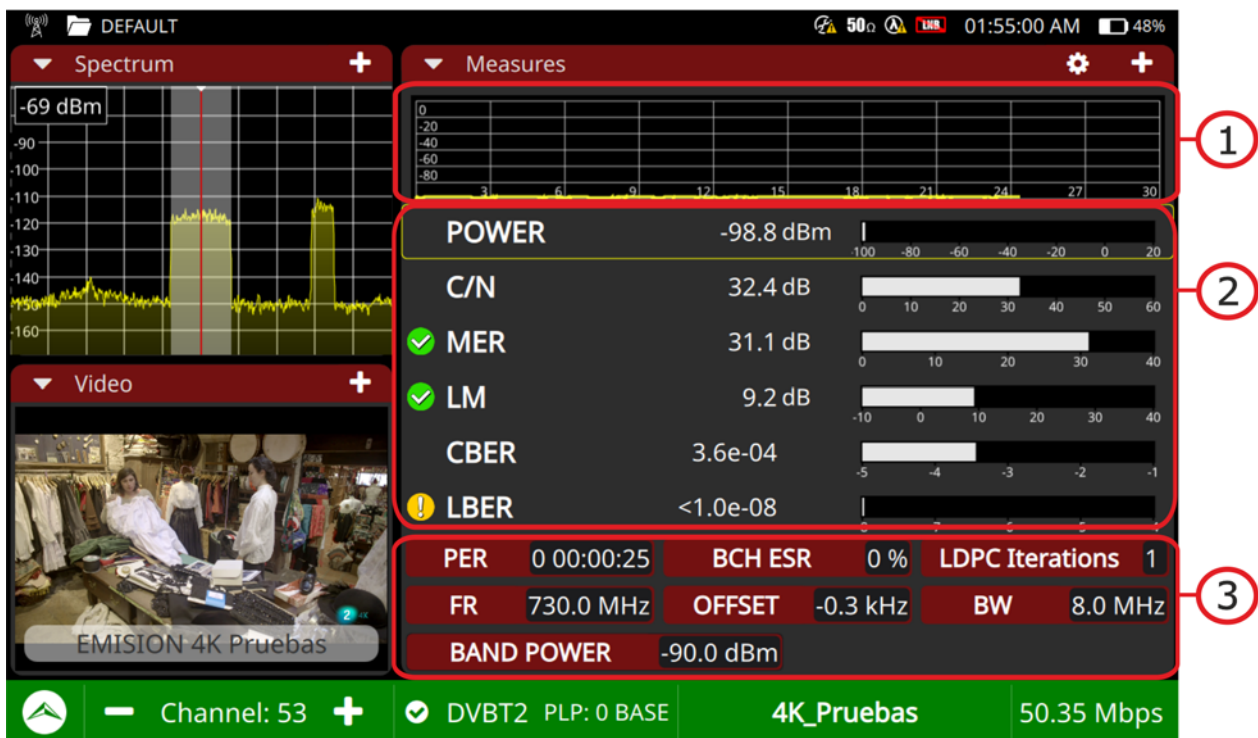
##### ► Settings

Press on the gear  to display settings:

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



► Screen



**Figure 8.**

- 1** Monitoring graph: It shows the selected measurement being plotted on a graph over time. The user can select any of the measurements available on the panel below. The selected measurement is inside a yellow frame.
- 2** Relevant Measurements: It shows the most relevant measurements for the tuned signal. Measurements are in numerical value and also plotted on a graph bar. The sign on the left indicates its quality.
- 3** Extra Measurements: It shows some extra measurements according to the signal (PER, frequency, offset, bandwidth, band power, etc.).



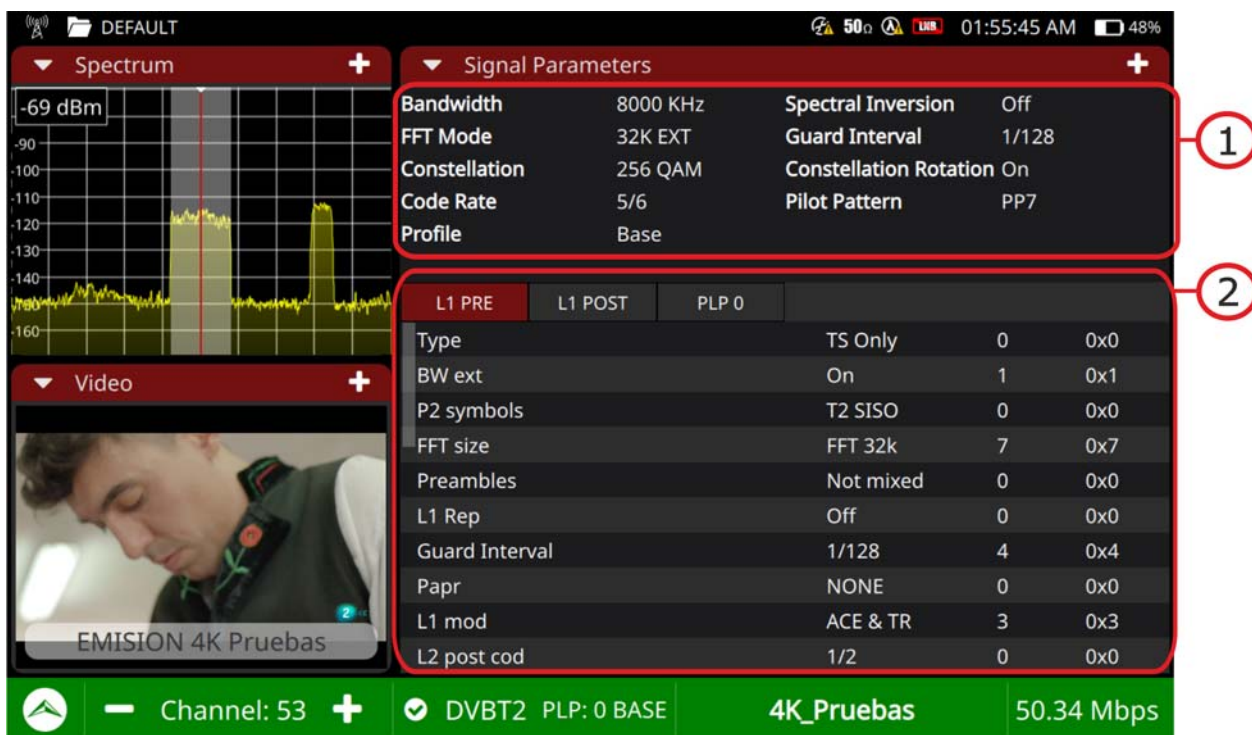
### 4.4.3 Signal Parameters

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

[Signal Parameters \(00:32s\)](#)

SCAN

#### ► Screen



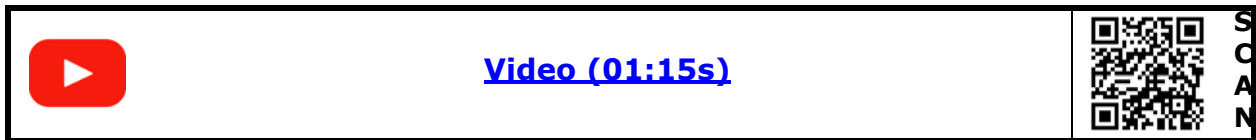
**Figure 9.**

- 1** General Panel: It displays the most relevant information.
- 2** .Specific panel: It shows detailed data.

