

# HEXYLON



HIGH PERFORMANCE PORTABLE METER INTENDED FOR PROFESSIONAL USERS  
**ADVANCED FEATURES AND HIGH MEASUREMENT ACCURACY**

EN

User manual

Refs. 901622



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## Safety requirements

### ● Product inspection

- Inspect the equipment for shipping damage. Should any damage be discovered, immediately file a claim with the carrier.

### ● Read and Follow All Instructions

- All the safety and operating instructions should be read prior to and followed while operating this product.

### ● Do not obstruct the ventilation slots

### ● Cleaning

- Follow the cleaning instructions contained in the Maintenance section of this manual.

### ● Attachments

- Do not use attachments that are not approved by the product manufacturer

### ● Water and Moisture

- This product is splash water resistant but is not submersible.
- Do not place objects filled with liquids on or near the meter, such as glasses.

### ● Power Sources

- This product should be operated only from the type of power source specified (12VDC - 4A).
- Ensure that the voltage applied to the power connector does not exceed 15V. Higher voltages could damage the equipment
- Maximum consumed current: 4A

### ● RF connector electrical protection

- Maximum VAC: 18VAC
- Maximum positive VDC: 58V
- Maximum negative VDC: -18V

### ● Grounding or Polarization

- Do not bypass or defeat electrical plug polarization or grounding. Doing so will violate the warranty and may pose a risk of fire or electrocution.

### ● Wire Protection

- Ensure all connected wiring is routed correctly to avoid damage including pinching, excessive bends, or compression.

### ● Electrical Supply, Grounding, and Surge Protection

- Ensure that all local or national electrical codes are followed.

### ● Power Lines

- Always use caution and avoid operating this or any connected equipment near uninsulated

power lines or any other hazards.

### ● Servicing

- There are no user serviceable parts except the battery pack. Do not attempt to service this product or remove covers. Refer all servicing to qualified service personnel. Follow the instructions in this manual when replacing the battery.

### ● Heat

- The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat..
- Do not place naked flame sources on the meter, such as lighted candles.

### ● Battery pack

- Battery must be replaced by the battery pack supplied by the manufacturer (ref. 901640) only. In no case the battery pack cover can be opened.
- This product should be operated only from the type of power source specified (12VDC - 4A).
- Ensure that the voltage applied to the power connector does not exceed 15V. Higher voltages could damage the equipment
- May explode if damaged or disposed of in fire or water

### ● Class

- Operation of this equipment in a residential environment may cause radio interference.

## Symbols and safety labels



Recycle or dispose of used electronic devices properly



The equipment contains a recyclable battery. Before depositing the equipment in the container of electrical and electronic equipment, you must remove the battery pack and deposit it separately for proper management



Battery only can be replaced by the battery pack supplied by the manufacturer (ref. 901640)



## Overview

### Introducing the Hexylon

**Hexylon** is the new high-performance portable meter, with advanced features and high measurement accuracy. And all in the most automatic and intuitive way in the market, thanks to its intuitive interface and gestural commands.

With **Hexylon**, technicians have a tool to measure, analyse and diagnose radio and TV signals in any scenario, no matter how complex.

**Hexylon** has an ultra-fast spectrum analyser with high accuracy, together with the echoes analysis features, allows to detect any important issue of the signal.



## Key features

- **High performance portable meter**
- **Intuitive.** Thanks to its novel interface, designed to get the most out of its multi-touch 8" screen
- **All the information about the signal in one screen.** Mosaic feature, with up to 6 user-defined widgets.
- **Powerful digital spectrum analyser** (scanning < 10ms.) 5MHz - 3.3GHz range
- **Easily updateable**
- Spectrum analyser with **selectable span**
- **Specific measurements over IP** (TSolP)
- **PASS/FAIL indicators:** Icons indicate if a measurement is good, bad or in the warning zone for quick and easy status check. Reduce installer entry errors and improve decision making.
- **Field-swappable** and separately rechargeable **battery**
- **User profiles** customization
- Automatic **channel scan**
- Automatic **satellite identification**
- **GPS for drive test** and automatic saving of measurements
- **LTE interferences** detection and simulation

General Specifications

Display	8" Touch Screen TFT 1024x768 Full Color
Weight	2150g
Dimensions	250x210x60 mm (H x W x D)
Power supply	Input: 100-240V~ 50-60Hz Output: 12VDC, 4A
Battery	Li-ion (7,2VDC, 9000mAh). Field replaceable
Operating time	> 4 hours
Operating temperature	-5°C to 45°C (23°F a 104°F)
Storage temperature	-20°C to 70°C (-4°F a 158°F )
Humidity	5% to 95% no-condensation
Interfaces	ETH, USB, HDMI, Audio Out / Video Input (Jack), optical fiber FC/APC connector, GPS antenna connector
Storage	64 Gb

## Technical Specifications

Frequency	
Range	5 - 3300 MHz
Accuracy	1 kHz
Tuning	Frequency or channel
Input	
Impedance	50 Ohm
ASI IN/OUT	✓
Spectrum Analyser	
Span	100 KHz, 1, 5, 10, 20, 50, 100, 200, 500 MHz, 1.0, 2.0 and 3.3 GHz. Other (any value between 100 KHz and 3.3 GHz)
RBW	500 Hz, 1, 3, 5, 10, 30, 50, 100, 300, 500 KHz, 1, 3, 5 MHz
Marks	Up to 4, with delta feature
Event trigger	✓
Waterfall	✓
Hold feature	Maximum and minimum
Reference level	Automatic and manual
Digital measurements ATSC3.0	
Freq. Range	42-1800MHz
MPEG image	✓
Modulation	QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, and 4096QAM
Power	-90 - 20 dBm
MER	Up to 40dB
PreLDPCBER	1.0E-2 - 1.0E-6
PreBCHBER	1.0E-2 - 1.0E-8
C/N	Up to 40dB
Constellation	✓
Echoes	✓
Uncorrected packets	✓
TILT	✓
Attenuation	✓
STLTP Analysis	✓
TxID	Option 901638
SFN Drift	Option 901638
Korean mode	✓
Digital measurements ATSC1.0	
Freq. Range	42-1800MHz
MPEG image	✓
Modulation	8VSB
Power	-90 - 20 dBm
MER	Up to 40dB
PreBER	1.0E-2 - 1.0E-8

PostBER	1.0E-2 - 1.0E-9
Constellation	✓
Echoes	Only PDP
MER by carrier	✓
Constellation	✓
Uncorrected packets	✓
TILT	✓
Attenuation	✓
Digital measurements QAM (Anex A/B/C)	
Modulations	4QAM, 16QAM, 32QAM, 64QAM and 256QAM
Power	-90 - 20 dBm
PreBER	1.0E-2 - 1.0E-8
PostBER	1.0E-2 - 1.0E-9
MER	Up to 40dB
C/N	Up to 52dB
Constellation	✓
Uncorrected packets	✓
TILT	✓
Attenuation	✓
Digital measurements DVB-S	
Wideband (only compatible HW)	250-2400 MHz
Power	-90 - 20 dBm
CBER	1.0E-2 - 1.0E-6
VBER	1.0E-2 - 1.0E-8
MER	Up to 20dB
C/N	Up to 30dB
Constellation	✓
Uncorrected packets	✓
TILT	✓
Attenuation	✓
Digital measurements DVB-S2X (option 901626)	
Wideband (only compatible HW)	250-2400 MHz
Modulations	QPSK, 8PSK
Power	-90 - 20 dBm
Link Margin	Up to 10dB
MER	Up to 20dB
C/N	Up to 30dB
PreLDPCBER	1.0E-2 - 1.0E-6
PreBCHBER	1.0E-2 - 1.0E-8
Constellation	✓
Uncorrected packets	✓
TILT	✓

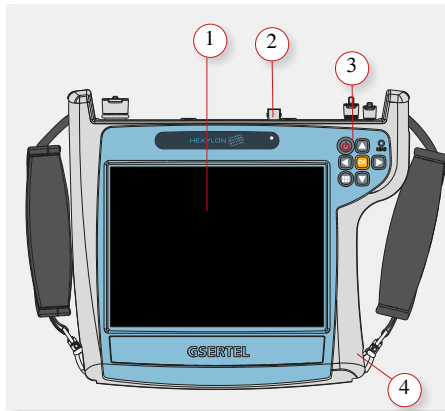
Attenuation	✓
Multi TS	✓
PLS scrambling	✓
<b>Digital measurements DVB-S2</b>	
Wideband (only compatible HW)	250-2400 MHz
Modulations	QPSK, 8PSK, 8APSK, 16 APSK Y 32 APSK
Power	-90 - 20 dBm
Link Margin	Up to 10dB
MER	Up to 20dB
C/N	Up to 30dB
PreLPCBER	1.0E-2 - 1.0E-6
PreBCHBER	1.0E-2 - 1.0E-8
Constellation	✓
Uncorrected packets	✓
TILT	✓
Attenuation	✓
Multi TS	✓
<b>FM Measurements</b>	
Level	✓
C/N	Up to 52dB
RDS	✓
FM Advanced measurements	Option 901633
<b>Analog Measurements</b>	
Level	20 - 128dBμV
V/A	Up to 52dB
C/N	Up to 30dB
<b>Features</b>	
Up to 6 widgets user-customizable	✓
System Scan with measurements and learning plan	✓
LTE check (4G and 5G)	✓
FO (-40, 7 dBm)	Reference 901622
GPS and Drive Test	Option 901625
MPEG2, MPEG4 Full HD Channels visualization	✓
4K visualization	Option 901630
IPTV Analyser	✓
Wifi Analyser	2,4 GHz and 5 GHz
TS Analysis + TS Recording	Option 901628
RF Recording	Option 901631
Units	dBμV, dBmV, dBm

Network Tools	✓
Teletext	✓
Electronic Program Guide	Option 901628
Cloud	✓
API	Option 901637
<b>Preamp powering</b>	
Preamp powering	5,13, 18, 24Vdc and other (any value between 5 and 24V)
Maximum power supplied	12 W
Maximum supplied current	900 mA
LNB Tone	22 KHz
DiSEqC	✓
SCR   dCSS (EN 50494   EN 50607)	✓

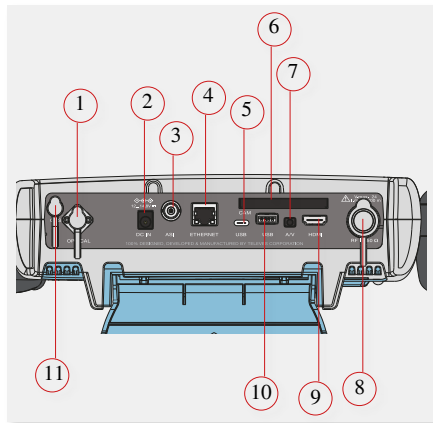
Specifications are subject to change without notice.

## Description of equipment components

### Connectors and controls

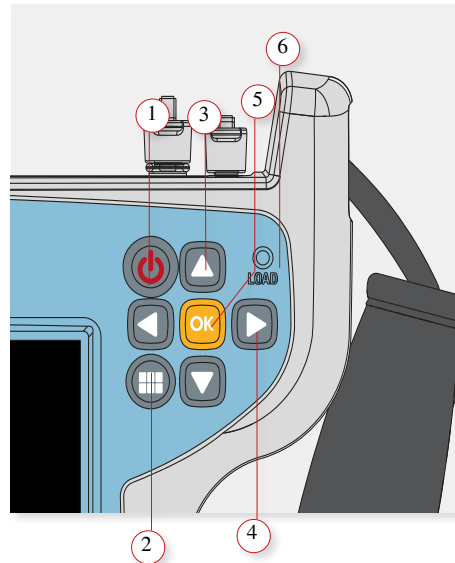


1. Touch screen 8"
2. Connectors
3. Keyboard and LED indicators
4. Battery (on the back)



1. F.O.
2. Power connector
3. ASI
4. Ethernet
5. USB-C (future use)
6. CAM
7. A/V
8. RF Input
9. HDMI
10. USB
11. GPS

### Keyboard

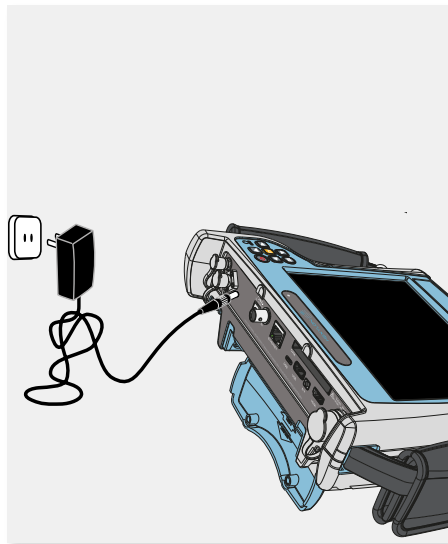


1. **Device ON/OFF button:** To turn the equipment off, press and hold for approximately 3 seconds. Short press to lock/unlock the screen.
2. **Menu button:** First press-features menu is shown. Second press-top menu is shown. Third press-context menu is shown. Fourth press-all menus are hidden
3. **Up/Down buttons:** Changes channel
4. **Left/Right buttons:** Changes screen in multi-screen features
5. **OK button:** Short press to accept an option, and press and hold for more than 10 seconds to reset the device
6. **Powering LED:** Indicates if the equipment is powering an external load

**CAUTION:** the USB ports are only for data transmission, not for device charging

## Power supply

A DC adapter is provided to power and charge the meter. Plug the adapter into a properly grounded electrical supply and the power connector on the side of the unit.



When external power is supplied, the battery management system automatically controls the charging process.

A battery icon indicates the charge status of the battery.

When the battery is fully charged, the battery icon is completely filled. As the battery discharges, the amount the icon is filled decreases in steps.

From a fully discharged state, a full charge takes approximately between 3 and 4 hours if the HEXYLON is turned off. When the meter is turned on, the charge takes more time.

When the meter is off while the battery is charging, the ON/OFF button red led blinks. When the battery is totally charged the red light remains red.

A 1 hour charge will provide battery for around two working hours.

The charge management system will detect various conditions preventing charging, such as a battery that is over a safe temperature.

## About the battery

### Important:

If the equipment is going to be stored for a while, it is recommended to take the battery off and store them both separately.

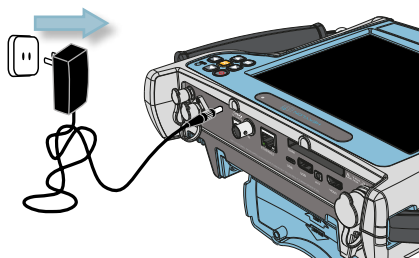
### To maximize battery life:

- ▶ Allow fully discharging the battery.
- ▶ The battery can be charged correctly attached to the device and using the supplied DC adapter. Or separately using the the DC adapter supplied with the Hexylon.
- ▶ For long term storage, take the battery pack off, and keep the device and the battery pack separately at room temperature, or about 25° C. Start with a charged battery and re-charge the battery every 2 to 3 months.

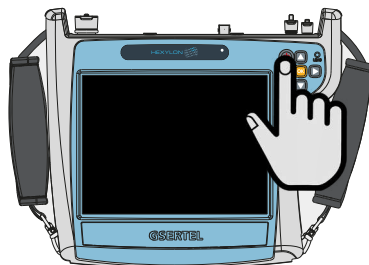
### Battery replacement:

It is recommended to use only the battery packs supplied by the manufacturer to replace the battery, following these instructions:

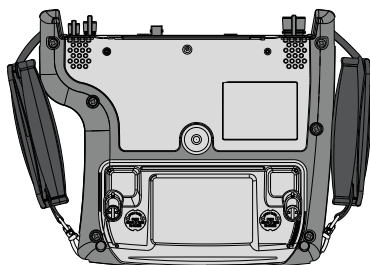
- ▶ Disconnect the meter from the power supply:



- ▶ Turn the Hexylon off:



- The battery pack is placed in the bottom-back side

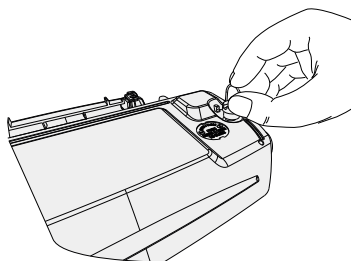


## Separately battery charge

The battery can be charged separately from the meter using the DC adaptor supplied with the Hexylon. Plug the adapter into a properly grounded electrical supply and the power connector on the side of the unit.

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- Lift the fixings washers and rotate them 90°. You'll notice that the fixings get out automatically allowing to remove the battery pack



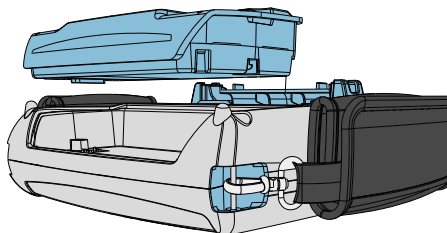
The flashing light indicates that the battery is being charged.

If the battery charge is less than 30% the light is red.

If the battery charge is between 30% and 60% the light is yellow.

If the battery charge is greater than 60% the light is green.

- Put the new battery pack and rotate the fixings washers again until the fixings fit into the device



- Turn your Hexylon on

## Gestures

Hexylon has an innovative interface, exclusively designed to get the most out of its 8" multi-touch display.