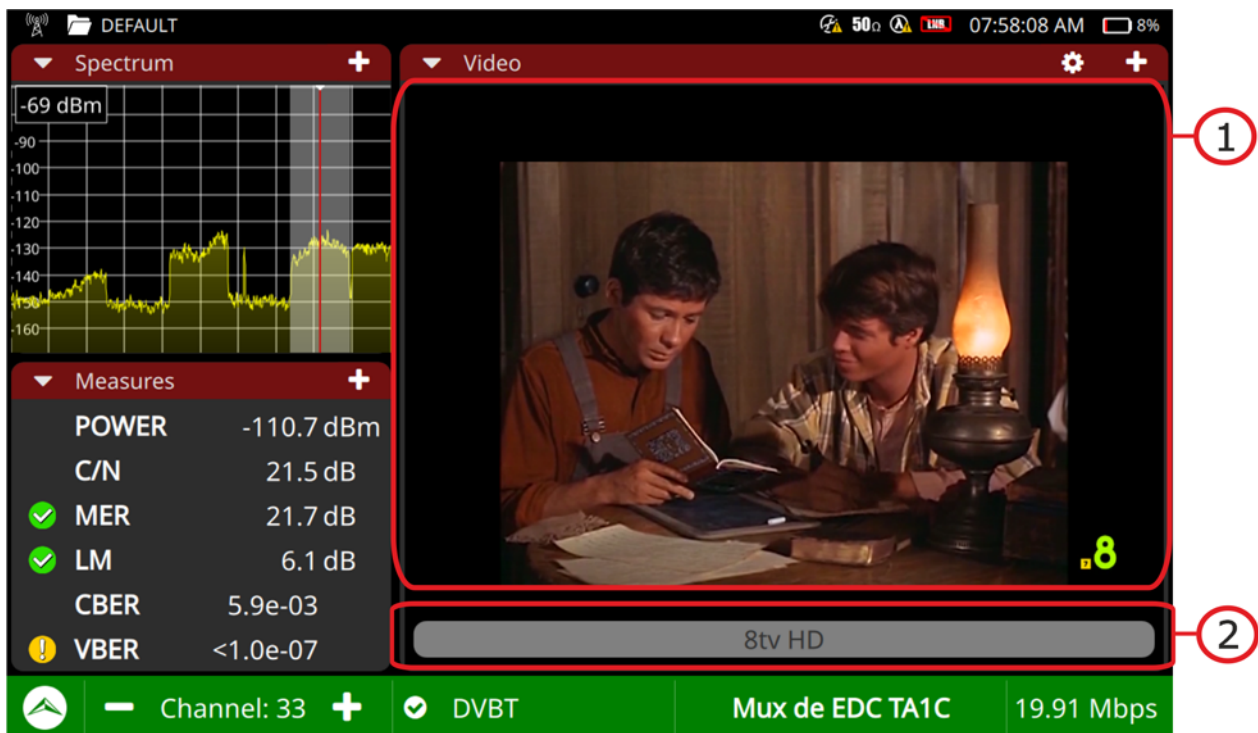


#### 4.4.4 Video

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



#### ► Screen



**Figure 10.**

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



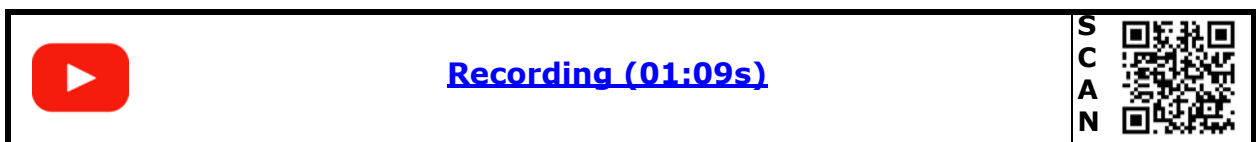
## ► Settings

Press on the gear  to display settings:

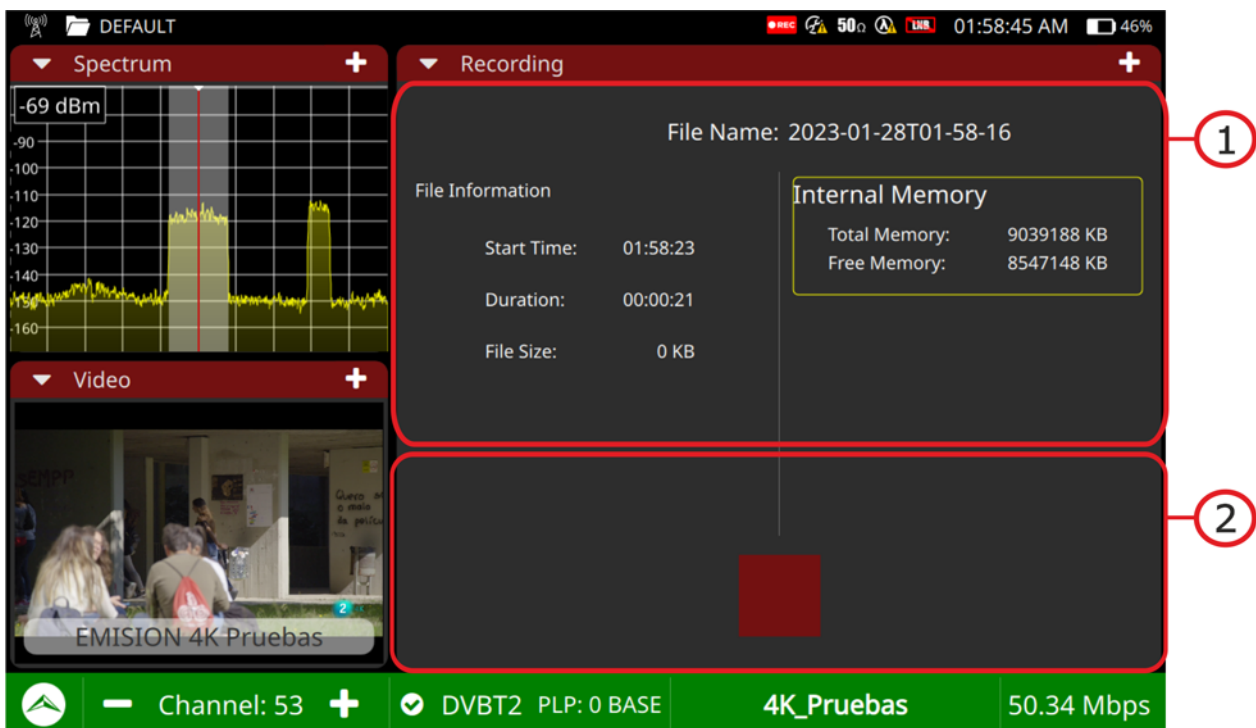
- Audio: It allows the user to change language of the service in case there is more than one available.

### 4.4.5 Recording

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



## ► Screen



**Figure 11.**



- 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 your workspace.



#### ► Touch gestures



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

### 4.4.6 Constellation

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

	<a href="#">Constellation (03:06s)</a>		SCAN
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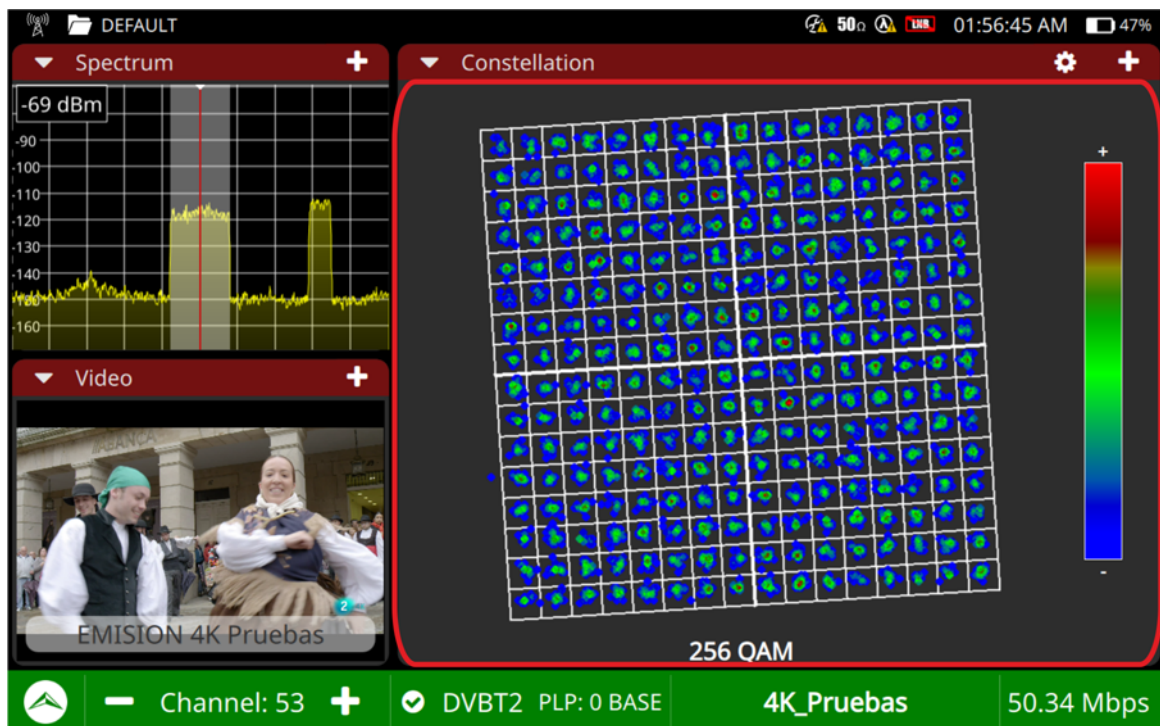
#### ► Settings

Press on the gear  to display settings:

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



## ► Screen



**Figure 12.**

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

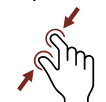
## ► Touch gestures



Drag: It moves around the constellation.



Zoom out: It amplifies constellation.



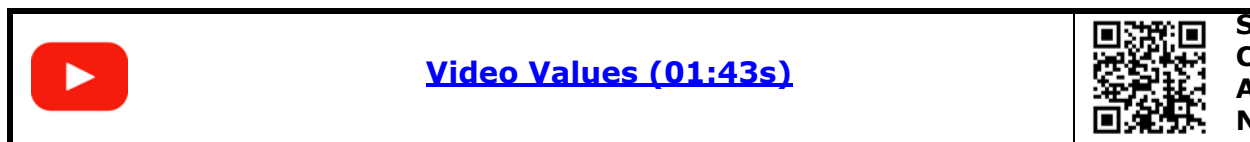
Zoom in: It reduces constellation..