To do this, Hexylon uses some gestural commands that are explained below:



Tap: one fast touch with one finger



Double tap: two fast consecutive touches with one finger



Swipe: short swipe with one finger



Drag: drag with one finger



Pinch/Spread: pinch/spread two fingers on the screen



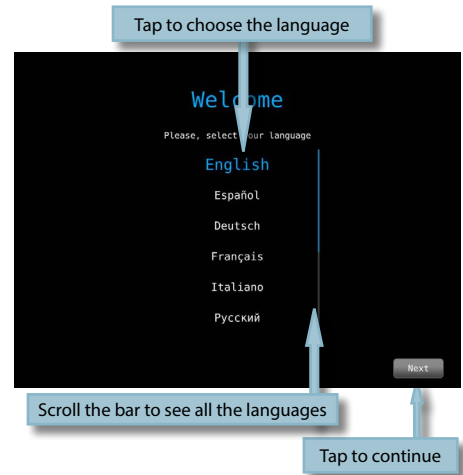
Drag and drop

## Before starting

The first time you turn your Hexylon on, please follow the next steps for a proper registration. To do that, you must be registered on our website ([www.gsartel.com](http://www.gsartel.com))

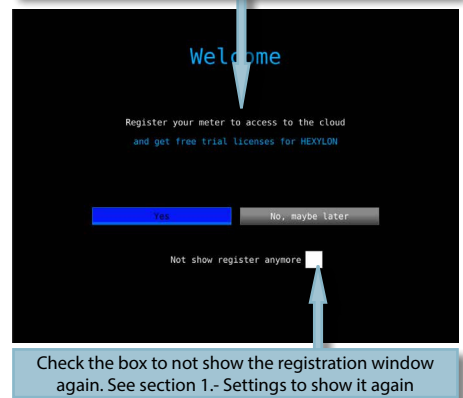
In addition, you need internet connection (Ethernet or Wi-Fi). Then, please follow the next steps that will be shown in the screen:

### 1.- Choose the language



### 2.- Choose if you want to register your meter:

No: cancel the registration. If you cancel the registration, you will be prompted to register your meter each time you turn it on



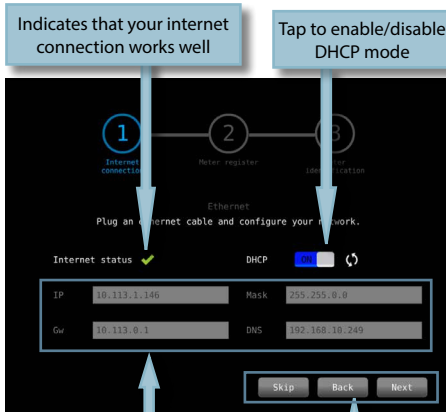


3.- Select the internet connection (Ethernet or Wi-Fi):



Skip: cancel the registration. If you skip, you will be prompted to register your meter each time you turn it on  
Back: back to previous step  
Next: goes to the next step

3.1- If you select Ethernet, all the parameters will appear on the screen: you can enable DHCP mode (the meter will select all the parameters automatically), or disable it (then you must enter all the network parameters)



Indicates that your internet connection works well

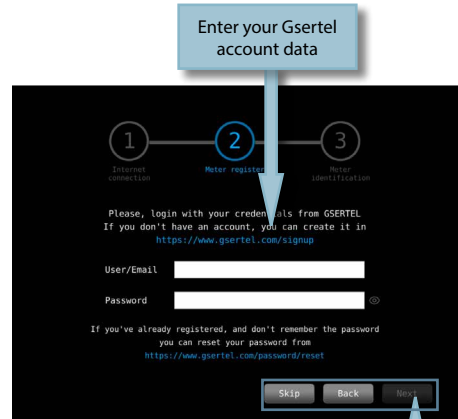
Tap to enable/disable DHCP mode

Network parameters

Skip: cancel the registration. If you skip, you will be prompted to register your meter each time you turn it on  
Back: back to previous step

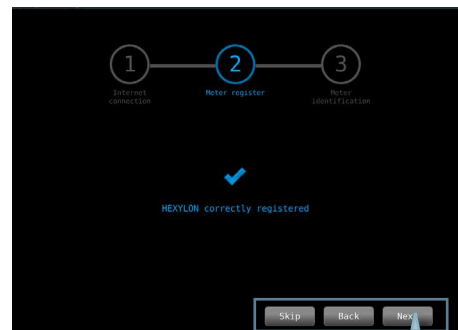
3.2- If you select Wi-Fi, a list with all the Wi-Fi networks will appear on the screen. You must select one of them to access the internet.

4.- When your Hexylon is connected to the internet, you have to enter your Gsertel account data (e-mail and password)



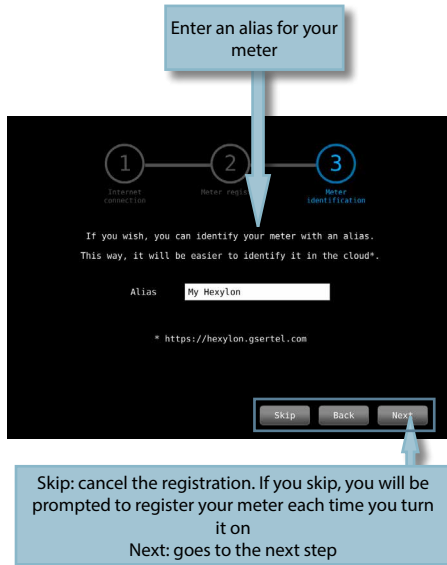
Skip: cancel the registration. If you skip, you will be prompted to register your meter each time you turn it on  
Back: back to previous step  
Next: goes to the next step

5.- Your Hexylon is registered!

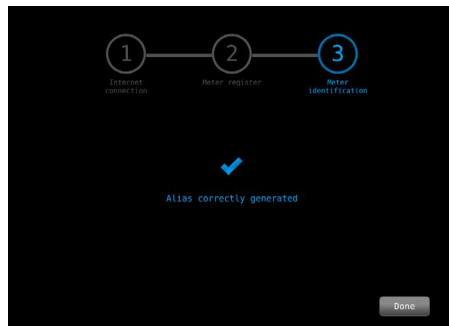


Skip: cancel the registration. If you skip, you will be prompted to register your meter each time you turn it on  
Next: goes to the next step

6.- The last step is to enter an alias for your Hexylon, this name will be saved in our database:



A message will confirm that the alias is correctly generated:

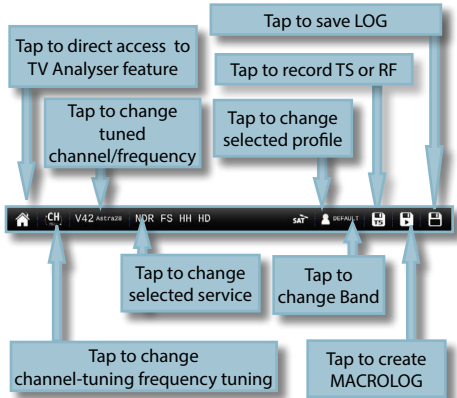


If you register your Hexylon, you can try all the licenses you want for 15 days totally free (see section *Main Menu -> 1.- Settings -> 1.5.- Licenses*) It is possible to block the registration menu. Please, see section *1.- Settings -> 1.1.- Regional*

## Icons in the screen

There are always two bars in the screen: one on the top and one at the bottom. The icons in them will be explained below.

### Bottom bar:



•Direct access to TV Analyser feature: see section 6.- *TV Analyser*.

•Change channel/frequency: If it is selected the **RF input** (see section *Top Menu->Inputs/Outputs*) allows you to select another channel (if it is selected channel tuning model) from the channel plan corresponding to the selected user profile (See section 2.- *User profiles*), or another frequency (if it is selected frequency tuning mode).

If it is selected the **channel tuning mode**, a pop-up window will show all the channels of the channel plan of the user profile (if you haven't do a scan -see section 6.1.- *Scan*-) or a list with the channels found after having made a scan and saved the plan. In the top right side of the channel list, you can see a pencil icon, if you tap on it, you can edit the channel list of channels (add or remove channels):



If it is selected the **frequency tuning mode**, allows you to change tuned frequency:



When terrestrial band is selected and the meter is in TV Analyser function, allows to select between video carrier freq. or central freq.

- If it is **selected the IP input**, this function allows you to select the IP channel, as well as to add /delete channels to the list. To do that, a pop up window will be shown with the list of the IPTV channels. The Hexylon has a default channel that you can edit:



To add a new IPTV channel, it is necessary to indicate the following parameters:

- Name
- IP: is the traffic IP (multicast or unicast)
- Origin IP: when the traffic is multicast and uses IGMP version 3, you could set the origin IP of the source. If you want to disable it, you must set the Origin IP to 0.0.0.0
- Port



•Note: See section *Web Application->4.- Plans* to learn how to create TV and IPTV channel plans using the web applicationChange selected service: it allows the user to select any other service locked previously. This feature shows a pop up window with all the services that the user has selected previously in any channel.

•Change selected service: it allows the user to select any other service locked previously. This feature shows a pop up window with all the services that the user has selected previously in any channel.



•Change band: see section 2.- *User profiles*

•Change profile: changes the user profile. See section 2.- *User profiles*

•MacroLOG: allows you to schedule repetitive measures in time intervals selected by the user. See section 9.- *LOGs*

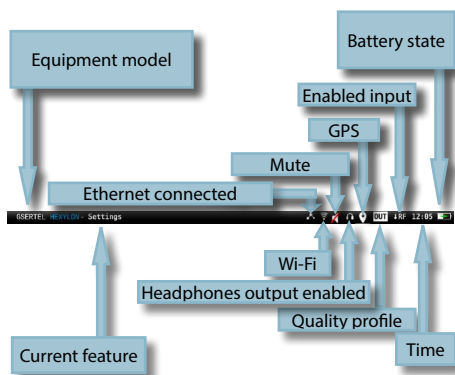
•TS or RF recording: TS recording is always available (option 901628), except when the user selects the spectrum feature (see section 7.- *Spectrum Analyser*). In this case, the RF recording (option 901631) function will be available. This feature shows a popup window to select the file name, the directory where it will be saved and, in the case of RF recording feature, some other parameters shown in the image below:

Once you press the Start button, a popup window will show a Stop button that the user must press when he wants to stop recording.

You can display the TS Recordings in your HEXYLON (see paragraph *Inputs/Outputs* in the section *Top Menu*), but the recordings must last at least 20 seconds.

•LOG: saves the measurements and the screenshot at that moment. See section 9.- *LOGs*

## Top bar:



•Connection to the network: indicates that the meter is connected to the network by Ethernet. See section *Settings-Network in Top Menu*

- No icon->No cable connected
- White icon->Cable connected
- Green icon->Connected to the internet

•Wi-Fi: indicates that the meter is connected to a Wi-Fi network. See section *Settings-Wi-Fi in Top Menu*

- No icon->Wi-Fi disabled
- White blinking icon->Wi-Fi establishing connection
- White icon->Wi-Fi connected
- Grey icon->Wi-Fi error
- Green icon->Connected to the internet

•GPS: indicates that the GPS is active. While the satellite data is not received, the icon blinks. See section *Settings-GPS in Top menu*. To perform a Drive-Test the GPS must be active, and then schedule a MacroLOG (see icons in the Bottom bar). The results of the Drive Test are shown in the web application. See section *1.- Measurements in Web application*.

•LNB and DiSEqC information: shows information about the LNB band (only if real frequency is selected -see section *1.2.- Measurements of the menu 1.- Settings-*), as well as about DiSEqC if it is active. See section *2.- User profiles*

•Quality profile: indicates the selected quality profile. To select other quality profile, access the *options context menu* of the feature. See section *Options context menu in Menus*. To add new quality profiles see section *5.- Quality profiles in Web application*.

•Enabled input: See section *Inputs/Outputs in Top menu*.

•Time: see section *Regional in the feature 1.- Settings*

•Connection to the cloud: See section *Before Starting* to register you and your Hexylon, so you will access to the cloud.

- Crossed out icon->No internet connection or cloud connection
- White icon->There is connection to the cloud, but the Hexylon is not registered
- Green icon->Connected to the cloud and Hexylon registered

## Menus

The Hexylon has 3 different menus. These menus will be explained in this section briefly, as well as their locations. All their features will be explained in the sections below.

### Top Menu



To access this menu you must do a short swipe at the top central part of the screen.

The features of this menu allows us to set up certain aspects of the meter in a fast way and from any feature.

### Main Menu



To access this menu you must do a short swipe on the right central part of the screen.

The main menu is a wheel with all the features of the meter.

Doing long swipe on the wheel, the user can access every features. To select a feature, you must tap on the corresponding icon.

### Options context menu



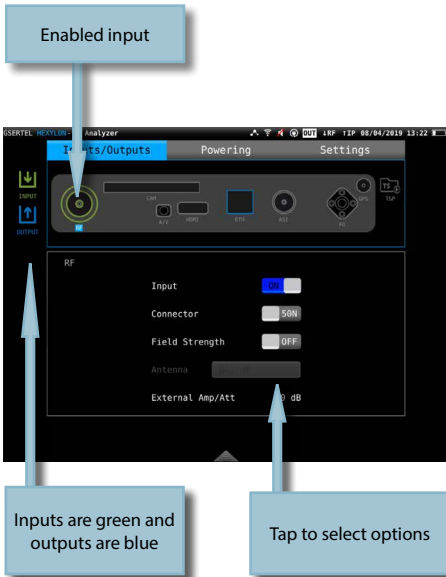
Most of the features of the main menu have a menu with some options that pertain exclusively to that feature. These options are in a context menu that appears when the user does short swipe on the left central part of the screen.

## Top menu

This menu has several tabs that will be explained below. To select one of them, the user must tap on the title.

## Inputs/Outputs:

Doing tap on the connector draw, the corresponding input/output will be enabled/disabled. Once it is enabled, the user must set some options depending on the kind of input.



Below are shown all the inputs/outputs, as well as all their options:

### •RF

- Input: ON/OFF. Enables/disables the RF input
- Field Strength: ON/OFF. If ON is selected, this measurement will be shown in the Measurements widget of the TV Analyzer feature (see section 7.4.4.- Measurements)
- Antenna: In order to calculate the field strength measurement, the user must

select the antenna that he/she is using

- External Amp/Att: if an amplifier or an attenuator is being used at the RF input of the Hexylon, you can enter the value, so it will be taken into account when making the calculations of the power measurements

### •CAM

- Enable: Enables/disables the conditional-access module
- If you select CAM input, please wait a few seconds until the HEXYLON detects the CAM. Then you can access to the MMI menu of the CAM:



### •A/V

- CVBS Input: Enables/disables the connector as a CVBS input
- Headphones Output: Enables/disables the connector as headphones output

### •HDMI

- Output: Enables/disables the connector as a HDMI output
- Mode: OSD+Video/Video. Allows to choose what the user wants to get: only the video signal, or video + OSD

### •ETH

- IPTV Input: ON/OFF. Enables/disables the Ethernet connector as an input for IPTV signals. Please see section Icons in the screen->Bottom Bar to learn how to create an IPTV channel
- STLT mode: ON/OFF. This option is

enabled when IPTV Input is ON.. If STLTP is OFF, the Hexylon assumes that the input signal is a IPTV signal.

- IPTV Output: ON/OFF. Enables/disables the Ethernet connector as an output for IPTV signals
- IP and Port: Whenever the IPTV Output is ON, the user must indicate the IP address and the port

## •ASI

- Input: ON/OFF. Enables/disables the IP connector as an input for ASI signals
- T2MI mode, BTS mode: ON/OFF. These options are enabled when ASI Input is ON. Only one of these options can be selected. If none of these options is selected, the Hexylon assumes that the input signal is an ASI signal. Otherwise, the user must enable the type of the input signal (T2MI or BTS). If T2MI is selected, the PID must be indicated too.
- Output: ON/OFF. Enables/disables the ASI connector as an output for ASI signals

## •FO

- Input: ON/OFF. Enables/disables the connector as an input for optical signals
- Lambda  $\lambda$  (nm): 1310, 1490, 1550. Allows to select the wavelength of the input signal
- External Att: if an optical attenuator is being used at the optical input of the Hexylon, you can enter the value, so it will be taken into account when making the calculations of the power measurements

## •GPS

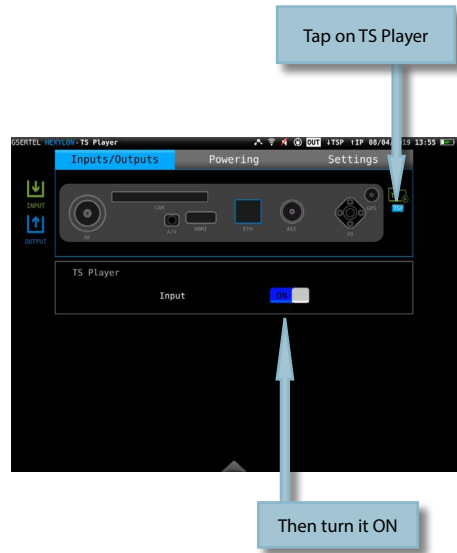
- Input: ON/OFF. Enables/disables the external GPS input

## •TS

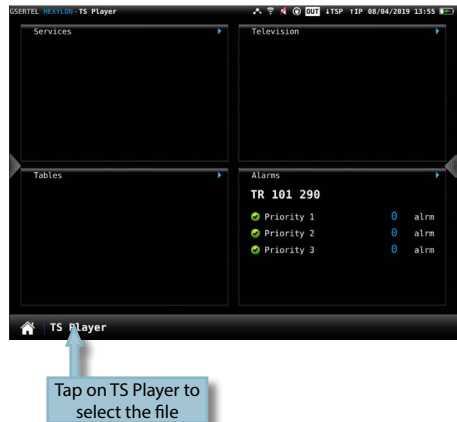
- Input: ON/OFF. Enables/disables the TS player

Please, follow these steps to play the TSI recordings:

If your HEXYLON has the option 901628 (TS Recording), you can select the TS player feature. So you can see your TS recording in your HEXYLON:

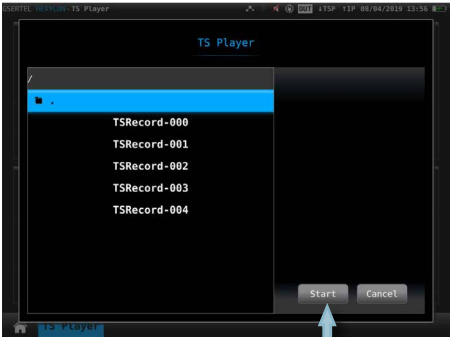


Then close the Top Menu window, and you will a window like this:



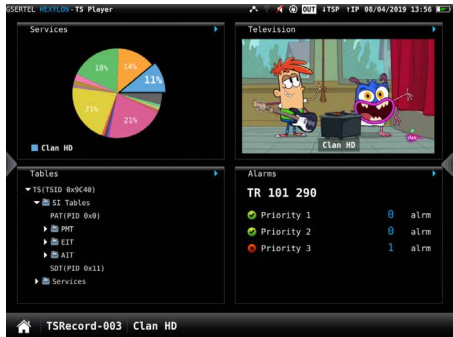
NOTE: The TS Recording should last at least 20 seconds for the TS Player feature can play it.

Once you tap on the TS Player button, it will be displayed the list of the TS Recordings:



Select the file you want to play and tap on Start

Then the TS Recording will be displayed (it may take a few seconds to be locked):



If you select CAM input, please wait a few seconds until the HEXYLON detects the CAM. Then you can access to the MMI menu of the CAM:

Powering:

Allows setup the preamplifiers powering.



Tap to select

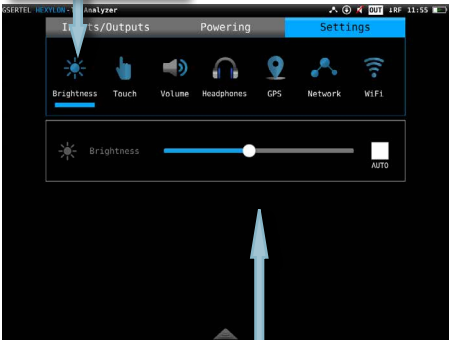
Consumption information

Settings:

The user can set the following parameter from this menu:

• **Brightness:** increase/decrease the display brightness

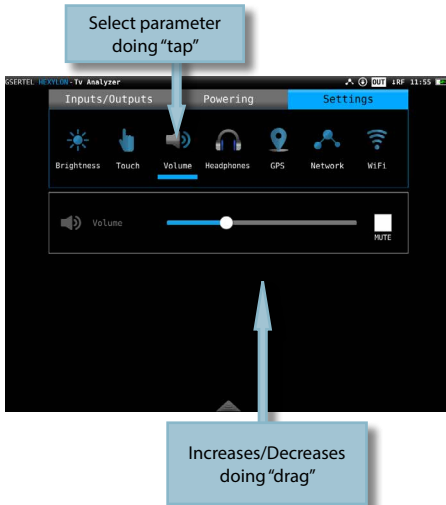
Tap to select the parameter



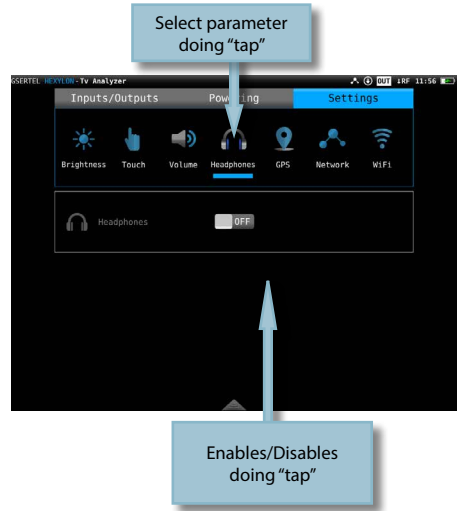
Increases/decreases doing "drag"



•**Volume:** increases/decreases the volume



•**Headphones:** enables/disables audio A/V output

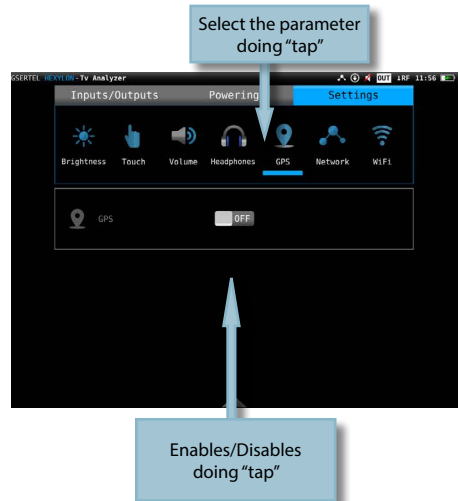


EN

•**Touch:** increases/decreases the sensitivity of the touch control



•**GPS:** Enables/disables the GPS feature. When it is enabled, the corresponding icon appears on the top bar of the screen. While the Hexylon does not receive the satellite signal, the GPS icon will blink.



•**Network:** Allows to set up the equipment network connection. If the user selects the DHCP mode (DHCP ON), the network parameters will be configured automatically. If the DHCP mode is off, the user must type all the network parameters (IP, gateway, Mask and DNS), and the do tap in "Apply".



•**Wi-Fi:** enables/disables the equipment Wi-Fi connection.



## Main menu

All the Hexylon features are contained in this menu, and they will be explained in the following sections.



### 1. Settings

Allows set all the global parameters of the meter. This feature has several tabs that will be explained below:

#### 1.1.- Regional

Sets the language, the date and the time.



#### 1.2.- Measures

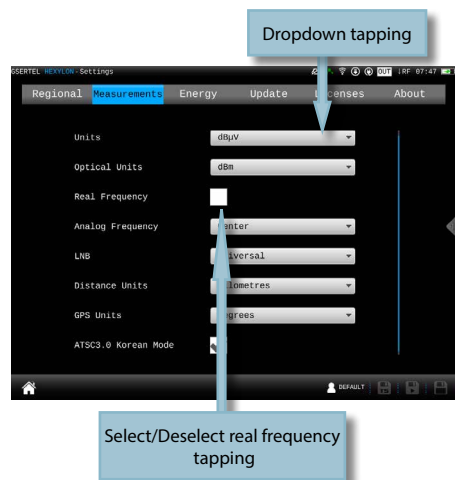
Allows to set up those parameter that are commons to all the measurements: units, frequency (if real frequency is not checked, the meter will use IF), LNB, and the GPS units.

Both the measurements and the GPS coordinates will be shown in the units selected in this menu.

You can also select between Center or Video Carrier in the Analog Frequency dropdown list. So, when the meter is in TV Analyser function, terrestrial

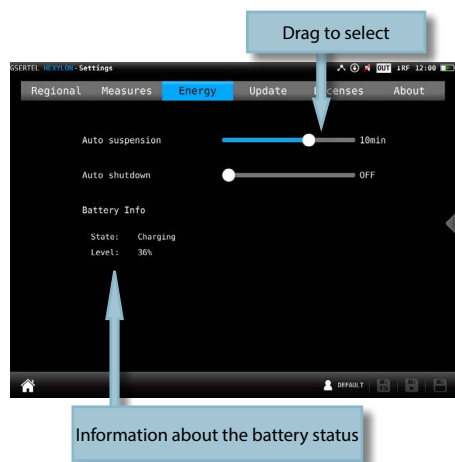
band, and in frequency mode, when the user enters a new frequency using the keyboard, it will correspond to the central frequency of the analog channel, or the video carrier frequency, according to the user's selection.

ATSC3.0 Korean mode enables this mode for ATSC3 signals.



### 1.3.- Energy

Allows set the energy-saving modes. Select the downtime until equipment auto suspension, and the downtime until auto shutdown.

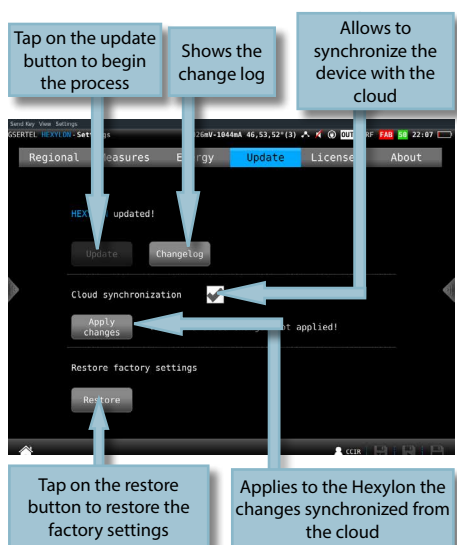


### 1.4.- Update

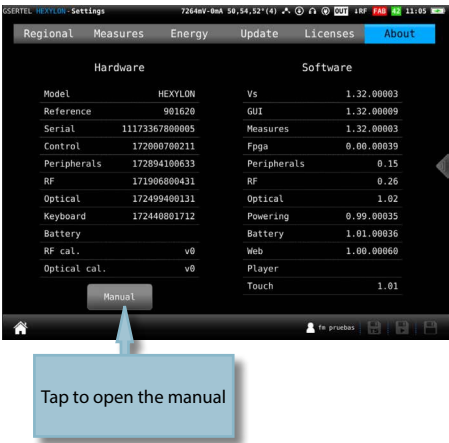
When the Hexylon is connected to the internet (via Ethernet or Wi-Fi) it is automatically detected if a new firmware version is available. If so, tap on the Update button and your Hexylon will be automatically updated.

Be aware that the meter must be connected to the external powering to be updated.

This menu allows to configure the synchronization between the Hexylon and the cloud (see section Hexylon Cloud)

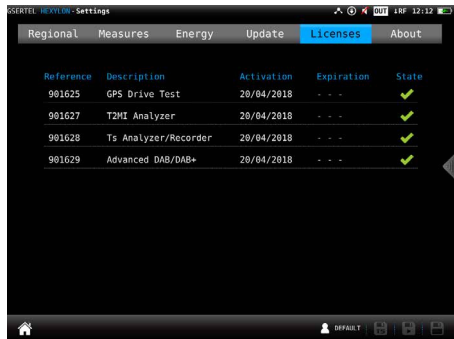


You can also update your device using a USB stick. To do that, save the update file in a USB stick and insert the USB stick into the USB connector of your HEXYLON. A message appears automatically indicating that an update is available on the USB. When you go to the Update menu, the following screen will appear:



### 1.5.- Licenses

Shows a list with all the licenses available on your HEXYLON.



### 2. Manual

Allows to display the user manual in the Hexylon screen.

Note: This feature is available only for Hexylon with compatible hardware.

### 1.6.- About

Shows all the information about your equipment, both hardware and software.

It is also possible to open the user manual and read it in the HEXYLON screen.





## 3. User profiles

Your Hexylon allows define as many user profiles as you need. For each user profile, you must indicate what band(s) is going to measure that user profile and the main parameters.

If you select terrestrial band for a profile, you must select the channel plan, the preamplifiers powering and the norm.

If you select satellite band for a profile, you must select the channel plan, polarity, powering, SCR and DiSeqC.



### 3.1.- Set

Goes to the setting feature of the main menu (see section 1.- Settings)

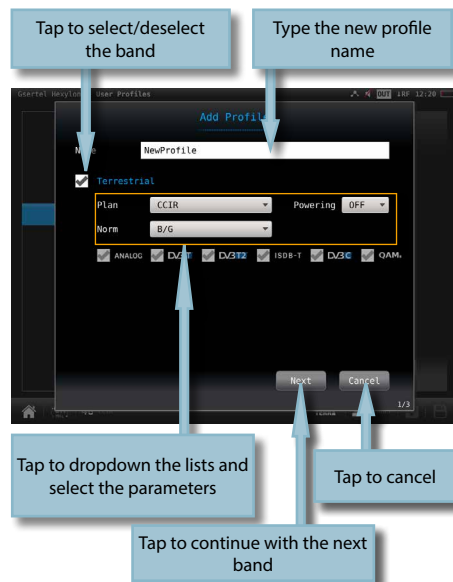
### 3.2.- Add

Adds a new user profile. When you tap on this button, a popup window will open where the user must set all the required parameters.

First of all, you must type the profile name. Then, you must select the bands you want to include in that profile and set up the parameters.

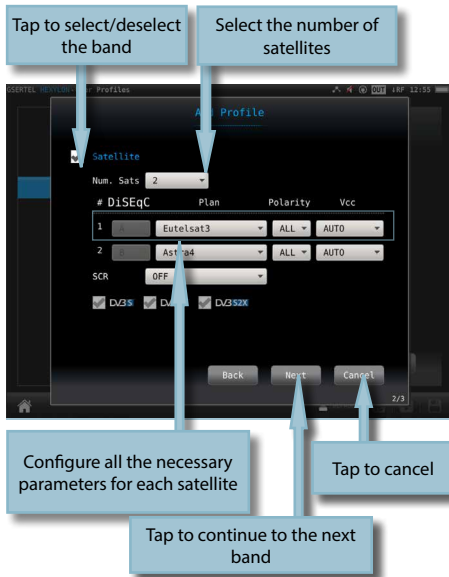
To select a band, you must select the corresponding check box. The first step is the terrestrial band, then tap on "Next" button pass to the satellite band, and finally the radio band.

Once you have finished the radio band configuration, tap on "add" button to save the user profile.



If you include the satellite band in the profile, you must select how many satellites you want to include in that profile. Then you must set all the parameters for each one.

Each satellite plan is automatically associated with a DiSeqC command (first plan with SAT A, second plan wit SAT B, and so on). So, the powering is always ON and automatically set to AUTO, but the user can select any other value.



### 3.3.- Edit

Allows changes in the selected profile of the list.  
The process is similar to add a new profile.

### 3.4.- Delete

Deletes the selected profile from the list.



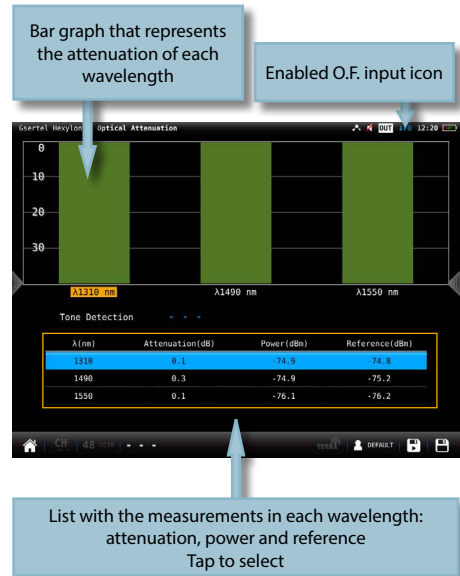
## 4. Optical attenuation

This feature allows measure the optical attenuation in the fiber network in three wavelengths: 1310nm, 1490nm and 1550nm.

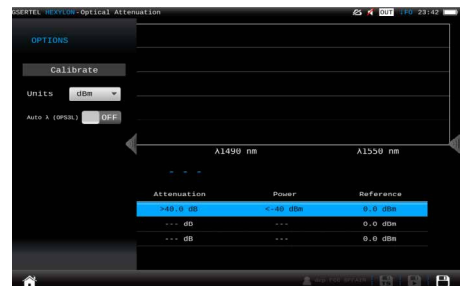
When the user selects this features, the optical fiber input is automatically enabled.

Please, see section Top Menu->Inputs/Outputs to learn how to enable the optical input.

### 4.1.- Main window:



### 4.2.- Options context menu:



•Calibrate: select the wavelength (tap on the graphic or on the list) and tap on this button to calibrate it.

•Units: mW/uW, dBm.

•Auto lambda (OPS3L): OFF/ON. If ON is selected, the Hexylon synchronizes with the Televes OPS3L light source, whenever it is in auto lambda mode too, so the Hexylon gets the measurements over the three lambdas simultaneously.

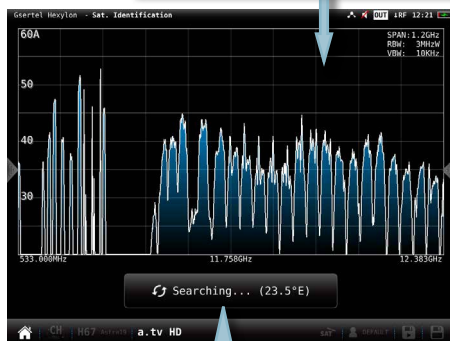


## 5. Satellite identification

This feature is able to detect automatically the satellite the input signal belongs to.

### 5.1.- Main window

The Hexylon adjusts automatically all the parameters of the spectrum



Once the satellite is identified, the name is shown in the display

### 5.2.- Options context menu



•Powering:

- VDC: Selects the preamplifier powering.
- DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions . This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

Goto: recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and

slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

- Aim antenna:

Emits an audible signal . This is a useful feature to point antennas without having to look at the display



## 6. LTE check

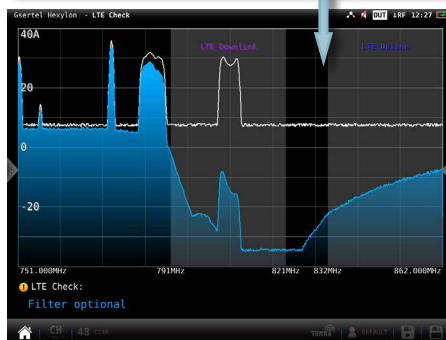
The presence of signals in 4G and 5G bands in distribution systems DTT, can affect the quality of the TV signal.

This function makes an analysis of the 4G and 5G signals and its influence on digital terrestrial television signal (UHF band), and it also estimates the need to insert a filter at the input of a Digital Terrestrial Television (DTT) system, in order to minimize interferences that may cause the signal on the DTT signal.

When you select this function, only the 4G Downlink and the 4G Uplink bands are analysed. You must display the Options Context Menu to analyse the 5G band.

### 6.1.- Main window

Simultaneous representation of the high UHF band spectrum (closest to the LTE band), LTE down-link spectrum, and LTE up-link spectrum

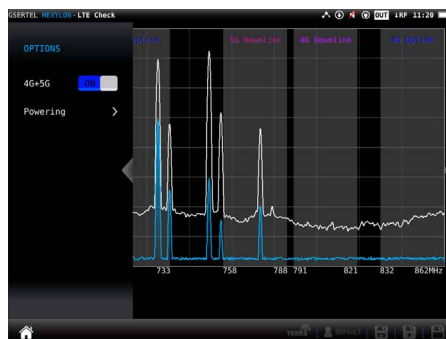


If it is necessary to insert a filter, is indicated on the screen.

If it was not necessary to insert a filter, it will be displayed the text "LTE Check OK" instead of "Required LTE filter".

On the screen are displayed simultaneously: 1-The spectrum of the high "UHF" band (closest to the LTE band); 2- The spectrum of the LTE down-link; 3- And the spectrum of the LTE up-link.

### 6.2.- Options context menu



- 4G+5G: ON/OFF. When ON is selected, the function analyses the 4G up and down links, as well as the 5G up and down links, detecting possible interfering signals and, if it is necessary it recommends a filter.


- Powering:

- VDC: Selects the preamplifier powering.





## 7. TV Analyser

This is the main function of the Hexylon. The user can reach this function by tapping the icon .

Thanks to this feature it is possible to have in one screen all the information of the tuned signal.

The feature TV Analyser has 3 screens: Scan, Mosaic 3+1 and Mosaic 6. To switch between screens do long swipe.

Please, see section *Top menu->Inputs/Outputs* to learn how to select the input that you want to use, and the section *Icons in the screen->Bottom bar* to learn how to change the selected channel, and how to add channels for IPTV.

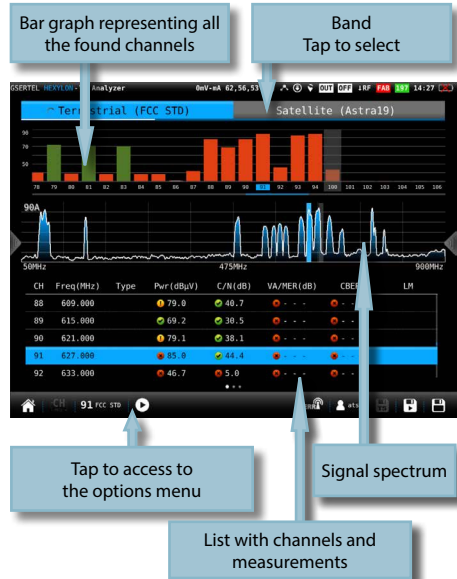
Below there is a detailed explanation of each of these screens:

### 6.1.- Scan

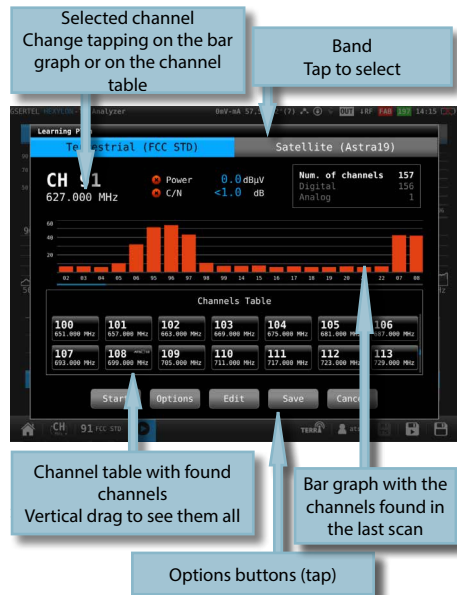
This function scans the selected channel plan and detects every existing analog and digital channel in real time to determine the overall frequency response of the system.