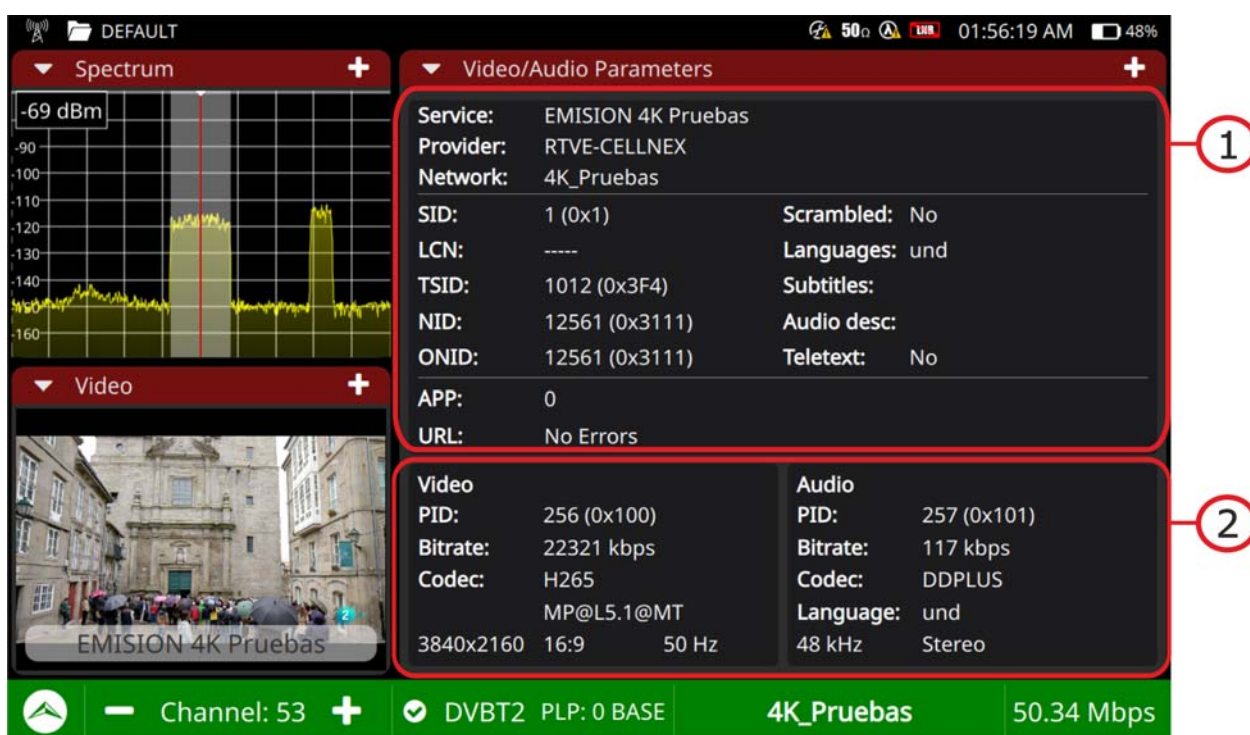


#### 4.4.7 Video Values

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



#### ► Screen



**Figure 13.**

- 1** General Panel: It provides service information: name, provider and network name. Also Service ID, Logical Channel Number, transport stream ID, Network ID, original network ID, if the service is scrambled, audio language, subtitles language and some others.
- 2** .Video/audio panel: On the left side shows video layer details: PID, bitrate, codec, resolution, aspect ratio and scanning rate. On the right side shows audio layer details: PID, bitrate, codec, language, sampling rate and format.



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

#### 4.4.8 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

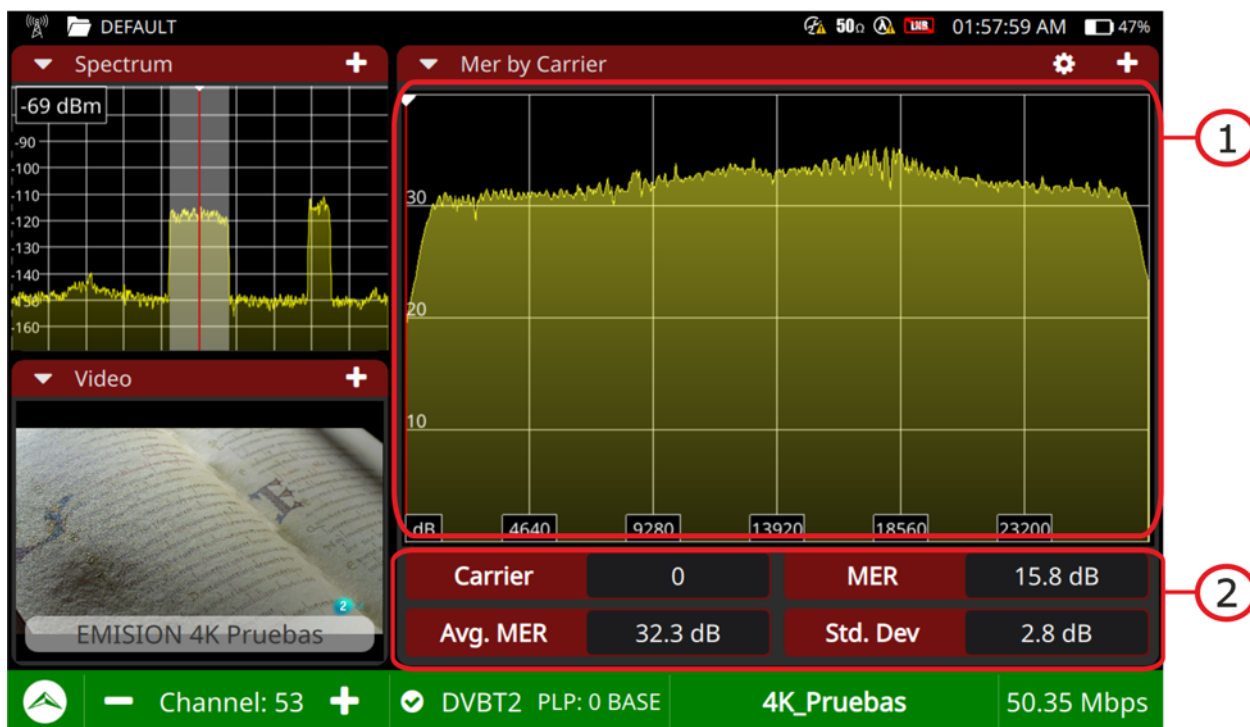


Figure 14.

- 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 settings:

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

### 4.4.9 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.

	<a href="#">Echoes (04:22s)</a>		SCAN
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#### ► Touch gestures



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

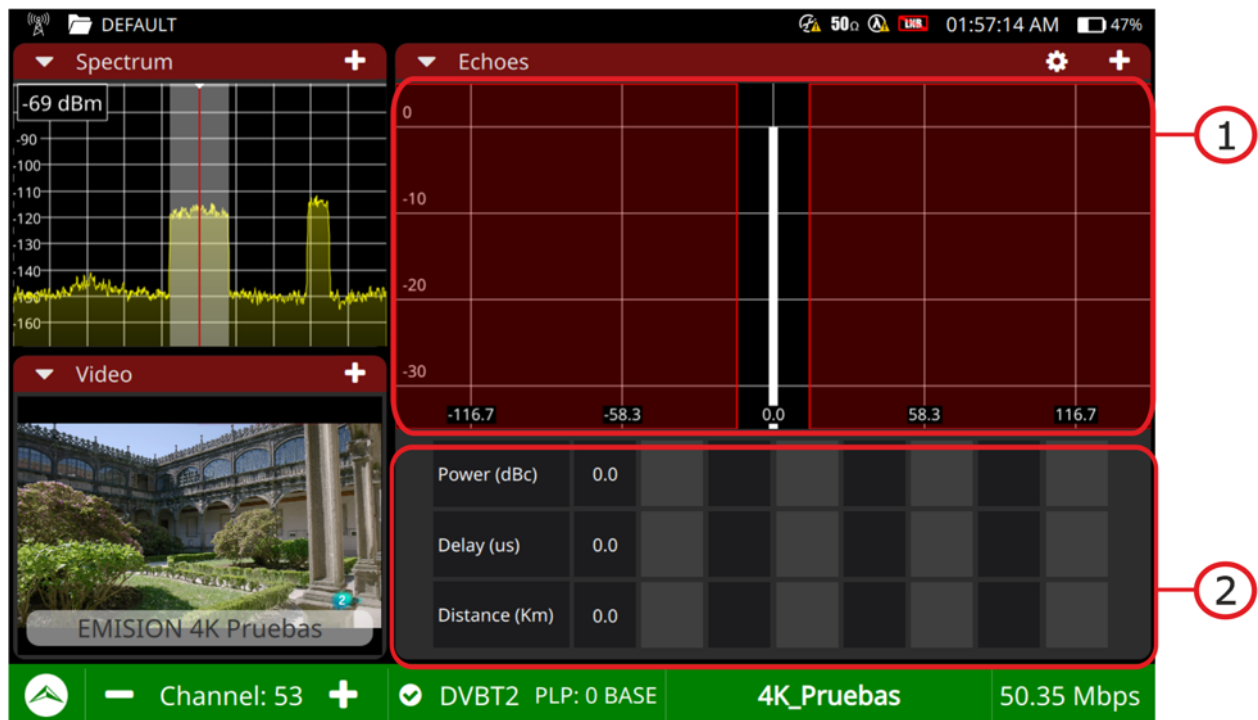
#### ► Settings

Press on the gear  to display it:

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



## ► Screen



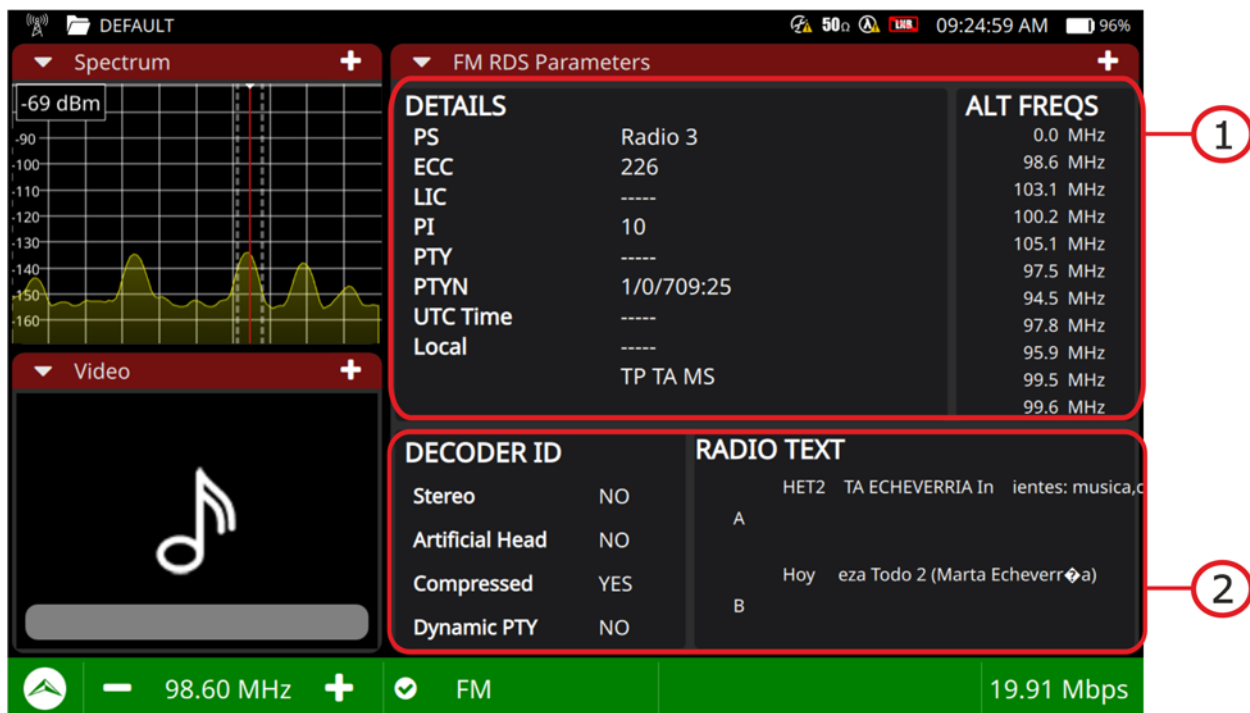
**Figure 15.**

- 1 Graph Panel: It shows the echoes. The horizontal axis shows time ( $\mu\text{s}$ ) 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 ( $\mu\text{s}$ ) and distance (km).

### 4.4.10 FM RDS Parameters

RDS (Radio Data System) is a communications protocol standard for embedding digital information in FM radio broadcast.

## ► Screen



**Figure 16.**

- 1** General Panel: The column on the left shows several RDS data fields. The column on the right shows alternative frequencies.
- 2** .Specific panel: The column on the left shows different operation modes of the decoder. The column on the right shows extra text information.

## ► RDS Data



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



- Local: Local time.

#### 44.11 Transport Stream Analyzer

The Transport Stream (TS) Analyzer is a set of tools that provides the user with a comprehensive analysis of the transport stream extracted from the digital signal being tuned. The transport stream can be received through any of the equipment inputs.

	<a href="#">Transport Stream Tools</a>	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; margin-right: 5px;">SCAN</div>  </div>
---	--	--

The TS Analyser has these tools:

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

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

#### 44.12 Transport Stream Tables

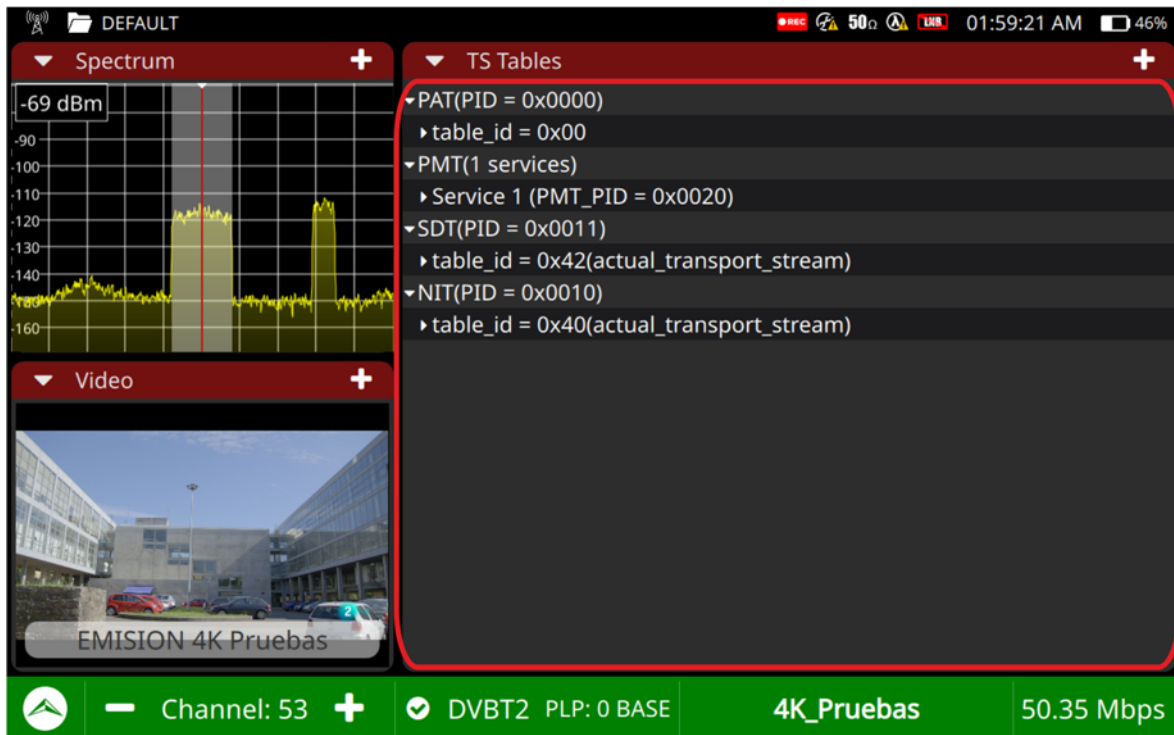
The TS Tables tool identifies and captures the TS signal and all its metadata. All PSI and SI tables and their fields are extracted and shown on screen.