The scan measurement leverages the location based thresholds to clearly show whether or not signal levels comply with the cable system specifications with their green, yellow and red bars.

#### 7.1.1.- Main window



Tapping on the icon  a popup window will appear showing the following functions:



•Start: Starts a new system scan

•Options:

- Fast: ON/OFF. When the fast scan is enabled (ON), the meter will not make CBER and VBER measurements for digital channels, neither V/A measurements for analog channels. So, only power and level measurements will be shown.
- Wide outlet: ON/OFF. Enable this option when the outlet in your installation has both terrestrial and satellite bands. So, both bands will be scanned consecutively. If this options is disabled, only the selected band will be scanned.

Note: Note that if the selected user profile does not allow to make measurements in some bands, the scan will not be done in that band.

•Edit: Allows to add/delete channels from the plan. If the channel is selected (blue colored), when you tap on it, it will be deselected. Otherwise, if the channel is deselected (grey colored), when you tap on it, it will be selected.

•Save: Saves a new plan with the found channels.

•Cancel: Closes the options window.

### 7.1.2.- Options context menu



•Fast: ON/OFF. When the fast scan is enabled (ON), the meter will not make CBER and VBER measurements for digital channels, neither V/A measurements for analog channels. So, only power and level measurements will be shown.

•Wide outlet: ON/OFF. Enable this option when the outlet in your installation has both terrestrial

and satellite bands. So, both bands will be scanned consecutively. If this option is disabled, only the selected band will be scanned.

Note: Note that if the selected user profile does not allow to make measurements in some bands, the scan will not be done in that band.

•Show all: ON/OFF. When show all is ON, all the measurements of all the channels are shown. When it is OFF, you can only see the measurements of the channel that is being measured in that moment.

•Span full: ON/OFF. When Span full is ON you can see all the bars corresponding to all the found channels. When this option is OFF, only 24 bars are shown, so it is necessary to scroll to see them all.

•Tilt: ON/OFF. When the tilt option is ON, this function measures the tilt between the channels indicated in the labels CH A and CH B. Then you can see a white line between these two channels and the tilt measurement on it.

•Attenuation: ON/OFF. When the attenuation option is ON, the Hexylon measures the attenuation of the installation relative to a reference point, usually the head-end output. So, the first thing you must do is connect the meter to the reference point and tap on the Calibrate button. In this way, the equipment will measure and save the level of all the channels.

Then you must go to all the points of the installation where we want to measure and connect the meter, taking care to have this function ON. The Hexylon will measure the levels of all the channels comparing them with the reference ones.

When this option is ON, the bars of the graphic don't represent the level or the power of the channels, but the attenuation of each one of them. The list shows power (or level) and C/N. In addition, a green trace is shown in the spectrum. This trace indicates the levels in the reference point.

•Quality profile: allows to select the quality profile.

•Powering:

- VDC: Selects the preamplifier powering.
- DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

**Halt:** This command stops the motor movement.

**East:** Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

**West:** Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

**Store:** 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

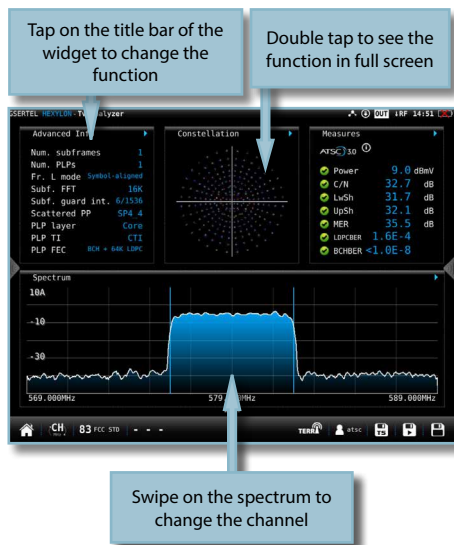
**Goto:** recovers one of the 8 positions for the antenna that has been previously stored

**SCR (only satellite band):** Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

## 7.2.- Mosaic 3+1

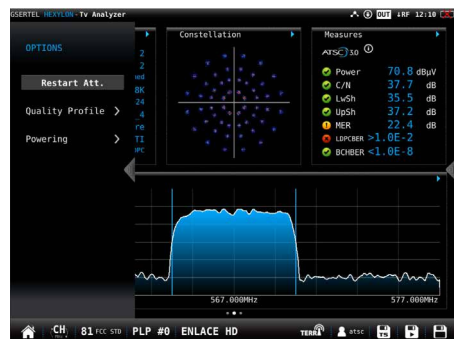
This screen has 4 widgets, 3 in the top of the screen and one in the lower part of the screen. These widgets are user-configurable, that is, the user can select the function he or she wants to visualize in each widget.

### 7.2.1.- Main window



All the available features are explained in section 7.4.- Features.

### 7.2.2.- Options context menu:



- Restart Att: restarts the control attenuation.
- Quality profile: allows to select the quality profile
- Powering:
  - VDC: Selects the preamplifier powering.
  - DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat

D)

- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

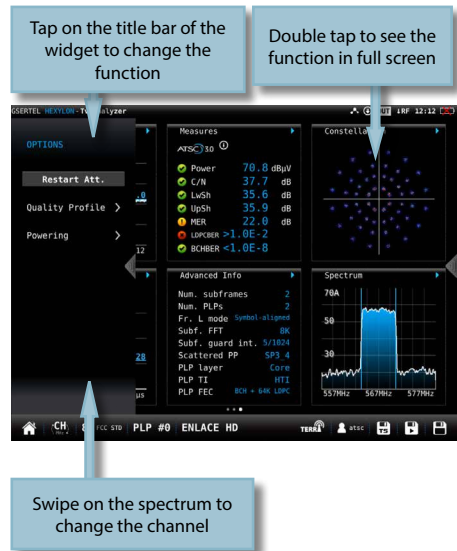
Goto: recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

### 7.3.- Mosaic 6

This screen has 6 widgets. These widgets are user-configurable, that is, the user can select the function he or she wants to visualize in each widget.

### 7.3.1.- Main window



All the available features are explained in section 7.4.- Features.

### 7.3.2.- Options context menu



- Restart Att: restarts the control attenuation.
- Quality profile: allows to select the quality profile
- Powering:
  - VDC: Selects the preamplifier powering.
  - DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)

- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

**Halt:** This command stops the motor movement.

**East:** Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

**West:** Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

**Store:** 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

**Goto:** recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

## 7.4.- Features

This section explains all the features available to visualize in the widgets of the Mosaic 3+1 and Mosaic 6 modes.




Note: If the ASI input is selected, only Television and Services features will be available.

### 7.4.1.- Television

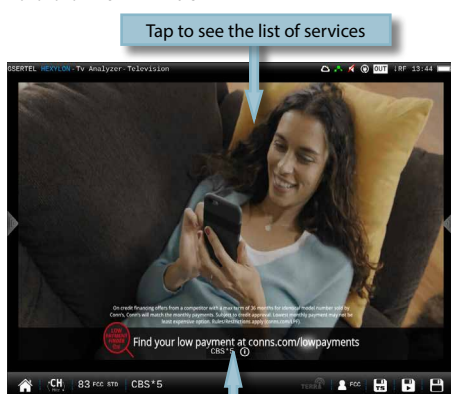
This feature allows to visualize the selected service

image of the tuned channel.

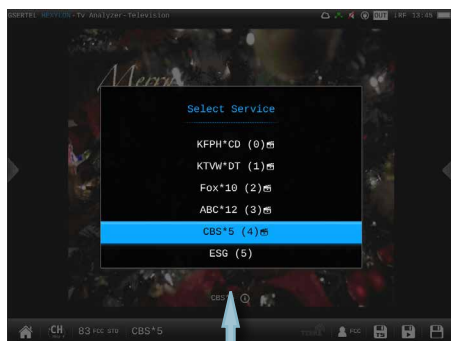
Note: When the image is not available, one of these icons will be shown:

- Only audio service 
- Encrypted channel 
- Data service 

#### 7.4.1.1.- Main window

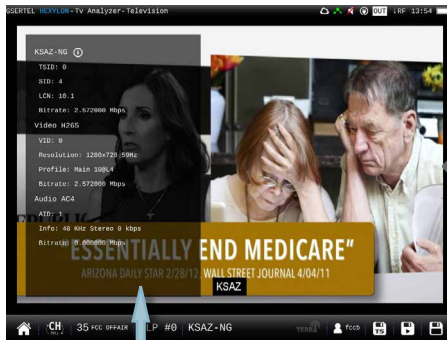


Tapping on the screen, it appears a popup window with the list of the channel services:



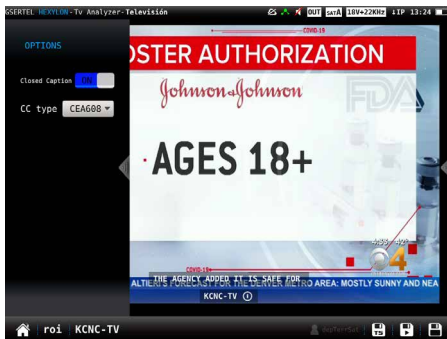
Next to the name of the service, the icons indicating the transports are shown (image, one or more audio transports). To change the audio, tap again on the screen and select the same service in the list, then a new pop-up window will appear showing the available audios.

Tapping on the service name, it appears a pop-up window with the information about it:



Tap to close the pop-up window

### 7.4.1.2.- Options context menu



- Closed caption (ON/OFF): Enables/Disables closed caption
- Closed caption type: Allows to select the type of closed caption

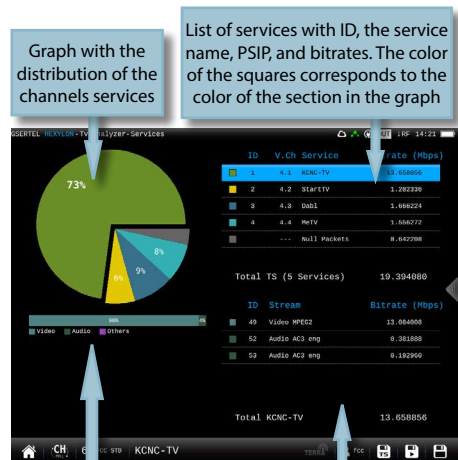
### 7.4.2.- Services

This feature shows a graph with the distribution of the services of the channel. Tapping on one of the sections of the graph, you can see the name of the corresponding service.

If you see this feature in full screen, you will have a more detailed information.

The information in the Virtual Channel column corresponds to the PSIP (Program and System Information Protocol, that carries metadata about each channel in the broadcast MPEG transport stream of a television station and information about television programs).

#### 7.4.2.1.- Main window



Distribution and bitrates of the service PIDs

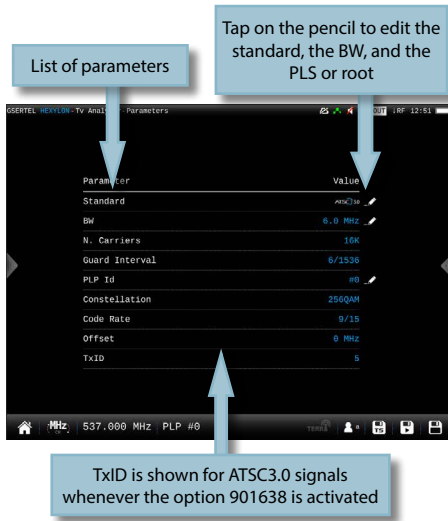
Service PIDs. The colors of the squares indicate the PID type

### 7.4.3.- Parameters

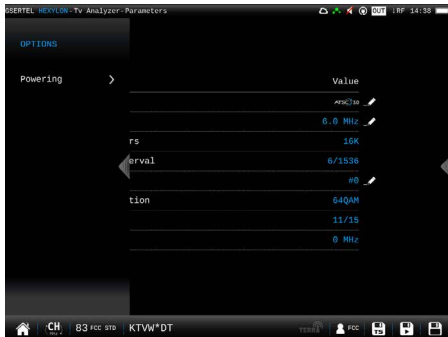
This feature shows the parameters of the locked signal.

One of the parameters displayed for ATSC 3.0 signals is the transmitter identifier (TxID), which is very useful during network deployment in multi-transmitter situations.

## 7.4.3.1.- Main Window



## 7.4.3.2.- Options context menu



### •Powering:

- VDC: Selects the preamplifier powering.
- DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the

LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

Goto: recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

## 7.4.4.- Measurements (RF input)

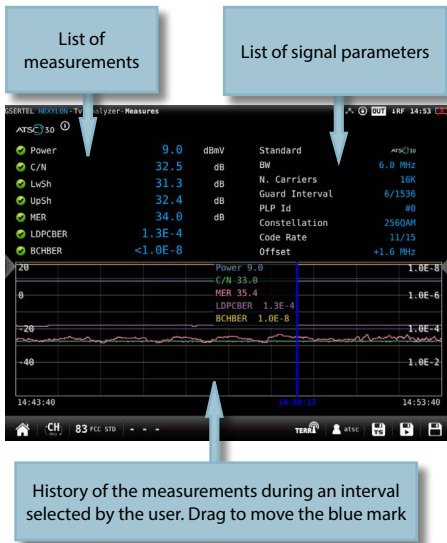
This feature shows the measurements of the selected channel. The measurements depends on the signal modulation:

- DVB-S: Power, C/N, MER, CBER, VBER
- DVB-S2: Power, C/N, MER, PreLDPCBER, PreBCHBER
- ATSC1.0: Power, C/N, MER, PreBER, PostBER
- ATSC3.0: Power, C/N, MER, PreLDPCBER, PreBCHBER
- QAM: Power, C/N, BER, MER
- Analog: Level, C/N, V/A, Hum, CTB, CSO

If you see this feature in full screen, you will have more detailed information.



#### 7.4.4.1.- Main window



possible to control the DiSeqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

**Halt:** This command stops the motor movement.

**East:** Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

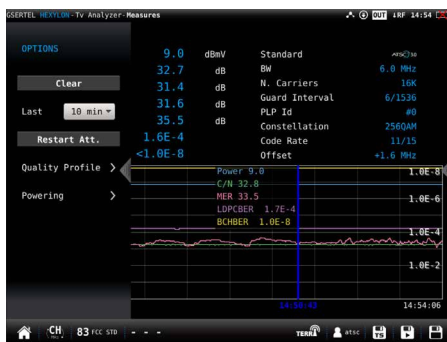
**West:** Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

**Store:** 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

**Goto:** recovers one of the 8 positions for the antenna that has been previously stored

- **SCR (only satellite band):** Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSeqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).
- **CTB (only analog channels):** Turns ON/OFF the CTB measurement. If you select CTB ON, a popup window will be displayed asking you to turn the signal off. CTB can only be made with the service disabled, because it is a measurement made in the frequency of the video carrier of the TV signal. Turn the signal ON again to measure CTB and all other measurements properly.
- **CSO Offsets (only analog channels):** The CSO measure is carried out in different

#### 7.4.4.2.- Options context menu



- **Clear:** restarts the graph.
- **Last:** 5 min, ½ hour, ½ day, 1 day, 1 week. Allows select the time interval shown in the graph
- **Quality profile:** allows to select the quality profile
- **Powering:**
  - **VDC:** Selects the preamplifier powering.
  - **DiSeqC (only satellite band):** selects the DiSeqC parameter (Sat A, Sat B, Sat C, Sat D)
  - **Positioner (only satellite band):** makes it

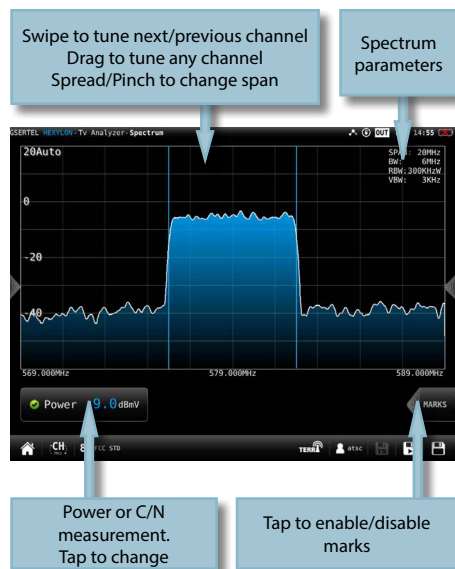


frequencies (at different distances from the video carrier) within the selected channel. Using this menu you can select the offset where you want to measure the CSO, and you can save up to 6 offset values, that can be the default values or user-selected ones.

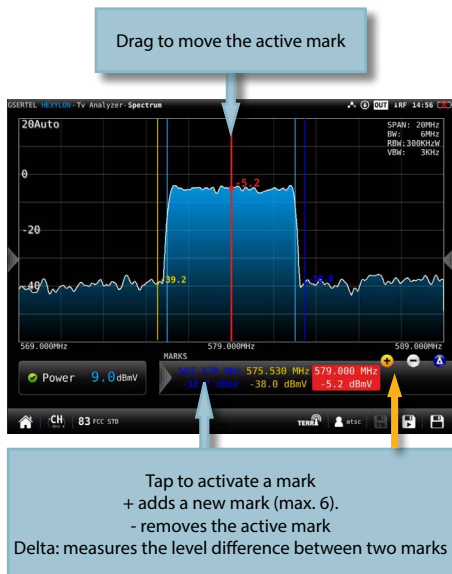
## 7.4.5.- Spectrum (RF Input)

This feature shows the spectrum of the signal.

### 7.4.5.1.-Main window



If you tap to enable marks:



### 7.4.5.2.- Options context menu



- Restart Att: restarts the control attenuation.
- Frequency Calibration: If the user needs more accuracy, this feature improves it by considering all the conditions of the Hexylon in the current moment.
- Span: 100KHz, 1MHz, 5MHz, 10 MHz, 20 MHz, 50 MHz, 100 MHz, 200 MHz, 500 MHz, 1.0GHz, 2.0GHz, 3.3GHz, Other.
- Start Frequency: Allows the user to set the initial

frequency of the spectrum graph.

•Stop Frequency: Allows the user to set the final frequency of the spectrum graph.

•Reference level: Auto, 50dBuV – 130dBuV

•dB/div: Auto, 5dBuV, 10dBuV

•RBW: 500 HzW – 5MHzW

•VBW: 100Hz – 1MHz

•Average: Allows to average the number of spectrum traces selected by the user. Please note that the spectrum refresh may be slowed down.

- Reset average: resets the average.
- Number of averages: allows the user to select the number of traces to average.

•Standard: Selects the standard of the signal.

•BW: Selects the bandwidth.

•Advanced: Access to spectrum advanced features:

- Hold: enables/disables max. hold y min. hold features. Tapping on Clear button to restart hold trace.
- Trigger: enables/disables the trigger by level feature. To select the level, tap on the label and a popup keyboard appears.
- Fill: enables/disables the spectrum graph filled.

•Quality profile: allows to select the quality profile

•Powering:

- VDC: Selects the preamplifier powering.
- DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down,

successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

Goto: recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

•Aim Antenna: ON/OFF

Emits a modular audible signal with frequency directly proportional to signal level in the spectrum trace relative to reference level. It is recommended to set the reference level manually, as well as to select the span to include a frequency range wide enough. The audible signal becomes continuous when the signal level is close to the reference level. Then it is necessary to increase the reference level to get a more accurate adjustment. This is a useful feature to point antennas without having to look at the display.

•OOB Emissions (only for DVB-T): It is a mask predefined by the ETSI EN 302 296 standard to check if the channel complies with it or not.

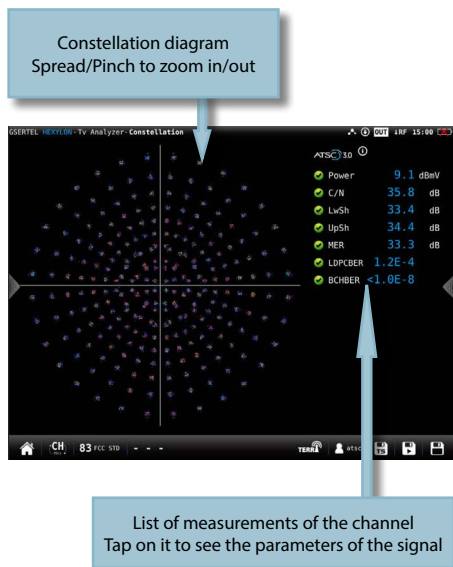
•Relative Marks: ON/OFF

If ON is selected, the marks will be relative to their position in the grid, not to their frequency

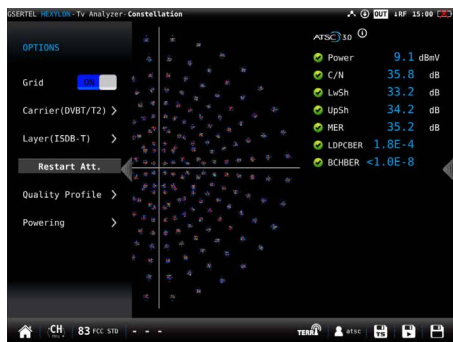
## 7.4.6.- Constellation (RF Input)

This feature shows the constellation diagram of the tuned channel.

### 7.4.6.1.- Main window



### 7.4.6.2.- Options context menu



- Grid: ON/OFF. Shows/hide the grid.
- Carrier (only ATSC3.0): Allows you to select the constellation of the selected carrier(s).
- Layer (only ISDB-T/Tb): Allows to select the layer whose constellation must be displayed.
- Restart Att: restarts the control attenuation.

- Quality profile: allows to select the quality profile

- Powering:

- VDC: Selects the preamplifier powering.
- DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

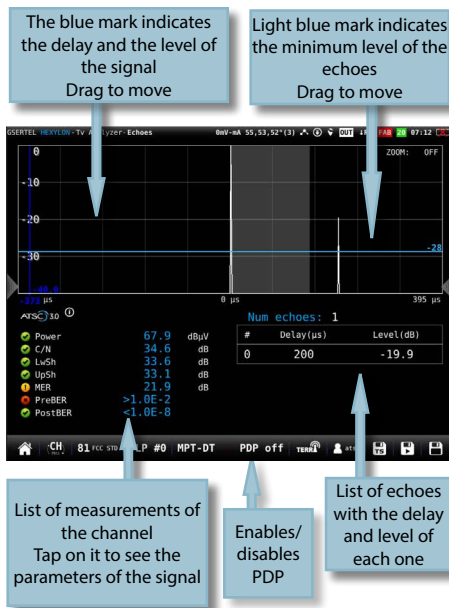
Goto: recovers one of the 8 positions for the antenna that has been previously stored

SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

### 7.4.6.- Echoes (RF Input)

This feature allows you to visualize the echoes of the received signal, helping the installer to minimize them as much as possible for optimal signal reception. In addition, this feature shows PDP diagram too. The Path Delay Profile does not need channel demodulation, which has significant advantages over the traditional functions of echoes analysers: Viewing echoes in low signal quality, viewing echoes outside the guard interval. It works for ATSC3.0 signals. Only PDPs are available for ATSC1.0

#### 7.4.7.1.- Main window



#### 7.4.7.2.- Options context menu:



- Min. Level: indicates the level from which the meter must take the echoes into account.. You can also change this level by dragging the horizontal light blue level.

- Zoom: OFF, 2x, 4x, 8x, 16x. You can also Spread/ pinch on the screen.

- Units: us, Km.

- Restart Att: restarts the control attenuation.

- Quality profile: allows to select the quality profile

- Powering:

- VDC: Selects the preamplifier powering.
- DiSeqC (only satellite band): selects the DiSeqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSeqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available

to store at up to 8 antenna positions . This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

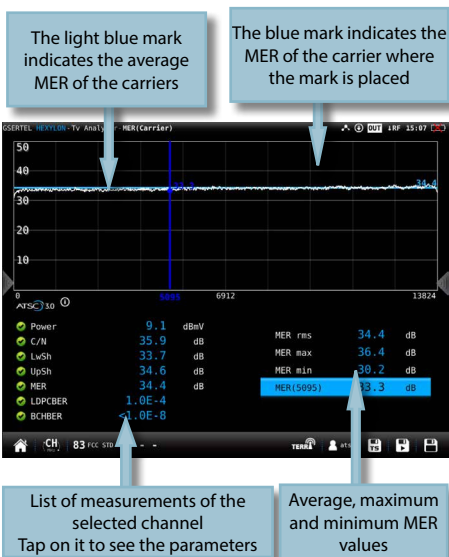
Goto: recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSeqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

## 7.4.8.- MER/carrier (RF Input)

This feature represents MER value for each carrier of the ATSC3.0 signal. This is pretty useful to detect if there is any interference inside the channel that makes the quality signal to get worse and that is invisible for a traditional spectral analysis.

### 7.4.8.1.- Main window

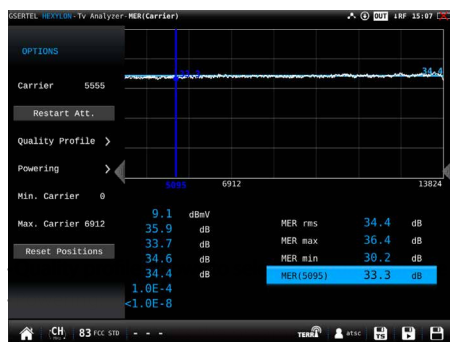


•MER RMS: Average MER.

•MER max: Maximum MER value of the signal. In parentheses the number of carrier with this maximum value of MER. If you tap on this measurement, the blue mark will move to the carrier with the maximum MER, and will be moving searching the carrier with maximum MER each time.

•MER min: Minimum MER value of the signal. In parentheses the number of carrier with this minimum value of MER. If you tap on this measurement, the blue mark will move to the carrier with the minimum MER, and will be moving searching the carrier with minimum MER each time.

### 7.4.8.2.- Options context menu



•Carrier: Allows to select the carrier where the user wants to measure the MER.

•Restart Att: restarts the control attenuation.

•Quality profile: allows to select the quality profile

•Powering:

- VDC: Selects the preamplifier powering.

•Min. Carrier: Allows you to select the minimum carrier to be shown in the graph.

•Max. Carrier: Allows you to select the maximum carrier to be shown in the graph.

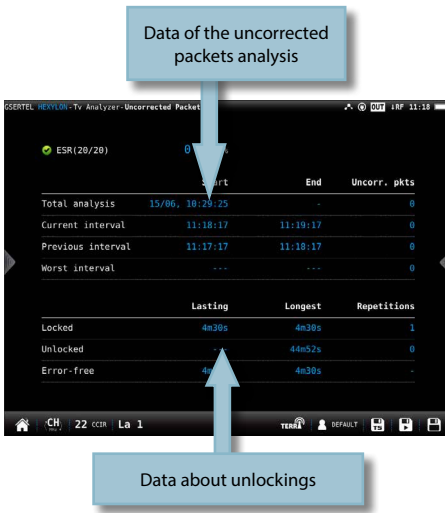
•Reset Positions: Sets the minimum and maximum carriers shown in the graph to the maximum and minimum carriers of the channel.

## 7.4.9.- Uncorrected packets (RF Input)

This feature makes an uncorrected packet analysis

during a timer interval selected by the user.

#### 7.4.9.1.- Main window



•ESR (Errored Second Ratio): Number of erroneous seconds within an observation window of the past 20 seconds).

•Total analysis: Start and end time of the analysis, and number of uncorrected packets in all the intervals analysed.

•Current interval: Start and end time of the current interval, and number of uncorrected packets.

•Previous interval: Start and end time of the previous interval and number of uncorrected packets.

•Worst interval: Start and end time of the interval with more uncorrected packets, and number of uncorrected packets in the worst interval of analysis since it was started.

•Locked: Time gone by since the demodulator locked to the digital signal the last time, longest time the digital signal was locked, and number of lockings.

•Unlocked: Time gone by since the demodulator unlocked to the digital signal the last time, longest time the digital signal was unlocked, and number of unlockings.

•Error-free: Time gone by since last uncorrected packet, and longest time gone by since last uncorrected packet.

#### 7.4.9.2.- Options context menu:



•Restart: restart the uncorrected packets analysis

•Interval: Change the analysis interval time. The interval is configurable between 1 minute and 1 hour.

•Restart Att: restarts the control attenuation.

•Powering:

- VDC: Selects the preamplifier powering.
- DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the

antenna will be stored.

Goto: recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

## 7.4.10.- Advanced info (RF and IP Inputs)

This feature shows exhaustive information about the modulation parameters.

If the IP input is selected and the STLTP mode is enabled (see section *Top Menu->Inputs/Outputs*), this function will show the modulation parameters of the encapsulated ATSC3.0 signal.

### 7.4.10.1.- Main window



### 7.4.10.2.- Options context menu



- VDC: Selects the preamplifier powering.
- DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

Goto: recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and



will set the slot with the meter parameters: frequency, band (powering), and DiSeqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

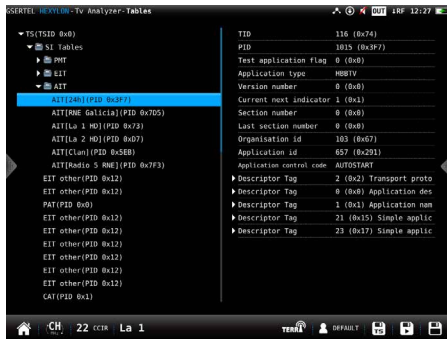
### 7.4.11.- Tables

This feature shows the channel information in tree view format.

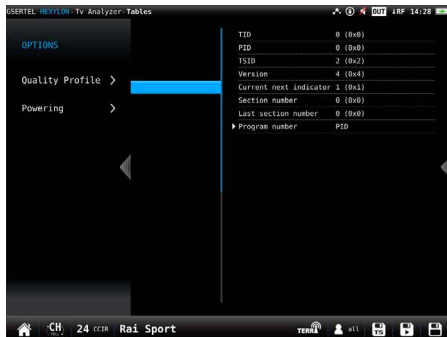
Each service corresponds to a node of the tree, where the service ID and the name is displayed besides.

By expanding a node, they are shown all the packets of the service with the ID of each one and the information about the packet type. And when you select one of these packets, all the information about it will be shown on the right side of the screen.

#### 7.4.11.1.- Main window



#### 7.4.11.2.- Options context menu



#### •Powering:

- VDC: Selects the preamplifier powering.
- DiSeqC (only satellite band): selects the DiSeqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSeqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

**Halt:** This command stops the motor movement.

**East:** Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

**West:** Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

**Store:** 8 storage positions are available to store at up to 8 antenna positions . This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

**Goto:** recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSeqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).



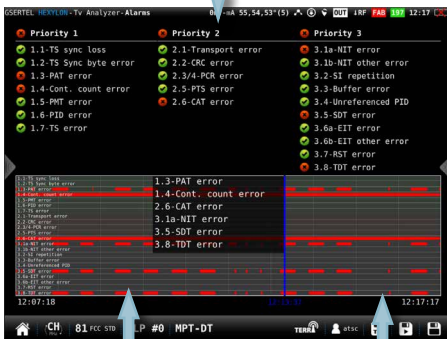
## 7.4.12.- Alarms

This feature shows all the priority 1, 2, and 3 TS alarms generated by the **Hexylon** in a period of time selected by the user.

### 7.4.12.1.- Main window

The current state of the alarms is shown in the upper side of the screen.

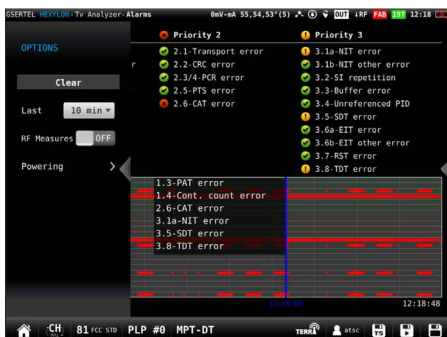
The green check mark indicates that the parameter has no alarm at current time, red color indicates that the parameter has alarm at current time, and yellow color indicates that the parameter has no alarm at current time, but had one alarm in the past



Graph with all the alarms generated in a time frame

Drag the blue line to check the alarms at a given time

### 7.4.12.2.- Options context menu



•Clear: restarts the graph.

•Last: 10 min, ½ hour, 1 hour, ½ day, 1 day, 1 week.

Allows select the time interval shown in the graph

•RF Measures: Enables/disables the RF measurement visualization in the graph. Note: when the RF measurements are enabled, the TS alarms are not visible in the graph.

•Powering:

- VDC: Selects the preamplifier powering.
- DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
- Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

Goto: recovers one of the 8 positions for the antenna that has been previously stored

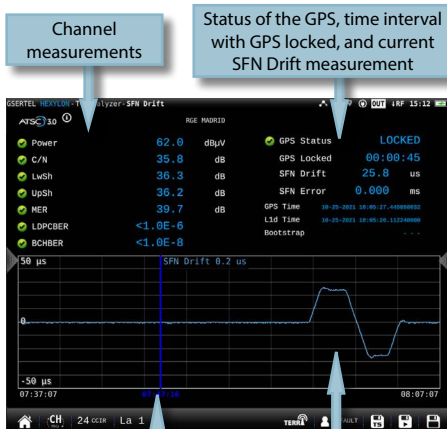
- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSEqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

#### 7.4.13.- SFN Drift ( RF Input - only for ATSC3.0)

This feature measures the temporal deviation in the superframe transmission at the transmitter output.

The HEXYLON enables the GPS automatically when the user access this function, and disables it when the user leaves the function.

##### 7.4.13.1.- Main window



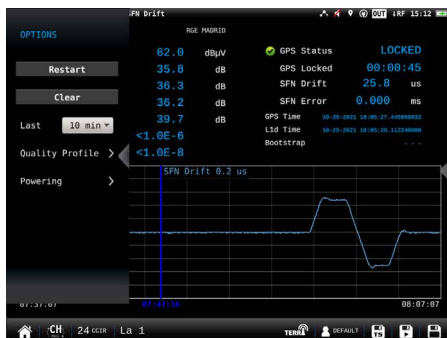
Channel measurements

Status of the GPS, time interval with GPS locked, and current SFN Drift measurement

Drag the blue line to check the alarms at a given time

SFN Drift graph in a time frame

##### 7.4.13.2.- Options context menu



•Clear: clears the graph.

•Last: 10 min, ½ hour, 1hour, ½ day, 1 day, 1 week.

Allows select the time interval shown in the graph.

•Restart Att: restarts the attenuation control.

•Quality Profile: allows to select the quality profile

•Powering:

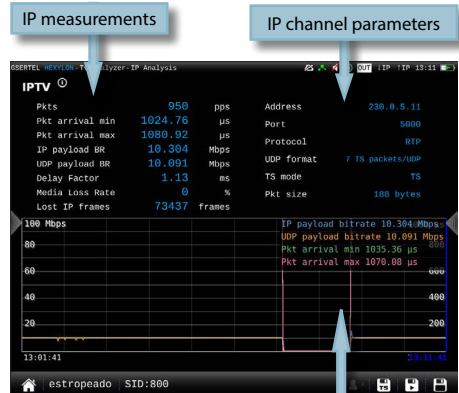
-VDC: Selects the preamplifier powering.

#### 7.4.14.-IP Analysis (Ethernet Input)

This function makes a deep analysis of the IP signal, and shows the parameters of the signal and all the corresponding measures, as well as a chart that represents a history of the measurements in a period of time selected by the user.

Two of the displayed measures are the Delay Factor (DF) and the Media Loss Rate (MLR), that are the components of the Media Delivery Components (MDI), a technique used to evaluate the quality of IP media streams.

##### 7.4.14.1.- Main window

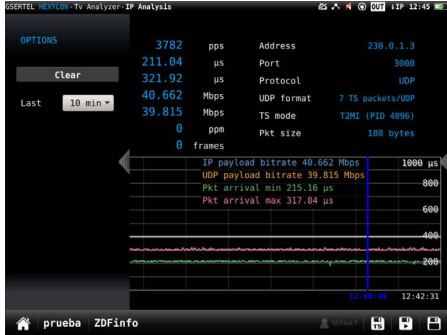


IP measurements

IP channel parameters

History of the measurements during an interval selected by the user. Drag to move the blue mark

## 7.4.14.2.- Options context menu



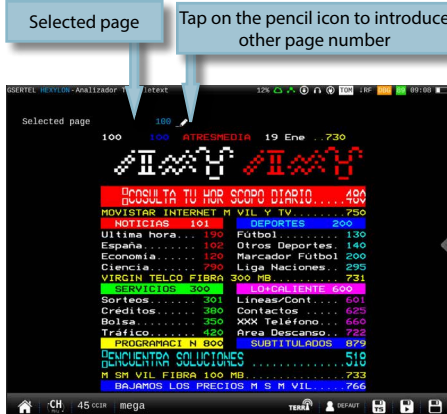
- Clear: clears the graph.
- Last: 10 min, ½ hour, 1hour, ½ day, 1 day, 1 week. Allows select the time interval shown in the graph.

## 7.4.15.-Teletext

This function shows the teletext of the selected service, whenever it has that feature, otherwise it is shown "NO TTX".

Please, note that the page number must be between 100 and 899.

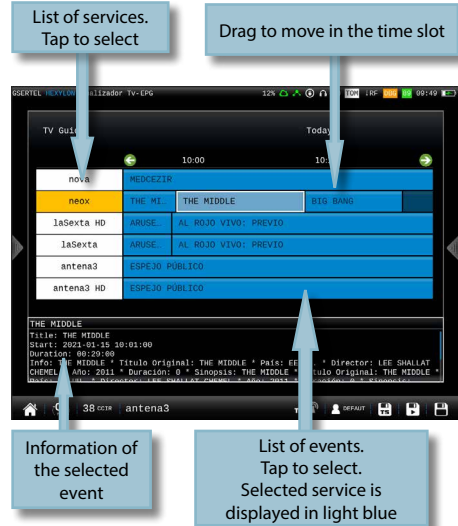
### 7.4.15.1.- Main window



the channel has that feature.