##### ► Touch gestures



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

► Screen



**Figure 17.**

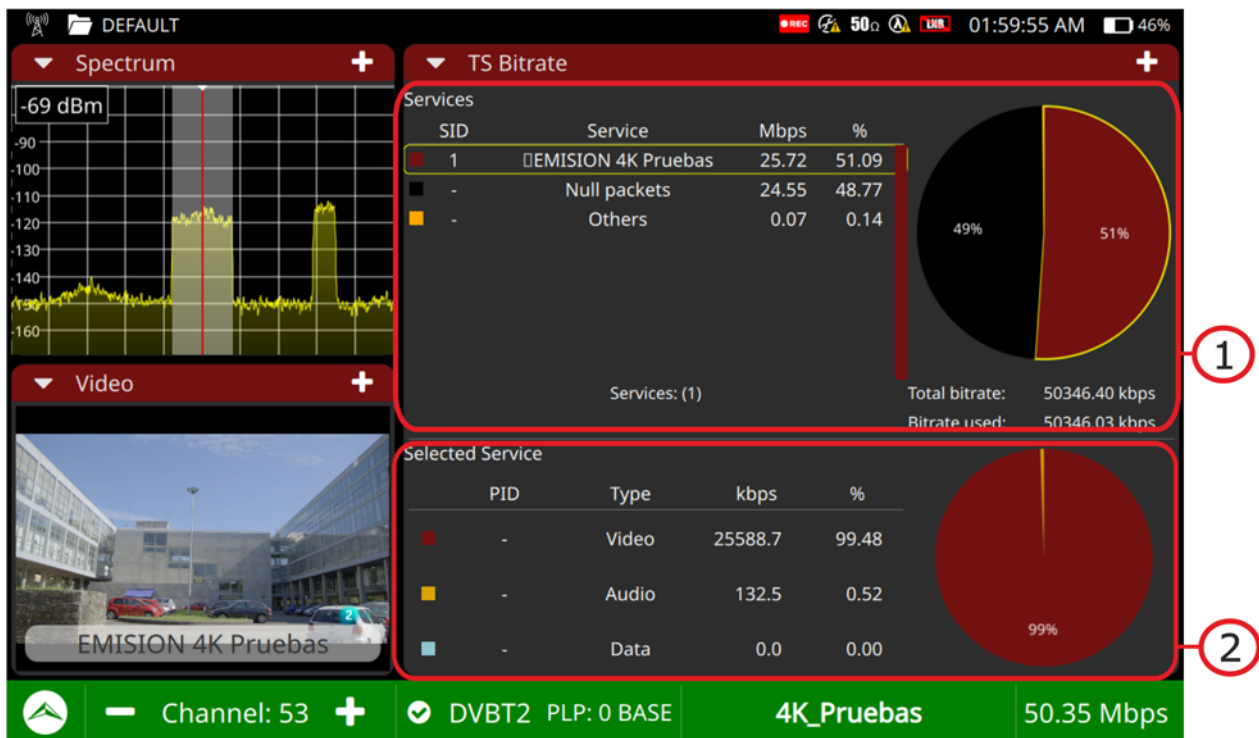
- 1** General Panel: It shows all metadata extracted from the transport stream. These are the PSI (Program Specific Information) and SI (Service Information) tables and all their related fields. They can be unfolded to see its subfields.

#### 4.4.13 Transport Stream Bitrate

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



## ► Screen



**Figure 18.**

- 1 Services panel: It shows all services in the transport stream in real time. The "Others" service indicates the amount of bitrate used by the PSI/SI tables. The pie chart indicates the percentage contribution in bitrate per service in respect to the total TS bitrate, including null packets, which are displayed in black. Below the pie chart there is the total TS bitrate and total bitrate used.
- 2 Selected service panel: It shows video, audio and data bitrate for the selected service in real time, both in percentage and absolute value. The pie chart shows this information graphically.

## ► Touch gestures

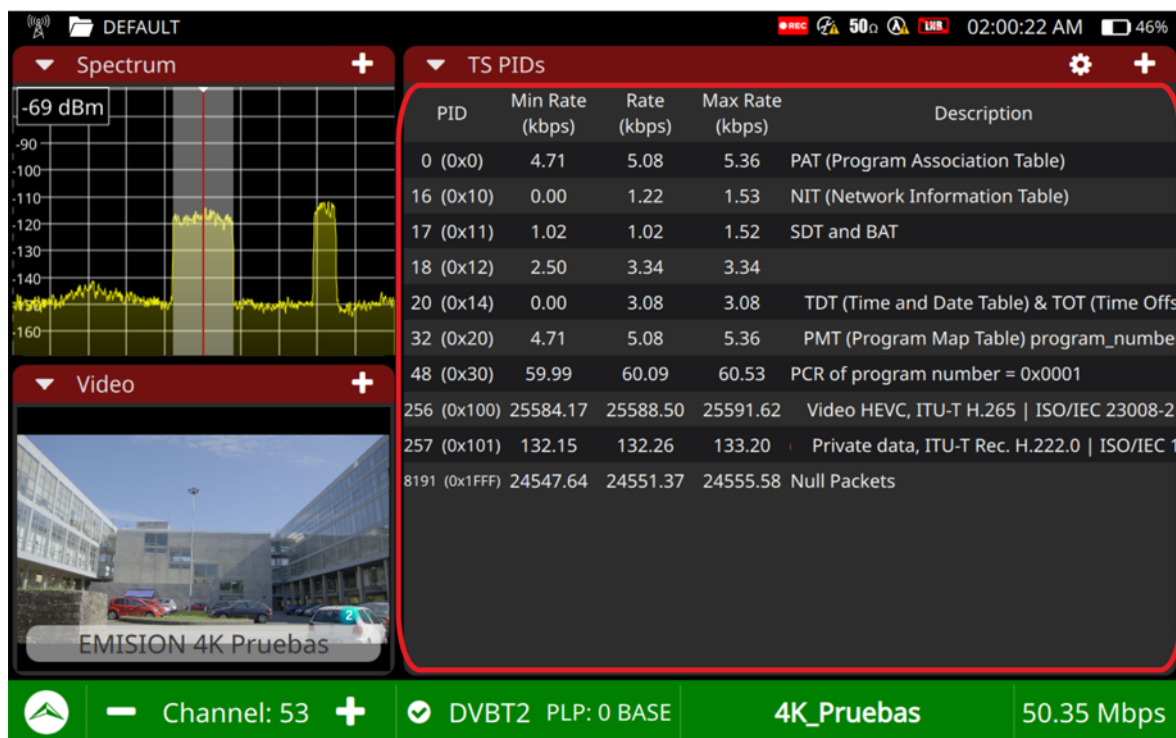


Tap: It selects a service.

#### 4.4.14 Transport Stream PIDs

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

##### ► Video Screen



**Figure 19.**

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

##### ► Touch gestures



Drag: It moves along the PID list.

##### ► Settings

Press on the gear  to display settings:

- Order by: It allows ordering by PID, bitrate, max. bitrate, min. bitrate or description.
- Reset: It resets and captures the PID list.

#### 4.4.15 Transport Stream Alarms

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

##### ► Screen

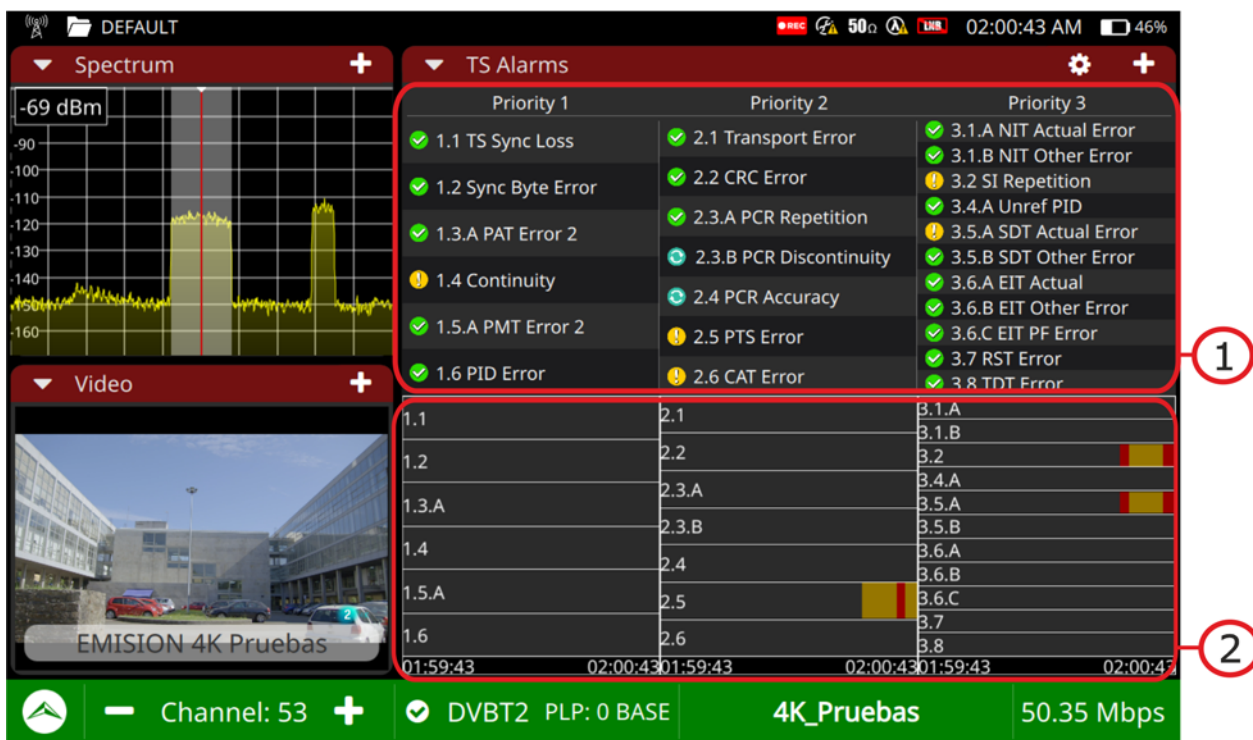


Figure 20.