The information of the EPG may take some seconds to be displayed.

### 7.4.16.1.- Main window



## 7.4.14.2.- Options context menu



- Show Information: ON/OFF. Shows/Hides the selected event information

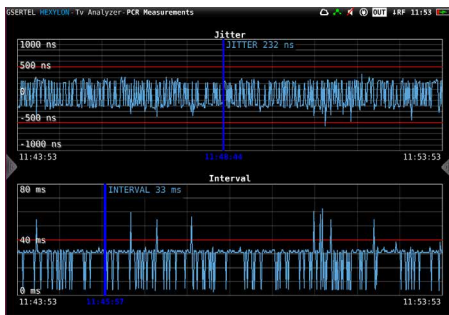
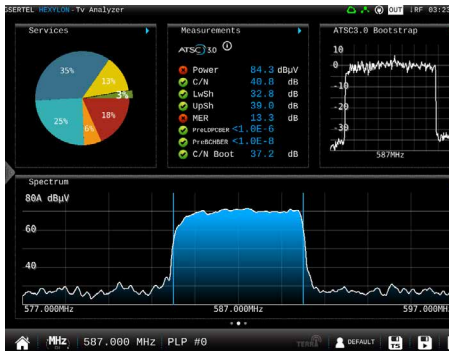
## 7.4.16.-EPG

This function shows the Electronic Program Guide of the selected service in the current day, whenever

## 7.5. PCR Measures

It is enable with option ref. 901628 (TS Analysis and Recording).

This feature shows the two current values of the PCR jitter and the PCR interval of a selected MPEG Video when the widget is minimized, or two graphs that represent the PCR jitter and the PCR interval in a period of time when the widget is maximized.



The PCR (Program Clock Reference) is a timestamp included in some particular packets of the MPEG Transport Stream that is used for the video decoder to be able to reconstruct the clock with which it was generated the video stream and thus have the right temporal references.

The PCR jitter is a measure of the frequency stability of PCR timestamps. A high jitter may cause the decoder is unable to reconstruct the clock correctly and so, the video may not decoded properly.

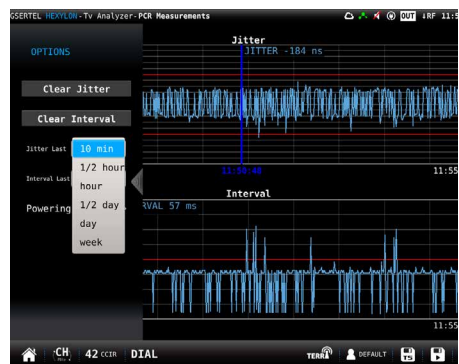
The standard indicates that jitter must be less than + - 500 ns. The upper graph of the picture below represents the time evolution of the jitter corresponding to the video selected on the bottom

panel, as well as two red lines, which correspond to the upper and lower thresholds above and below which the PCR jitter alarm is triggered.

The PCR interval is a measure of the range of arrival of the packets carrying the PCR time references. The standard indicates that interval must be <40 ms. If it is higher, it is possible that the video decoder is unable to reconstruct the video generation clock correctly. The lower graph of the picture below represents the time evolution of the abovementioned intervals corresponding to the video selected on the bottom panel, as well as one red line, which corresponds to the upper thresholds above which the PCR interval alarm is triggered.



The user can select the time interval to be displayed, as well as clear the graphs.



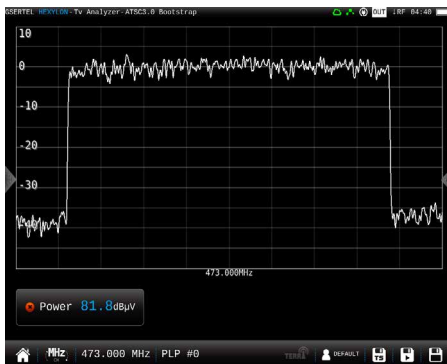
## 7.6. ATSC3.0 Bootstrap

It is enable with option ref. 901638 - Adv. ATSC 3.0 (SFN Drift + TxID)

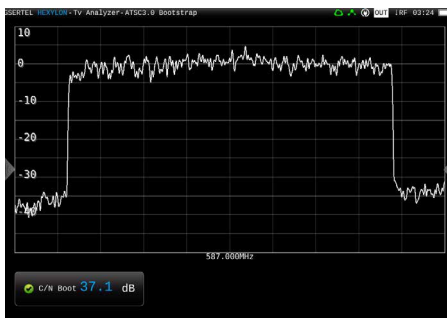
This feature shows the spectral representation of the Bootstrap signal of an ATSC 3.0 channel and it's C/N.

The ATSC 3.0 Bootstrap is a signal present before each ATSC 3.0 frame. This signal has a fixed physical configuration and carries data identifying the version of the frame following it.

When the widget is minimized, shows the ATSC 3.0 Bootstrap spectrum and the C/N value it is show in the "Measurements" widget (C/N Boot).



If the widget is maximized, shows a full screen representation of the ATSC 3.0 Bootstrap spectrum and the user can switch between the C/N value and the Power value tapping de button below.



## 8. Spectrum Analyser

This feature has two screens: spectrum analyser and waterfall. Long swipe to switch between them.

### 8.1.- Spectrum analyser

This feature shows the spectrum of the input signal.

#### 8.1.1.- Main window



If you tap to enable the marks:



## 8.1.2.- Options context menu



- Restart Att: restarts the control attenuation.
- Frequency Calibration: If the user needs more accuracy, this feature improves it by considering all the conditions of the Hexylon in the current moment.
- Span: 100KHz, 1MHz, 5MHz, 10 MHz, 20 MHz, 50 MHz, 100 MHz, 200 MHz, 500 MHz, 1.0GHz, 2.0GHz, 3.3GHz, Other.

- Start Frequency: Allows the user to set the initial frequency of the spectrum graph.
- Stop Frequency: Allows the user to set the final frequency of the spectrum graph.
- Reference level: Auto, 50dBuV – 130dBuV
- dB/div: Auto, 5dBuV, 10dBuV
- RBW: 500 HzW – 5MHzW
- VBW: 100Hz – 1MHz
- Average: Allows to average the number of spectrum traces selected by the user. Please note that the spectrum refresh may be slowed down.
  - Reset average: resets the average.
  - Number of averages: allows the user to select the number of traces to average.
- Standard: Selects the standard of the signal.
- BW: Selects the bandwidth.
- Advanced: Access to spectrum advanced features:
  - Hold: enables/disables max. hold y min. hold features. Tapping on Clear button to restart hold trace.
  - Trigger: enables/disables the trigger by level feature. To select the level, tap on the label and a popup keyboard appears.
  - Fill: enables/disables the spectrum graph filled.
- Quality profile: allows to select the quality profile
- Powering:
  - VDC: Selects the preamplifier powering.
  - DiSEqC (only satellite band): selects the DiSEqC parameter (Sat A, Sat B, Sat C, Sat D)
  - Positioner (only satellite band): makes it possible to control the DiSEqC motors used to move mobile parabolic antennas. This function is available in satellite mode and when the equipment is powering the LNB.

Halt: This command stops the motor movement.

East: Allows to move the motor in the EAST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down, successive movement sequences will be executed until the key is released.

West: Motor movement in the WEST direction. Each click corresponds to one step in the movement of the motor (pitch motors). By holding the key down,

successive movement sequences will be executed until the key is released.

Store: 8 storage positions are available to store at up to 8 antenna positions. This command allows one of 8 positions to be chosen where the current position of the antenna will be stored.

Goto: recovers one of the 8 positions for the antenna that has been previously stored

- SCR (only satellite band): Selects the SCR parameters (multiswitch, standard and slots) When a slot is enabled (for example slot 3, freq. 1210MHz), the meter will tune into the slot frequency (1210MHz) and will set the slot with the meter parameters: frequency, band (powering), and DiSeqC. In addition, a SCR icon will be shown in the bar at the top (SCR3) to indicate that the slot is enabled. While the slot is enabled, all the setting changes of the meter, will be applied to the currently slot (SCR3).

#### • Aim Antenna: ON/OFF

Emits a modular audible signal with frequency directly proportional to signal level in the spectrum trace relative to reference level. It is recommended to set the reference level manually, as well as to select the span to include a frequency range wide enough. The audible signal becomes continuous when the signal level is close to the reference level. Then it is necessary to increase the reference level to get a more accurate adjustment. This is a useful feature to point antennas without having to look at the display.

- OOB Emissions (only for DVB-T and DAB): It is a mask predefined by the ETSI EN 302 296 standard (for DVB-T) or ETSI EN 302 077 standard (for DAB) to check if the channel complies with it or not.

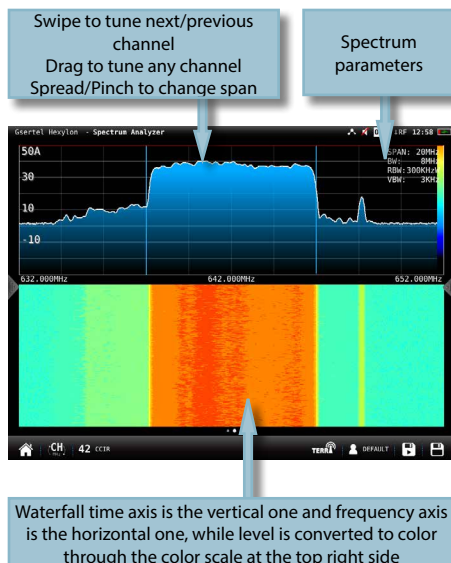
#### • Relative Marks: ON/OFF

If ON is selected, the marks will be relative to their position in the grid, not to their frequency

## 8.2.- Waterfall

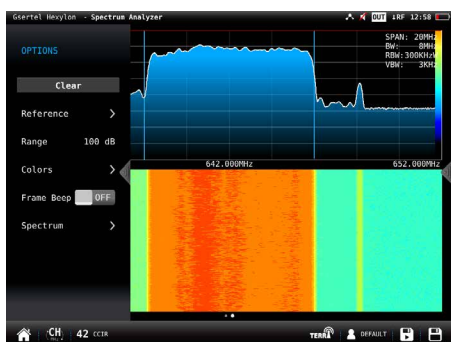
The waterfall diagram is a three-dimensional representation of the signal spectrum. Signal levels are converted to colors and displayed along a time axis.

### 8.2.1.- Main window



Every spectrum trace at the top half generates a new waterfall line at the bottom half.

### 8.2.2.- Options context menu:



- Clear: It clears the waterfall display.
- Reference: it changes the level of the highest color



in the color scale. Signal levels above this reference will be displayed in this color.

- Range: it changes difference in dB between the highest and the lowest color of the color scale on the waterfall display.

- Colors: it changes the color palette. Different color combinations can be selected for the waterfall representation (Jet, Hot and BlueHot).

- Frame beep: when this option is ON, a beep sounds each time the waterfall screen fully refreshes, so there is no need to look at the screen continuously. Looking at the screen just when the beep sounds guarantees not missing any waterfall information.

- Spectrum: accesses to the spectrum options context menu (see section 8.1.- *Spectrum analyser*).



## 9. Radio Analyser

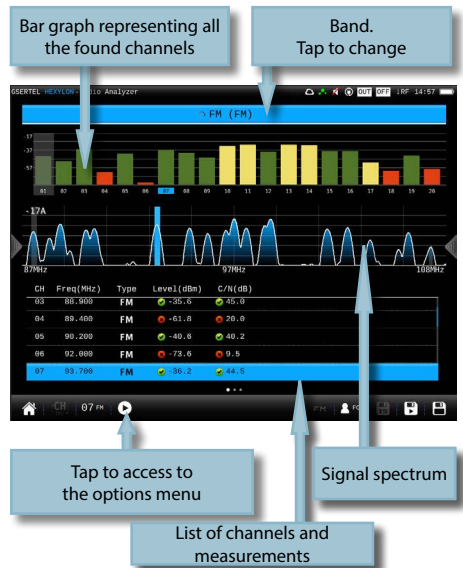
This feature is similar to TV Analysis in the radio band. So it has two screens: scan and mosaic 3+1. Long swipe to switch between them.

### 9.1.- Scan Radio

This feature scans the FM band.

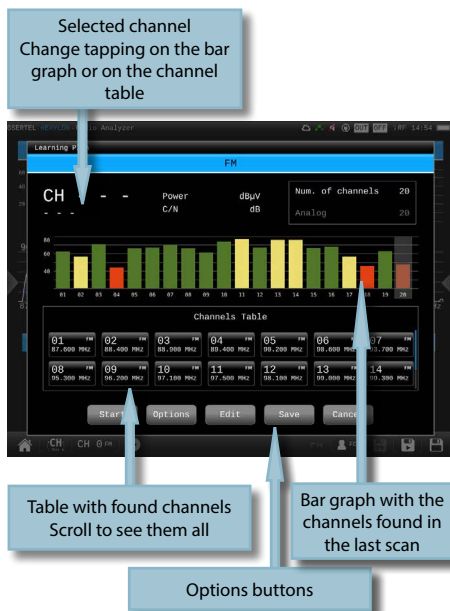
The scan measurement leverages the location based thresholds to clearly show whether or not signal levels comply with the cable system specifications with their green, yellow and red bar.

#### 9.3.1.- Main Window





Tapping on icon  a popup window will appear:



## 9.3.2.- Options context menu



•Wide outlet: ON/OFF. Enable this option when the outlet in your installation has both terrestrial and satellite bands. So, both bands will be scanned consecutively. If this options is disabled, only the selected band will be scanned.

Note: Note that if the selected user profile does not allow to make measurements in some bands, the scan will not be done in that band.

•Show all: ON/OFF. When show all is ON, all the measurements of all the channels are shown. When it is OFF, you can only see the measurements of the channel that is being measured in that moment.

•Span full: ON/OFF. When Span full is ON you can see all the bars corresponding to all the found channels. When this option is OFF, only 24 bars are shown, so it is necessary to scroll to see them all.

•Tilt: ON/OFF. When the tilt option is ON, this function measures the tilt between the channels indicated in the labels CH A and CH B. Then you can see a white line between these two channels and the tilt measurement on it.

•Attenuation: ON/OFF. When the attenuation option is ON, the Hexylon measures the attenuation of the installation relative to a reference point, usually the head-end output. So, the first thing you must do is connect the meter to the reference point and tap on the Calibrate button. In this way, the equipment will measure and save the level of all the channels.

Then you must go to all the points of the installation where we want to measure and connect the meter, taking care to have this function ON. The Hexylon will measure the levels of all the channels comparing them with the reference ones.

When this option is ON, the bars of the graphic

•Start: Starts a new system scan

•Options:

- Wide outlet: ON/OFF. Enable this option when the outlet in your installation has both terrestrial and satellite bands. So, both bands will be scanned consecutively. If this options is disabled, only the selected band will be scanned.

Note: Note that if the selected user profile does not allow to make measurements in some bands, the scan will not be done in that band.

•Edit: Allows to add/delete channels from the plan. If the channel is selected (blue colored), when you tap on it, it will be deselected. Otherwise, if the channel is deselected (grey colored), when you tap on it, it will be selected.

•Save: Saves a new plan with the found channels.

•Cancel: Closes the options window

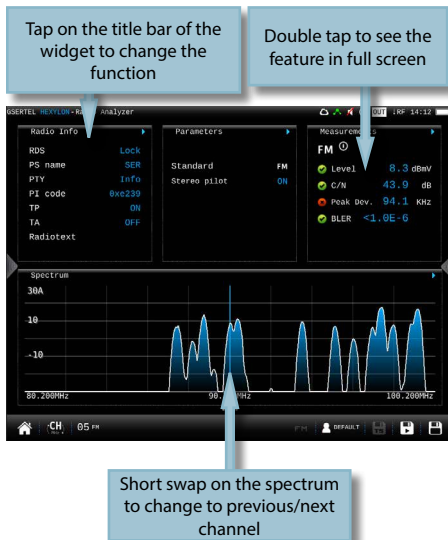
don't represent the level or the power of the channels, but the attenuation of each one of them. The list shows power (or level) and C/N. In addition, a green trace is shown in the spectrum. This trace indicates the levels in the reference point.

- Quality profile: allows to select the quality profile.
- Powering:
  - VDC: Selects the preamplifier powering.

## 9.2.- Mosaic 3+1

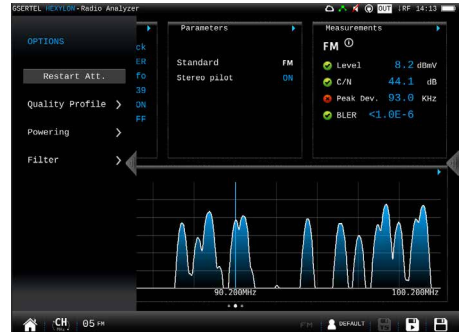
This screen has 4 widgets, 3 in the top of the screen and one in the lower part of the screen. These widgets are user-configurable, that is, the user can select the the function he or she wants to visualize in each widget.

### 9.2.1.- Main Window



The available features are explained in section 9.3.- *Radio features*

## 9.2.2.- Options context menu



- Restart Att: restarts the control attenuation.
- Quality profile: allows to select the quality profile.
- Powering:
  - VDC: Selects the preamplifier powering.
- Filter (only for FM): Allows to select the filter to demodulate the FM signal

## 9.3.- Mosaic 6

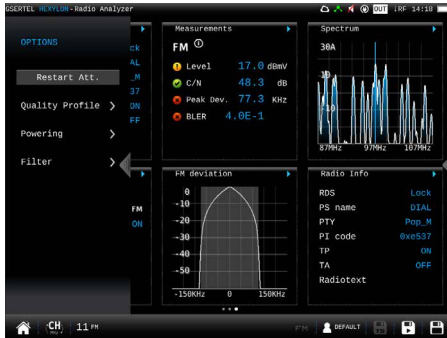
This screen has 6 widgets. These widgets are user-configurable, that is, the user can select the the function he or she wants to visualize in each widget.

### 9.3.1.- Main window



All the available features are explained in section 9.4.- Features.

## 9.3.2.- Options context menu



- Restart Att: restarts the control attenuation.
- Quality profile: allows to select the quality profile
- Powering:
  - VDC: Selects the preamplifier powering.

## 9.4.- Radio features

This section explains all the features available to visualize in the widgets of the Mosaic 3+1 and Mosaic6 modes.

### 9.4.1.- Radio info

This feature shows the information of the tuned channel.

If it is a FM channel, the information shown is: RDS, PS name, PTY, PI, MS, TP, TA, CT, alternative frequencies, and radio text.

For DAB channels, the information displayed is: Ensemble, ECC, Service Info (name, ID, Reference, Country ID, Service ECC), Program Type, Subchannel Info (ID, bitrate, mode, Audio, Protection), Radio Text.

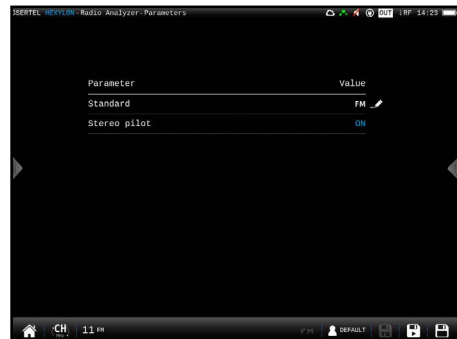
### 9.4.1.1.- Main Window



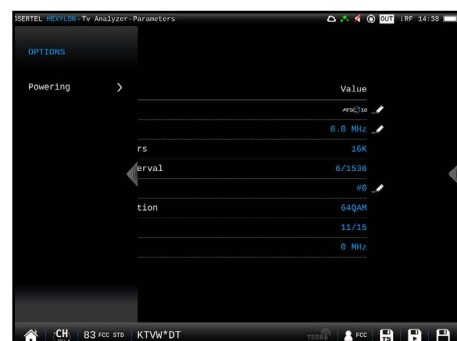
### 9.4.2.- Parameters

This feature shows the parameters of the locked signal.

### 9.4.2.1.- Main Window



### 9.3.2.2.- Options context menu

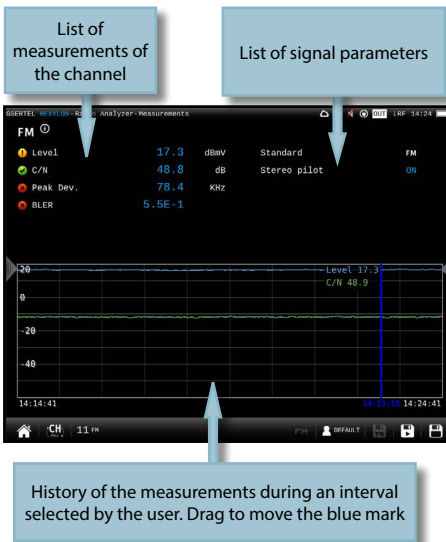


- Powering:
  - VDC: Selects the preamplifier powering.

### 9.4.4.- Measurements

This feature shows the measurements of the selected channel: Level, C/N, Peak deviation, and BLER.

#### 9.4.4.1.- Main window



#### 9.4.4.2.- Options context menu



- Clear: restarts the graph.
- Last: 5 min, ½ hour, ½ day, 1 day, 1 week. Allows select the time interval shown in the graph
- Restart Att: restarts the control attenuation.
- Quality profile: allows to select the quality profile
- Powering:
  - VDC: Selects the preamplifier powering.

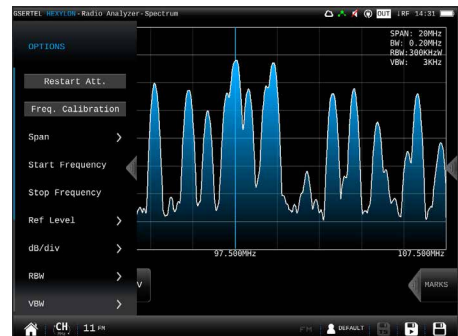
### 9.4.5.- Spectrum

This feature shows a graph representing the services distribution.

#### 9.4.5.1.- Main Window



#### 9.4.5.2.- Options context menu



- Restart Att: restarts the control attenuation.
- Frequency Calibration: If the user needs more accuracy, this feature improves it by considering all the conditions of the Hexylon in the current moment.
- Span: 100KHz, 1MHz, 5MHz, 10 MHz, 20 MHz, 50 MHz, 100 MHz, 200 MHz, 500 MHz, 1.0GHz, 2.0GHz, 3.3GHz, Other.
- Start Frequency: Allows the user to set the initial frequency of the spectrum graph.
- Stop Frequency: Allows the user to set the final frequency of the spectrum graph.
- Reference level: Auto, 50dBuV – 130dBuV
- dB/div: Auto, 5dBuV, 10dBuV
- RBW: 500 HzW – 5MHzW
- VBW: 100Hz – 1MHz
- Average: Allows to average the number of spectrum traces selected by the user. Please note that the spectrum refresh may be slowed down.
  - Reset average: resets the average.
  - Number of averages: allows the user to select the number of traces to average.
- BW: Selects the bandwidth of the channel.
- Advanced: Access to spectrum advanced features:
  - Hold: enables/disables max. hold and min. hold features. Tapping on Clear button to restart hold trace.
  - Trigger: enables/disables the trigger by level feature. To select the level, tap on the label and a popup keyboard appears.
  - Fill: enables/disables the spectrum graph filled.
- Quality profile: allows to select the quality profile
- Powering:
  - VDC: Selects the preamplifier powering.
- Aim Antenna: ON/OFF

Emits a modular audible signal with frequency directly proportional to signal level in the spectrum trace relative to reference level. It is recommended to set the reference level manually, as well as to select the span to include a frequency range wide enough. The audible signal becomes continuous when the signal level is close to the reference level. Then it is necessary to increase the reference level to get a more accurate adjustment. This is a useful feature to point antennas without

having to look at the display.

- OOB Emissions (only for DAB): It is a mask predefined by the ETSI EN 302 077 standard to check if the channel complies with it or not.

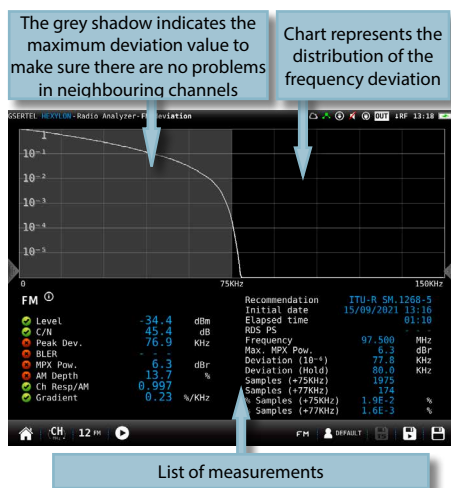
## 9.4.6.- FM Deviation

This feature shows the difference between an FM modulated frequency and the nominal carrier frequency.

The norm ITU-R SM.1268-4 establishes two ways to measure the FM deviation, according to annex II (*Emission mask OFF* in the option context menu) and annex I (*Emission mask ON* in the option context menu).

### 9.4.6.1.- Main Window

If *Emission mask* is *OFF*, you can see the FM deviation according to the annex II of the norm:



List of FM measurements:

- Level
- C/N
- Peak deviation: maximum deviation value
- BLER: block error rate (rate of RDS errored blocks).


More FM measurements (Option 901633)

- MPX Power: modulation power relative

to a sinusoidal tone which causes a peak deviation of 19 kHz.

- AM Depth: variation of the instantaneous RF amplitude with time
- Ch. Response / AM Depth: relation between the center of channel frequency response and AM Depth
- Gradient: maximum slope of the channel frequency response

FM deviation advanced measurements (Option 901633)

In order to get FM deviation advanced measurements, it is necessary to configure an observation time tapping on 

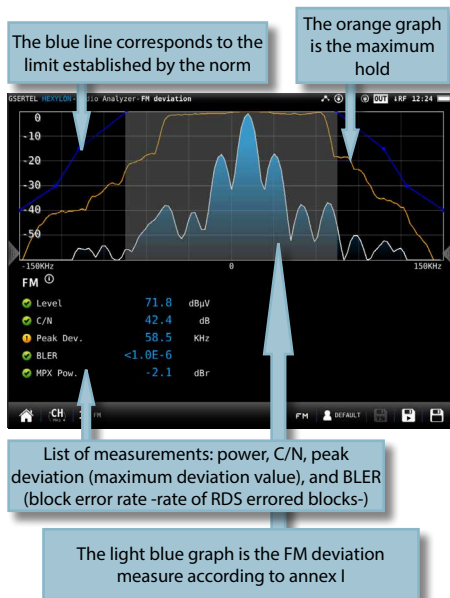
Time recommended by the ITU-R SM.1268-5

norm is 15 minutes, but time could be configured (1 minute to 2 hours).

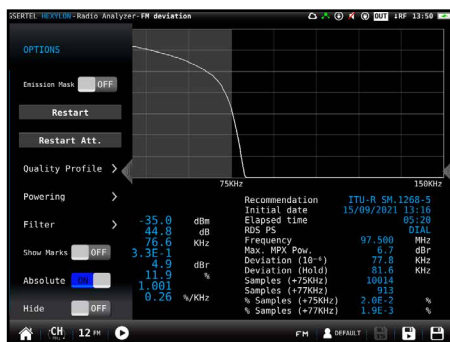
List of FM deviation advanced measurements:

- Max. MPX Pow: maximum value of MPX power
- Deviation (10-6): maximum deviation value discounting the 0.0001% of samples with biggest deviation.
- Deviation (Hold): maximum deviation value
- Samples (+75kHz): number of samples with deviation higher than 75kHz
- Samples (+77kHz): number of samples with deviation higher than 77kHz
- %Samples (+75kHz): percentage of samples with deviation higher than 75kHz
- %Samples (+77kHz): percentage of samples with deviation higher than 77kHz.

If *Emission mask* is ON, you can see the FM deviation according to the annex I of the norm:



#### 9.4.6.2.- Options context menu



- Emission mask ON/OFF: Shows the FM deviation measure according to annex I/annex II of the norm.
- Restart: Starts a new chart
- Restart Att: restarts the control attenuation.
- Quality profile: allows to select the quality profile .
- Powering:

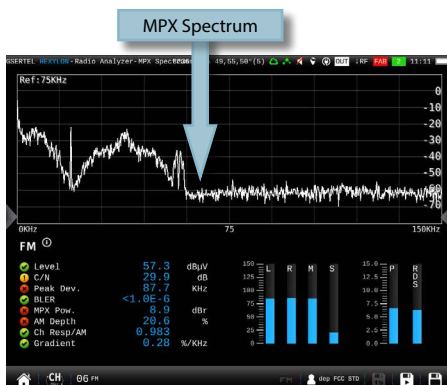
- VDC: Selects the preamplifier powering.
- Filter: allows to select the RF input channel filter.
- Show marks (only if Emission mask if OFF): shows/ hides the marks corresponding to values -15, -30 and -40
- Shows mask (only if Emission mask if ON): shows/ hides the trace corresponding to the limit of the norm
- Shows trace (only if Emission mask is ON): shows/ hides the trace corresponding to the measure
- Absolute: shows deviation absolute values in the graphic (0 -150 kHz)
- Hide: hides no relevant measurements to deviation measurement.

## 9.4.13.- MPX Spectrum (Option 901633)

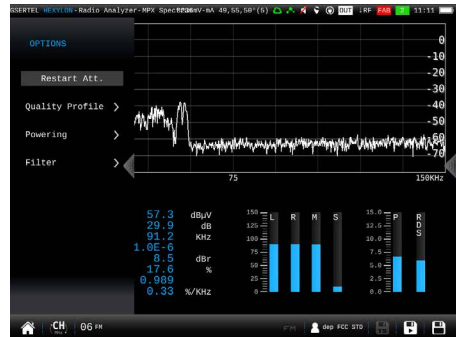
This feature shows the spectrum of the demodulated FM signal, the FM channel measurements, and several deviation measurements:

- L Deviation: FM deviation produced by Left audio
- R Deviation: FM deviation produced by Right audio
- M Deviation: FM deviation produced by mono audio (20 Hz - 15 KHz)
- S Deviation: FM deviation produced by stereo audio (23 - 53 KHz)
- Pilot Deviation: FM deviation produced by pilot (18 - 20 KHz)
- RDS Deviation: FM deviation produced by RDS signal (54 - 60 KHz)

### 9.4.13.1.- Main window



### 9.4.13.2.- Options context menu:



- Restart Att: restarts the control attenuation.
- Quality profile: allows to select the quality profile
- Powering:
  - VDC: Selects the preamplifier powering.
- Filter: Allows to select the filter to demodulate the signal



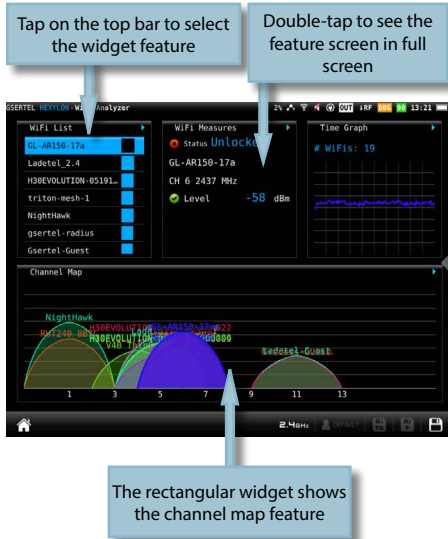
## 10. Wi-Fi Analyzer

The **HEXYLON** is able to perform a full analysis of the Wi-Fi band in both 2,4GHz, and 5GHz bands. To change the band selection, tap on the corresponding icon placed in the bottom bar.

When you access to this feature, the **HEXYLON** activates the Wi-Fi automatically and, if it has been connected to an available Wi-Fi network before, the **HEXYLON** has saved the password, so it will connect to the same network again automatically. The default selected Wi-Fi network is the first in the Wi-Fi list, in addition, this Wi-Fi is highlighted in the channel map of the widget at the bottom of the screen. The selected Wi-Fi does not have to match the Wi-Fi the **HEXYLON** is connected to.

The screen corresponding to this feature is Mosaic 3+1 type. This configuration has 4 widgets, 3 square ones at the top and a rectangular in the bottom. The top widgets are user-configurable.

### 10.1.- Main window



### 10.2.2.1.- Main window



## 9.2.- Features

This section explains all the features available to visualize in Wi-Fi analyser function.

### 10.2.1- Wi-Fi List

This feature shows a list with all the Wi-Fi networks detected by the **HEXYLON**.

In this list, the user can select the Wi-Fi network whose measurements he wants to view by tapping on it.

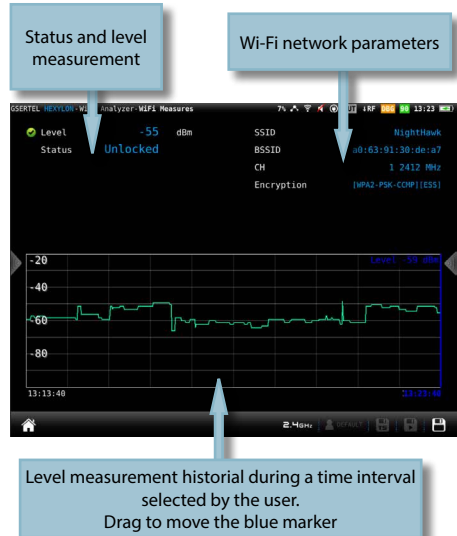
Note: to minimize this widget, the user must tap twice on the line corresponding to the selected Wi-Fi, otherwise another Wi-Fi will be selected.

The list can be ordered by SSID, BSSID, channel name, frequency, encryption type or signal level, the user just has to tap on the header of the corresponding column.

### 10.2.2- Wi-Fi measurements

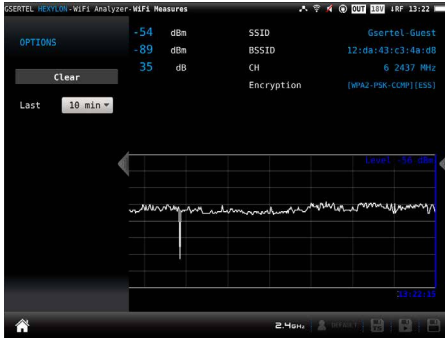
This feature shows all the measurements of the Wi-Fi network with the **HEXYLON** in currently connected to.

#### 10.2.1.1.- Main window





## 10.2.1.2.- Contextual options menu



- Clear: resets the chart.
- Last: 10 min, ½ hour, ½ day, 1 day, 1 week. Allows you to select the time interval shown in the chart.

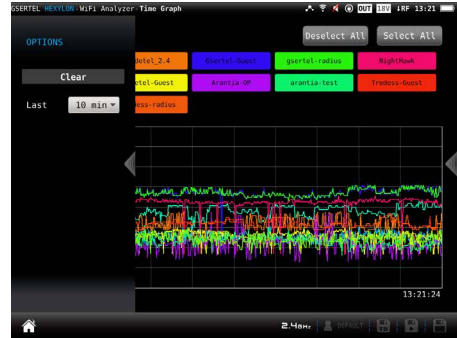
## 10.2.3- Time graph

This feature shows a graph with the level measurement historical of all the Wi-Fi networks detected by the **HEXYLON**.

### 10.2.3.1.- Main window



## 10.2.3.2.- Contextual options menu

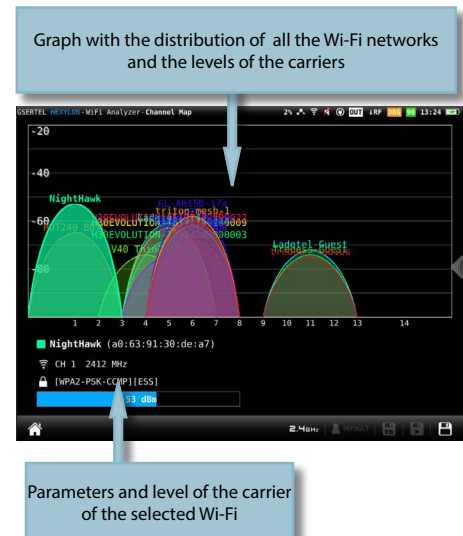


- Clear: resets the graph.
- Last: 10 min, ½ hour, ½ day, 1 day, 1 week. Allows select the time interval shown in the graph.

## 10.2.4- Channel map

This feature shows a graph with the distribution of all the Wi-Fi networks detected by the **HEXYLON**. When this feature is maximized, the user can select a Wi-Fi using the “up” and “down” arrow buttons of the device. The selected Wi-Fi will be shown in the foreground

### 10.2.4.1.- Main window





# 11. Network Tools

In this menu are grouped all the features that allow to check the network.

The screen corresponding to this feature is Mosaic4 type. This configuration has 4 widgets. All the widgets are user-configurable.

## 11.1.- Main window

Tap on the top bar to select the widget feature

Double-tap to see the feature screen in full screen

PORT	STATE	SERVICE
22 /TCP	Open	ssh
80 /TCP	Open	http
111 /TCP	Open	rpcbind
139 /TCP	Open	netbios-ssn

## 11.2.1.1.- Main window

Hexylon network parameters

Orange icon if the ping is stopped  
Green icon if the ping is running  
Red icon if the connection to the server can not be established

IP address of the server. Tap to change. And packets loss measure

ICMP_SEQ	TIME
59	17 ms
60	16 ms
61	17 ms
62	17 ms
63	16 ms
64	17 ms
65	17 ms
66	17 ms
67	16 ms

List of the successive pings

Tap to Start/Stop the ping

## 11.2.- Features

This section explains all the features available to visualize in Network Tools function.