- 1 Alarms Panel: It shows all the alarms classified by priority. Press on any of these alarms to enter in a specific screen for the alarm that shows a log with a list of events, a description and an option to enable/disable the alarm.
- 2 .Events panel: It shows a graph for each alarm with all the events that have happened. Errors are shown as a red strip lasting as long as the error.





### ► Touch gestures



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




### ► Settings

Press on the gear  to display settings:

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

### ► Icons

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

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



## 5 SPECIFICATIONS ATLAS NG

### 5.1 General

#### ► Inputs and Outputs

Parameter	Value	Additional Data
<b>RF Input</b>		
Connector	N female 50 $\Omega$	
Maximum Input Power	130 dB $\mu$ V	
Maximum Input Voltage	TBD	
<b>ASI/SDI Input</b>		
Connector	BNC female 75 $\Omega$	Up to 12 Gbps
Electrical	200 m cable lenght at 3 Gbps Nominal 800 mVp-p 1.4V common mode	
<b>ASI/SDI Output</b>		
Connector	BNC female 75 $\Omega$	Up to 12 Gbps
Electrical	300 mVp-p min 850 mVp-p max 8 mV common mode	3 Gbps
<b>10 MHz / 1PPS Reference Input</b>		
Connector	BNC female high impedance	min. 2 V; max. 5 V
<b>SFP+</b>		
Connector	SFP+	
<b>IPTV</b>		
Connector	RJ45	
Type	Ethernet 10 Mbps / 100 Mbps / 1 Gbps	
<b>Analogue Video Input</b>		
Input Connector	Multipole Jack	Zin=75 $\Omega$
Sensibility	1 Vpp	75 $\Omega$ ; positive video
<b>Analogue Audio Input</b>		
Input Connector	Multipole Jack	Zin=10k; same V/A input multipole jack
<b>Digital Video / Audio Output</b>		
Output Connector	HDMI 1.4 specification	3840x2160 @30 Hz Resolution
<b>Audio Output</b>		
Output Connector	Multipole Jack 32 $\Omega$	Stereo; to connect headphones or external speakers
Speakers	2 x 5 W	



Parameter	Value	Additional Data
USB Interface 3.0		
Connector	USB type A	
Features	Mass Storage Host	Can read and write on a pendrive USB CDC
	USB CDC	CDC: Communication device class
USB Interface 2.0		
Connector	USB type B micro	
Features	Two modes: master or device	
	Master: mass storage host, USB CDC	For GPS, probes
	Device: virtual COM	For remote control via remote orders
IP Interface (control IP)		
Connector	RJ45	Labeled IP CTRL
Type	Ethernet 10 / 100 Mbps / 1 Gbps	
Communication Software	webControl	
	Remote commands	
IP by default	TBD	
CAM		
Connector	DVB-CI compliant CAM module input	
WiFi Interface		
Type	Wireless standard 802.11 abgn	Dongle-Wifi connected to USB port
		Dongle must be validated by PROMAX
Remote control Interfaces		
Interfaces	RJ45 Ethernet; USB Virtual COM; WiFi	
Remote control	JSON: sending and receiving remote commands with JSON files	All interfaces
	webControl: web technology using a standard browser	RJ45, WiFi
	SNMP: Protocol used to manage and monitor network devices	RJ45, WiFi
Monitor Display		
Monitor	10.1" TFT touch panel	
Aspect Ratio	16:9	
Format	1280 x 800 dots	(RGB); (W) x (H)
Brightness	850 cd/m <sup>2</sup>	
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



Parameter	Value	Additional Data
	13 V	Up to 500 mA
	15 V	Up to 500 mA
	18 V	Up to 500 mA
<b>22 kHz Signal Voltage</b>	0.65 V $\pm$ 0.25 V	Selectable in Satellite band
<b>22 kHz Signal Frequency</b>	22 kHz $\pm$ 4 kHz	Selectable in Satellite band
<b>DiSEqC Generator</b>	DiSEqC 2.2 (DiSEqC 1.2 commands implemented)	DiSEqC is a trademark of EUTELSAT
<b>SATCR / SCD (EN50494)</b>	Available	DiSEqC 1.2 available
<b>dCSS / SCD2 (EN50607)</b>	Available	Compatible with LNB SKY UK According DiSEqC 2.x
<b>LNB Band</b>	Ku / Ka / C	
<b>Polarity</b>	Horizontal / Vertical, Right / Left	

### ► Operation Modes

Parameter	Value	Additional Data
<b>TV Analyzer</b>	Available	
<b>Spectrum Analyzer</b>	Available	
<b>IPTV</b>	Available	
<b>ASI</b>	Available	
<b>SDI</b>	Available	
<b>WiFi Analyzer</b>	TBA	
<b>OTT</b>	TBA	
<b>Ethernet Analyzer</b>	TBA	

### ► Datalogger

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

### ► Mechanical Features

Parameter	Value	Additional Data
<b>Dimensions</b>	304x218x83 mm	(W) x (H) x (D)
<b>Weight</b>	3.4 kg	Without installed options
<b>Volume</b>	5,5 cm <sup>3</sup>	

### ► Power Supply

Parameter	Value	Additional Data
<b>Internal Battery</b>	7.4 V; 18.3 Ah	Li-Po Smart battery



Parameter	Value	Additional Data
Battery Operation Time	> 4 hours	With smart power management
Recharging time	TBD	
External Voltage	12 ± 2 V DC	
Consumption	TBD	
Energy saving	Auto power off TFT Off Standby mode	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 0 MT0170	Antenna Dual WiFi	
1x 0 MF0213	USB WiFi adapter	
1x 0MF0214	USB cable	
1x 0 CO6861	Aero SMA/f-BNC/m adapter	
1x	GPS receiver	
1x CC-046	Jack 4V/RCA cable	
1x AA-103	Car lighter charger	
1x AL-103	External DC charger	
1x AD-055	F/f-BNC/f adapter	
1x AD-056	F/f-DIN/f adapter	
1x AD-057	F/f-F/f adapter	
1x CA-005	Mains cord	
1x CB-096	Rechargeable Li-Po battery 7.4 V 18.3 Ah	Built-in
1x DC-300	Transport belt	
1x DC-302	Carrying bag	
1x DC-230	Transport suitcase	
1x DG0399	Quick Reference Guide	
1x MN-001	Monopod	

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



## 5.2 TV Analyzer Mode

### 5.2.1 Supported Standards

#### ► DVB-T

Parameter	Value	Additional Data
Modulation	COFDM	
Margin of power Measurement	35 dBμV - 115 dBμV	
Measurement	Power, CBER, VBER, MER, PER, C/N and Link Margin	
Tuning Range	45 - 1000 MHz	
Standard compliant	European Standard for DVB-T	ETSI EN 300-744 v.1.6.1
	All European Standards for static and portable equipment and targeting upcoming Digital Europe e-book requirements	NorDig-Unified Test Specs ver2.5.0 DTG D-Book 8.0 IEC 62216
Carriers		
Guard Interval		
Code Rate		
Constellation		
Bandwidth		
Spectral inversion		
Hierarchy		
Cell ID		
TPS signalling		

#### ► DVB-T2

Parameter	Value	Additional Data
Profiles	T2-Base, T2-Lite	
Modulation	COFDM	
Margin of Power Measurement	35 dBμV - 115 dBμV	
Measurement	Power, CBER, C/N, LBER, MER, Link Margin, BCH ESR, LDP Iterations and PER	
Tuning Range	45 - 1000 MHz	
Standard compliant	European Standard for DVB-T2	ETSI EN 302-755 v1.3.1
	All European Standards for static and portable equipment and targeting upcoming Digital Europe e-book requirements	NorDig-Unified Test Specs ver2.5.0 DTG D-Book 8.0
Carriers		
Guard Interval		
Bandwidth		
Spectral Inversion		
Pilot Pattern		
PLP Code Rate		
PLP Constellation		
PLP Constellation Rotation		
PLP ID		



Parameter	Value	Additional Data
Cell ID		
Network ID		
T2 System ID		

#### ► ISDB-T

Parameter	Value	Additional Data
Modulation	COFDM	
Margin of power Measurement	35 dBμV - 115 dBμV	
Measurement	Power, CBER, VBER, MER, PER, C/N and Link Margin	
Tuning Range	45 - 1000 MHz	
Standard compliant	ARIB Transmission System for DTT Broadcasting	ARIB STD-B31 v2.2
Mode		
Guard Interval		
Code Rate		
Constellation		
Bandwidth		
Spectral inversion		
Layer		
Segments		

#### ► DVB-C

Parameter	Value	Additional Data
Modulation	QAM	
Margin of Power Measurement	45 - 115 dBμV	
Measurements	Power, BER, MER, PER, C/N and Link Margin	
Tuning Range	45 - 1000 MHz	
Standard compliant	Digital Video Broadcasting for cable systems	ETSI EN 300-429 v1.2.1
	NorDig-Unified Test Specification	ver 2.5
Symbol Rate	1700 - 7200 kbauds	
Roll-off (α) factor of Nyquist filter		
Spectral Inversion		
Demodulation		

#### ► DVB-C2

Parameter	Value	Additional Data
Modulation	QAM	
Margin of Power Measurement	45 - 115 dBμV	
Measurements	Power, CBER, MER, PER, C/N, LBER, BCH ESR, LDP Iterations	
Tuning Range	45 - 1000 MHz	
Standard compliant	Digital Video Broadcasting for cable systems	ETSI EN 300-429 v1.2.1
Carriers		



Parameter	Value	Additional Data
Guard Interval		
Bandwidth		
Spectral Inversion		
Pilot Pattern		
Code Rate PLP		
PLP Constellation		
Dslice PLP		
PLP ID		
Cell ID		
Network ID		
C2 System ID		

### ► J83 Annex B

Parameter	Value	Additional Data
Modulation	COFDM	
Margin of Power Measurement	45 dBμV - 115 dBμV	
Measurement	Power, BER, MER, PER, C/N and Link Margin	
Tuning Range	45 - 1000 MHz	
Standard compliant		ITU-T J.83 v3.0
Bandwidth		
Spectral Inversion		
Demodulation		
Symbol Rate		
Roll-off factor (α) for Nyquist filter		

### ► ATSC 1.0

Parameter	Value	Additional Data
Modulation	8VSB	
Margin of Power Measurement	35 dBμV - 115 dBμV	
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	8VSB	
Margin of Power Measurement	45 dBμV - 115 dBμV	
Measurement	Power, CBER, MER, PER, C/, LBER, BCH ESR, LDP Iterations	
Tuning Range	45 - 1000 MHz	
Standard compliant	ATSC Digital Television Standard	ATSC A/321 (2016) ATSC A/322 (2017) ATSC A/330 (2016)





### ► Analogue TV

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

### ► DVB-S

Parameter	Value	Additional Data
Modulation	QPSK	
Margin of Power Measurement	35 dBμV - 115 dBμV	
Measurements	Power, CBER, MER, C/N and Link Margin	
Symbol Rate	1 - 45 Msym/s	
Tuning Range	250 - 2350 MHz	
Roll-off (α) factor of Nyquist filter		
Code rate		
Spectral Inversion		

### ► DVB-S2

Parameter	Value	Additional Data
Modulation	QPSK, 8PSK, 16APSK, 32APSK	
Margin of Power Measurement	35 dBμV - 115 dBμV	
Measurements	Power, CBER, LBER, MER, PER, C/N, BCH ESR and Link Margin	
Symbol Rate	1 - 45 Msym/s	
Supporting	TS, GPS and GCS	
Tuning Range	250 - 2350 MHz	
Roll-off (α) factor of Nyquist filter		
Code rate (8PSK)		
Code rate (QPSK)		
Code rate (16APSK)		
Code rate (32APSK)		
Spectral Inversion		
Pilots		
TS clock		

### ► DSS

Parameter	Value	Additional Data
Modulation	QPSK	
Margin of Power Measurement	35 - 115 dBμV	
Measurements	Power, CBER, VBER, MER, PER, C/N and Noise Margin	
Tuning Range	250 - 2350 MHz	
Symbol Rate		
Roll-off (α) factor of Nyquist filter		
Code rate		



Parameter	Value	Additional Data
Spectral Inversion		

#### ► DVB-S2X

Parameter	Value	Additional Data
Modulation	QPSK	
Margin of Power Measurement	35 - 115 dBμV	
Measurements	Power, CBER, VBER, MER, PER, C/N, BCH ESR and Link Margin	
Supporting	TS, GPS and GCS	
Tuning Range	250 - 2350 MHz	
Symbol Rate	1 - 45 Msym/s	

#### ► DCII (DigiCipher 2)

Parameter	Value	Additional Data
TBD		

#### ► FM / RDS / Advanced Measurements

Parameter	Value	Additional Data
Tuning range	45 - 1000 MHz	
Tuning step size		
Sensitivity		
Selectivity (mono)		
Frequency Deviation		
Frequency Deviation		
Modulation Power		
Stereo Pilot Detection		
Sensibility of a FM mono signal		
<b>Advanced Measurements</b>		
Frequency deviation of whole band pass filtered MPX		
Frequency deviation caused by L+R (or mono) component of MPX		
Frequency deviation caused by L-R (or stereo) component of MPX		
Frequency deviation caused only by L channel		
Frequency deviation caused only by R channel		
Frequency deviation caused only by stereo pilot component of MPX		
Frequency deviation caused only by RDS		
Histogram 50 ms (according to recommendation ITU-R SM.1268-2)		
Histogram All Values (according to recommendation ITU-R SM.1268-4)		



## 5.2.2 TV Analyzer Tools

### ► Video

Parameter	Value	Additional Data
Codecs	MPEG-1	
	MPEG-2	HD, MP, HL up to 1080p6
	H.264	CBP, MP, High Profile Level 5.2 up to 1080p240 / 4Kp60
	H.265 4K UHD	MMP L5.1 8b/10b up to 4Kp60
Maximum Image Size		
Minimum Image Size		
Bitrate		
Aspect Ratio		
SI/PSI Data		
HD Video Resolution		
HDMI Output Resolution		

### ► Audio

Parameter	Value	Additional Data
Codecs	MPEG-1	
	MPEG-2	
	AAC; HE-AAC	
	Dolby Digital (DD )and Dolby Digital + (DD+)	
Demodulation		
De-emphasis		
Sound subcarrier		

### ► Constellation

Parameter	Value	Additional Data
Type of Signal	DVB-T, DVB-T2, DVB-C, DVB-C2, DSS, DVB-S, DVB-S2, ISDB-T, J83 Annex B	
Displayed Data	I-Q Graph	

### ► Echoes

Parameter	Value	Additional Data
Type of Signal	DVB-T, DVB-T2, DVB-C2, ISDB-T	
Measurement range	Depends on the standard, carrier and guard interval	
Delay	0.1 - 224 us	Typical configuration (DVB-T 8K, GI = 1/4)
Distance	0.3 - 67,2 km	Typical configuration (DVB-T 8K, GI = 1/4)
Power Range	0 dBc - -30 dBc	Typical configuration (DVB-T 8K, GI = 1/4)
Time scale	1/3 Symbol Period	



## 5.3 Spectrum Analyzer Mode

### ► Digital Signal

Parameter	Value	Additional Data
<b>General Parameters</b>		
Tuning range	5 MHz - 3 GHz	
Markers	1	
Reference Level		
Spectrum Range		
Digital channels measurement	Power, C/N, frequency	Accuracy = $\pm 1.5$ dB Units: dBuV, dBmV, dBm
Indicators	Saturated, over-attenuated, right	
Dynamic	70 dB	
<b>Terrestrial</b>		
Tuning range	5 - 1000 MHz	
Tuning mode	Channel or frequency	
Tuning Accuracy	$\pm 1$ kHz	
Tuning Resolution	10 kHz	
Resolution Bandwidth (RBW)	2, 10, 20, 40, 100, 200, 1000 kHz	
Measurement Range	20 dBuV - 130 dBuV	
Span (min-max)	200 kHz - 40 MHz	for RBW = 2 kHz
	1 MHz - 250 MHz	for RBW = 10 kHz
	2 MHz - 450 MHz	for RBW = 20 / 30 / 40 kHz
	10 MHz - 995 MHz	for RBW = 100 / 200 / 1000 kHz
Digital channels measurement	Power, C/N	Accuracy = $\pm 1.5$ dB Units: dBuV, dBmV, dBm
<b>Satellite</b>		
Tuning range	250 - 2350 MHz	
Tuning mode		
Tuning accuracy	$\pm 2.5$ kHz	
Tuning Resolution	10 kHz	
Resolution Bandwidth (RBW)	10, 20, 40, 100, 200, 1000 kHz	
Measurement range	31 - 130 dBuV	35.5 $\mu$ V - 3.16 V
Span (min-max)	1 MHz - 250 MHz	for RBW = 10 kHz
	2 MHz - 450 MHz	for RBW = 20 / 30 / 40 kHz
	10 MHz - 2250 MHz	for RBW = 100 / 200 / 1000 kHz

### ► Analogue Signal

Parameter	Value	Additional Data
<b>General Parameter</b>		
Attenuation scale	Auto-range	
Numerical indication	Absolute value according to selected units	
Graphical indication	Analogue bar on screen	



Parameter	Value	Additional Data
<b>Audible indicator</b>	Pitch sound	Tone with pitch proportional to signal strength
<b>Terrestrial</b>		
<b>Tuning Range</b>	5 - 1000 MHz	
<b>Tuning Mode</b>	Manual	
<b>Tuning Resolution</b>	10 kHz	
<b>Measurement Range</b>	15 dBμV - 130 dBμV	3.16 μV - 3.16 V
<b>Analogue channels measures</b>	Level, C/N, V/A	
<b>Accuracy</b>	±1,5 dB	20 dBμV - 130 dBμV @ 990 MHz 10 μV - 3.16 V 23 °C ± 5 °C
<b>Out of range indication</b>	<, >	
<b>Satellite</b>		
<b>Tuning Range</b>	250 - 2500 MHz	
<b>Tuning Mode</b>	Intermediate frequency or downlink	Channel plan configurable
<b>Tuning Resolution</b>	10 kHz	
<b>Measurement Range</b>	15 dBμV (250 - 1800 MHz) 20 dBμV (1800 - 2300 MHz) 24 dBμV (2300 - 2500 MHz)	31.6 μV - 3.16 V
<b>Analogue channels measurements</b>	Level, C/N	According to modulation
<b>Accuracy</b>	±1,5 dB	20 dBμV - 130 dBμV @ 2490 MHz 10 μV - 3.16 V 23 °C ± 5 °C
<b>Out of range indication</b>	<, >	

## 5.4 IPTV Mode

Parameter	Value	Additional Data
<b>Connector</b>	RJ45	Labeled IPTV
<b>Streaming Reception</b>	4 simultaneous in real time	
<b>Streaming Measurement</b>	4 simultaneous in real time	
<b>Mesurement</b>	Jitter	up to 4 streamings simultaneously
	Packet rate	up to 4 streamings simultaneously
	Histogram	up to 4 streamings simultaneously
	Inter Packet Arrival Time	up to 4 streamings simultaneously
<b>Features</b>	VLAN networks support	
	Multicast discovery	
	Audio/video service play	
	T2MI reception	
	BTS reception	
<b>Multicast IP</b>	224.0.0.0 - 239.255.255.255	
<b>Multicast Ports</b>	1024 - 65535	
<b>Unicast</b>	TBD	



## 5.5 ASI Mode

### ► Transport Stream

Parameter	Value	Additional Data
<b>Communication Protocol</b>	MPEG-2	
<b>Packets</b>	188 or 204 bytes	Automatic detection
<b>Video Info</b>	Type, bitrate, format, aspect ratio, frequency, profile, PID	Bitrate info displayed in tables and pie chart
<b>Service Info</b>	Network, provider, NID, ONID, scrambled/free, TSID, SID, LCN	
<b>Audio Info</b>	Type, bitrate, format, frequency, mono/stereo, language, PID	
<b>Max. Recording Bitrate</b>	200 Mbit/s	
<b>Recording</b>	Internal memory or external USB	
<b>Recording Internal Memory</b>	8 GB	

### ► Transport Stream Tables & Alarms

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

## 5.6 SDI Mode

Parameter	Value	Additional Data
<b>Connector</b>	SDI-3G	
<b>Input</b>	3 GBit/s	
<b>Output</b>	3 GBit/s	
<b>Measurement</b>	Statistical eye	
	CRC error	
<b>Audio monitoring</b>	Up to 16 channels AES3	
	Channel status	
	LPCM audio loudness meter	



Parameter	Value	Additional Data
<b>Video/Audio formats</b>	Autodetection	
	SD	SDI @ 270 Mbps: 4:3 4:2:2 525i/625i SDTV + embedded AES3 audio
	HD	SDI @ 1.5 Gbps: 16:9 4:2:2 up to 720p60/1080p30/1080i60 HDTV + AES3
	3G	SDI level A @ 3 Gbps: 16:9 4:2:2 up to 1080p60 HDTV + AES3

## 5.7 Options

### ► Fibre Optics

Parameter	Value	Additional Data
<b>Descriptive Code</b>	TBD	
<b>Selective Optical Power Meter</b>		
<b>Optical Measure bands</b>	1310 nm ± 50 nm; 1490 nm ± 10 nm; 1550 nm ± 15 nm	
<b>Connector</b>	FC/APC	
<b>Measurement Dynamic Range</b>	- 49.9 dBm - +10 dBm	Accuracy ± 0,5 dB
<b>Isolation between bands</b>		
<b>Optical to RF Converter</b>		
<b>Dynamic range of conversion</b>		
<b>RF Attenuation</b>		
<b>RF band converted</b>	Terrestrial	
<b>RF band converted</b>	Satellite	Low Horizontal Low Vertical High Horizontal Low Vertical
<b>RF Output</b>		



## 6 MAINTENANCE

### 6.1 Instructions for Returning by Mail

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

### 6.2 Considerations about the Screen

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

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

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

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

### 6.3 Cleaning Recommendations

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

#### ► Cleaning the Screen

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

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

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





### ► **Cleaning the Plastic Case**

The equipment has to be disconnected before cleaning the case.

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

Before use, the equipment has to be completely dry.

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



## i ADDITIONAL INFORMATION

### i.1 Additional Documents

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

Name	Description	Link	
<b>PROMAX Download Area</b>	Documentation related to PROMAX equipment	<a href="http://www.promaxelectronics.com/ing/downloads/user-manuals">http://www.promaxelectronics.com/ing/downloads/user-manuals</a>	
<b>Signals Description</b>	Brief definition of all signals and parameters detected by the meter	<a href="http://www.promaxelectronics.com/ing/downloads/user-manuals/ranger-neo-3/high-class-field-strength-meter-and-spectrum-analyzer">http://www.promaxelectronics.com/ing/downloads/user-manuals/ranger-neo-3/high-class-field-strength-meter-and-spectrum-analyzer</a>	
<b>DiSEqC Commands</b>	Description of DiSEqC commands for remote control of antennas	<a href="http://www.promaxelectronics.com/ing/downloads/user-manuals/ranger-neo-3/high-class-field-strength-meter-and-spectrum-analyzer">http://www.promaxelectronics.com/ing/downloads/user-manuals/ranger-neo-3/high-class-field-strength-meter-and-spectrum-analyzer</a>	
















### i.2 Social Networks

Name	Link	
<b>Twitter</b>	<a href="https://twitter.com/PROMAX_news">@PROMAX_news</a>	
<b>Linkedin</b>	<a href="https://www.linkedin.com/company/1493234/">https://www.linkedin.com/company/1493234/</a>	
<b>Facebook</b>	<a href="https://www.facebook.com/promaxelectronics/">https://www.facebook.com/promaxelectronics/</a>	
<b>YouTube</b>	<a href="https://www.youtube.com/user/PROMAXElectronics">https://www.youtube.com/user/PROMAXElectronics</a>	



## ii MULTIMEDIA CONTENT

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

Chapter	Title	Link	QR Code	
<b>1. Introduction</b>	Introducing the ATLAS NG	<a href="https://youtu.be/KYArk4qbBgc">https://youtu.be/KYArk4qbBgc</a>		
<b>2. Setting Up</b>	Inputs and outputs	<a href="https://youtu.be/nxaKZI93W-Q">https://youtu.be/nxaKZI93W-Q</a>		
<b>2. Setting Up</b>	Main Menu	<a href="https://youtu.be/VS-wk48tupI">https://youtu.be/VS-wk48tupI</a>		
<b>3. Settings and Preferences</b>	Settings Menu	<a href="https://youtu.be/H0ruPD097pM">https://youtu.be/H0ruPD097pM</a>		
<b>4. TV Analyzer</b>	TV Analyzer Basics	<a href="https://youtu.be/x9cYqCwDpOo">https://youtu.be/x9cYqCwDpOo</a>		
<b>4. TV Analyzer</b>	Spectrum	<a href="https://youtu.be/c6_NIUxoeuc">https://youtu.be/c6_NIUxoeuc</a>		
<b>4. TV Analyzer</b>	Measurements	<a href="https://youtu.be/ZAvGjzLSqjk">https://youtu.be/ZAvGjzLSqjk</a>		
<b>4. TV Analyzer</b>	Signal Parameters	<a href="https://youtu.be/ZAvGjzLSqjk?t=54">https://youtu.be/ZAvGjzLSqjk?t=54</a>		
<b>4. TV Analyzer</b>	Video	<a href="https://youtu.be/c4fA5oXJ7Go">https://youtu.be/c4fA5oXJ7Go</a>		
<b>4. TV Analyzer</b>	Recording	<a href="https://youtu.be/aE4h9IktrgE">https://youtu.be/aE4h9IktrgE</a>		
<b>4. TV Analyzer</b>	Constellation	<a href="https://youtu.be/PIVX95fCgQE">https://youtu.be/PIVX95fCgQE</a>		
<b>4. TV Analyzer</b>	Video Values	<a href="https://youtu.be/Ww84wTu9wwk">https://youtu.be/Ww84wTu9wwk</a>		
<b>4. TV Analyzer</b>	MER by Carrier	<a href="https://youtu.be/bdgpY1_M2JQ">https://youtu.be/bdgpY1_M2JQ</a>		
<b>4. TV Analyzer</b>	Echoes Analyzer	<a href="https://youtu.be/4Q1uxtyyn70">https://youtu.be/4Q1uxtyyn70</a>		
<b>4. TV Analyzer</b>	Transport Stream Analyzer	<a href="https://youtu.be/MIIPQ-T_PE">https://youtu.be/MIIPQ-T_PE</a>		



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