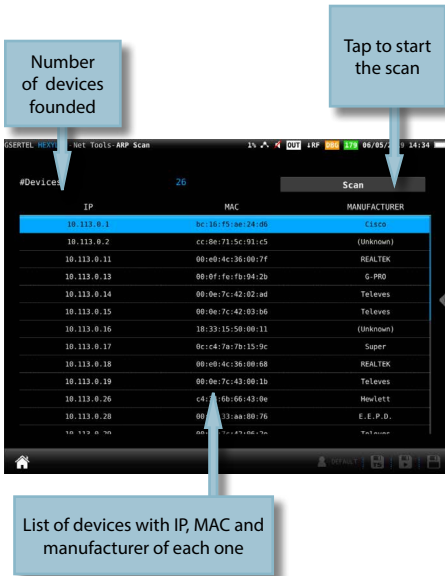
### 11.2.1- Ping

This function attempts to connect to the server selected by the user. If the connection is established, the **HEXYLON** makes a successive pings to the server and shows the delay times.

### 11.2.2- ARP Scan

The ARP (Address Resolution Protocol) Scan feature scans the devices in the network and returns the IP, the MAC and the manufacturer of each one.

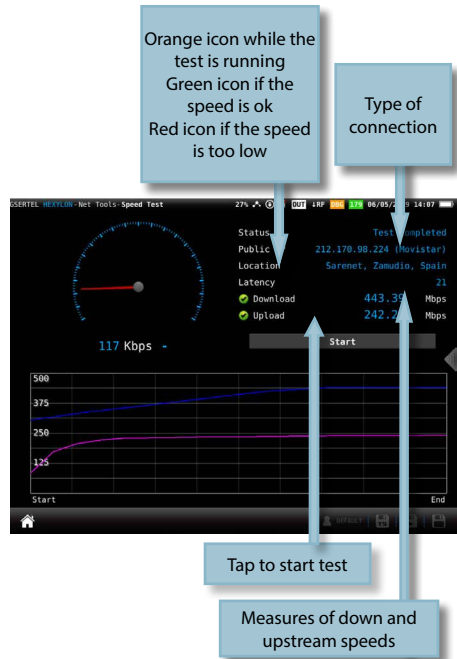
## 11.2.2.1.- Main window



## 11.2.4- Speed Test

This function attempts to connect to the server, checks the DHCP protocol and the connection to the Internet. Then, the HEXYLON makes a download and upload speed test.

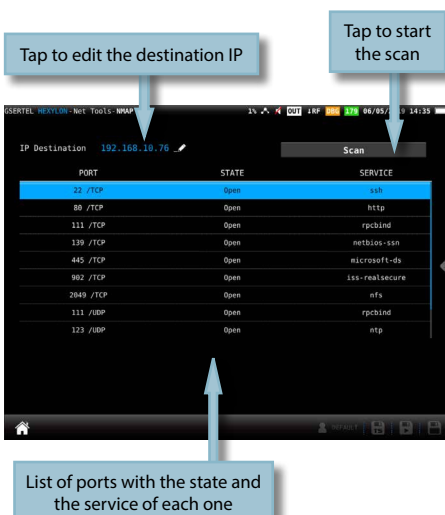
## 11.2.4.1.- Main window



## 11.2.3- NMAP Scan

The NMAP (Network Mapper) Scan feature and gets information of the enabled ports and services of the device with the IP selected by the user.

## 11.2.3.1.- Main window



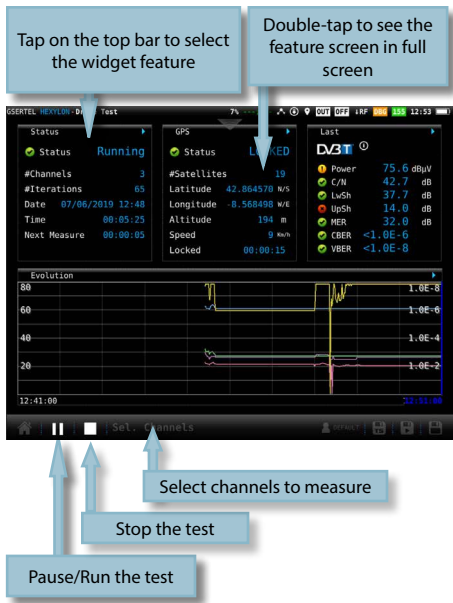


## 12. Drive Test

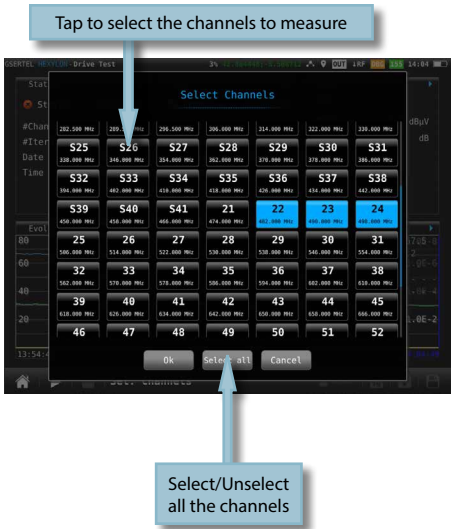
The Drive Test feature activates the GPS automatically. This is a suitable function to detect possible signal coverage problems in a specific area and find out what's causing it.

The screen corresponding to this feature is Mosaic3+1 type. This configuration has 4 widgets. All the widgets are user-configurable.

### 12.1.- Main window



When you tap on "Sel Channels", a pop-up window will show all the channels of the selected channel plan, so you can select those that you want to check in the drive test:



Once you tap on the Run button, you must select the name of the Drive Test File and the interval between two consecutive measurements (you can choose between time or distance interval):



Also it is also possible to select the channel analysis time, this parameter is the time that each channel is analyzed before forward to the next channel, if AUTO is selected, Hexylon will forward to the next channel when it considers that the measurements will be stable.

Note that, if the time necessary to perform the measurements on all the selected channels is greater than the time interval, the time between one iteration and the next one will be the minimum necessary to perform the measurements in all the selected channels.

## 11.2.- Features

This section explains all the features available to visualize in Drive Test function.

### 11.2.1- Status

This function shows the current status of the test.

#### 12.2.1.1.- Main window

Orange icon if the test is paused  
Green icon if the test is running  
Red icon if the test is stopped

Status	
Number of channels	3
Number of iterations	20
Initial date	07/06/2019 12:48
Elapsed time	00:01:42
Next Measure	00:00:03

Number of channels: is the number of channels selected by the user to be measured in each iteration  
Iterations: number of iterations of the test made from the start to now  
Initial date: date when the test began  
Elapsed time: time elapsed from the start date to now

### 12.2.2- GPS

This function shows all the information of the GPS.

#### 11.2.2.1.- Main window

Green icon if the GPS is locked  
Red icon if the GPS is unlocked

GPS	
Status	LOCKED
Number of satellites	20
Latitude	42.864521667 N/S
Longitude	-8.568316667 W/E
Altitude	181 m
Speed	0 Km/h
Locked	00:03:30

Number of satellites is the number of locked satellites  
Latitude, Longitude, Altitude: GPS measures  
Locked: is the time elapsed since the last time the GPS is locked

### 12.2.3.- Last

This function shows the current measurements obtained by the HEXYLON during the drive test.

#### 12.2.3.1.- Main window

List of measurements

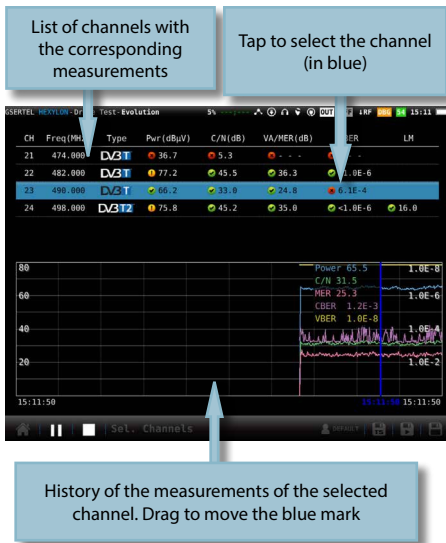
List of signal parameters

CH	Freq(MHz)	Type	Pwr(dBm)	C/N(dB)	VA/MER(dB)	BER	LM
22	482.000	DVB-T	74.5	41.6	35.0	<1.0E-6	
23	498.000	DVB-T	66.5	32.2	25.2	4.8E-4	
24	498.000	DVB-T2	77.3	44.2	34.3	<1.0E-6	15.3

### 12.2.4- Evolution

This function shows the time evolution of the selected channel measurements obtained by the HEXYLON during the drive test, as well as the current measurements in all the channels. The window is similar to the one of the section 6.4.3.- Measurements

#### 12.2.4.1.- Main window




### 12.2.5- Parameters

This feature shows the parameters of the locked signal.




## 13. LOGS

The Hexylon saves two types of measurements files: LOGs and MacroLOGs.

A **LOG** saves all the measurements in the screen, as well as a screenshot. To save a LOG, tap on the icon  in the bottom bar.

A **MacroLOG** is a scheduled measurement that the meter repeats automatically in a time interval selected by the user.

To schedule a MacroLOG tap on icon  in the bottom bar.

Then a popup window will be open, where you can select the time interval. Then tap on the Start button:

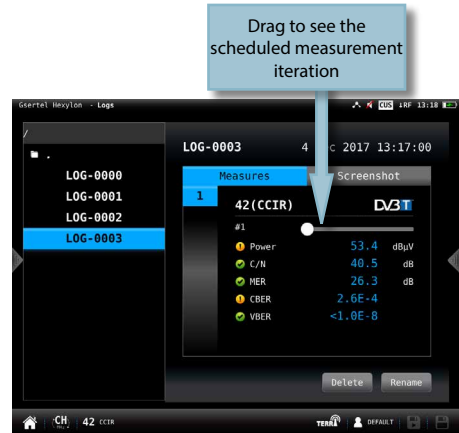


The meter makes and saves the measurements in each specified time interval until the user taps on Stop button.



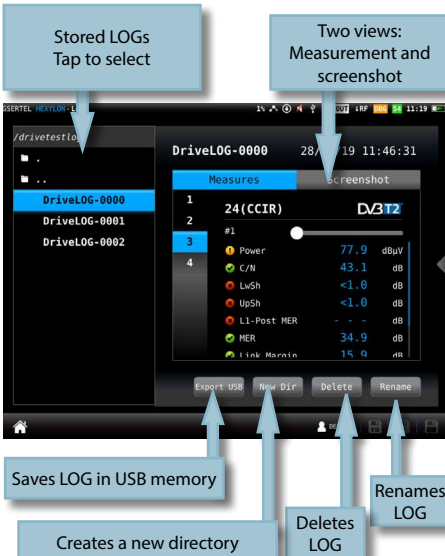
•Screenshot: shows a screenshot of the meter exactly as it is at the measurement time.

If you select a MacroLOG, you can also select the measurement iteration:



The LOGs feature allow us see all the LOGs and MacroLOGs stored in the meter.

## 13.1.- Main window



For each LOG, there are two views:

•Measurement: shows a list with all the measurements

## 14. Web browser

Hexylon integrates a web browser that provides access to web pages



# Web application

To access your Hexylon web application, you must type the IP of your meter in the address bar of your web browser (Chrome recommended).

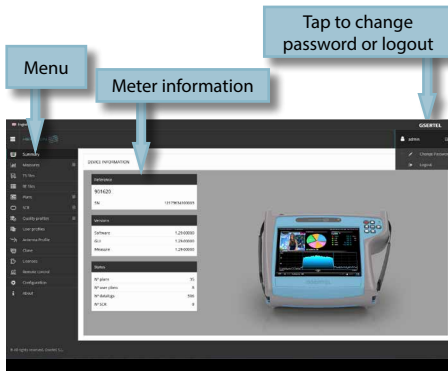
To know the IP of your meter, you must access to the top menu and select Network feature (see section *Settings* in *Top menu*).

The first time that you access to the web application you must use the following user and password:

User: admin

Password: admin

Then the web application will open, showing the Resume window:

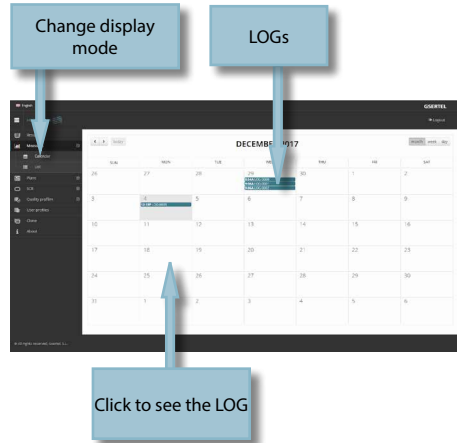


## 1.- Measurements

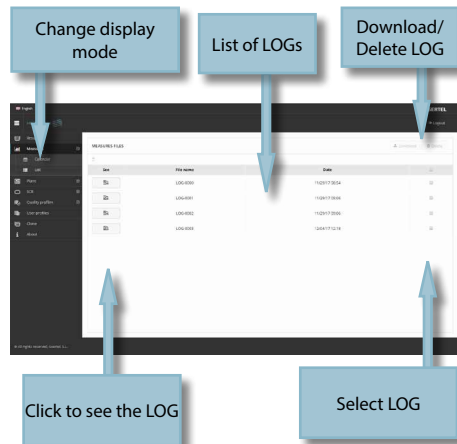
This feature shows all the LOGs and MacroLOGs stored in the meter.

There are two display modes:

•Calendar: the measurements are shown grouped by date in a calendar:



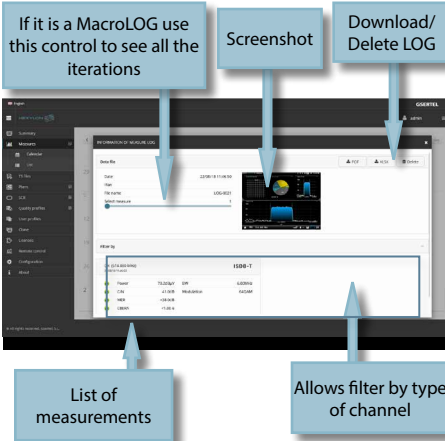
•List:



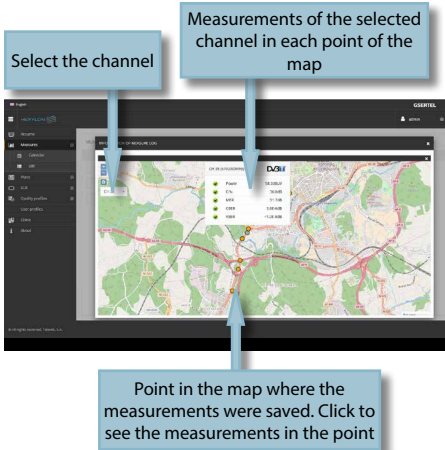
Once the LOG is selected, we see a window with all the information.

Using the buttons placed at the top right of the screen, you can remove the selected LOGs or download them to your computer in .xls format (it will be generated a .xls file for each LOG and they all will be downloaded together in a .zip file).





If the MacroLOG has, GPS information, you can see all the measurements iterations placed in a map in the position where they was made, so you have a detailed mapping and coverage analysis.

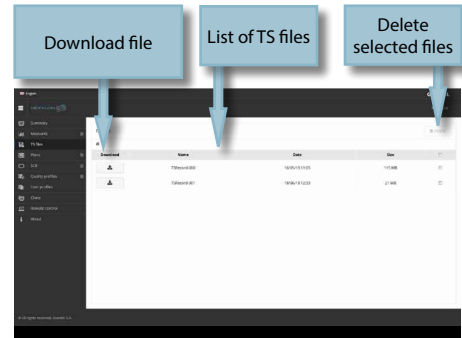


Note: please wait until the images or maps are displayed in your device screen before you download the file. This may take a few seconds.

## 2.- TS Files

This feature allows to download the transport stream files saved in the Hexylon.

You can delete the selected TS file using the Delete button placed at the top right side of the screen.

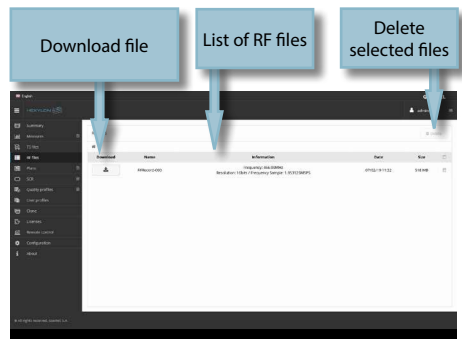


## 3.- RF Files

This feature allows to download the RF files saved in the Hexylon.

The RF files have .iq extension, and may be opened using a RF signal generator that admits that type of file.

You can delete the selected RF file using the Delete button placed at the top right side of the screen.



## 4.- Plans

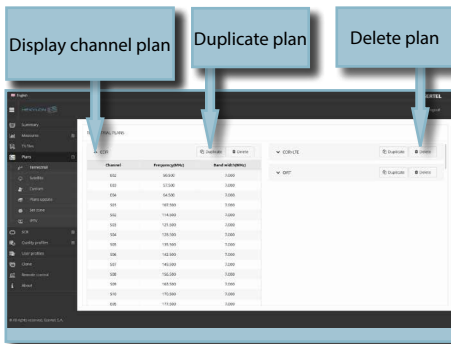
In this window, you can see all the channel plans of your Hexylon.

They are grouped in several categories: Terrestrial, Satellite, Custom, and IPTV.

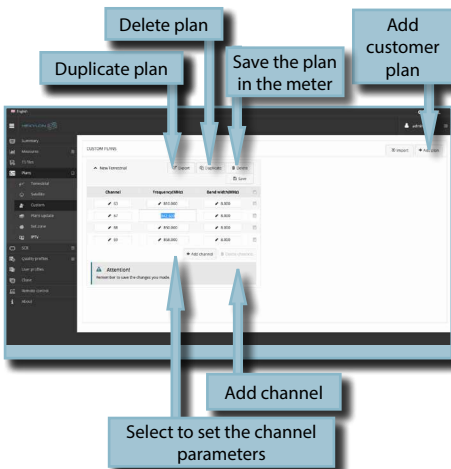
The Terrestrial, Satellite and DAB channel plan are the standard channel plans of the corresponding band.

These plans can be removed from the meter, but they can not be edited. However, you can make a copy of one of them to build a new customer channel plan from it.

The duplicated plans will appear in the Customer list automatically.

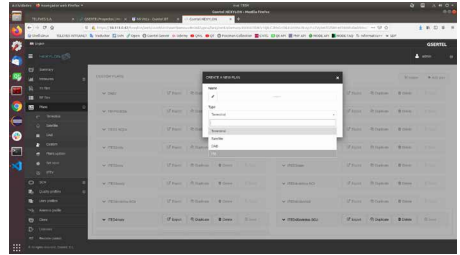


Custom channel plans can be edited:



Hexylon has no factory IPTV channel plan, neither FM plan. The user must create his own IPTV or FM channel plans.

To create a new channel plan, click on the Add button. As you can see in the image below, you must select the type of channel plan: terrestrial, satellite, FM, DAB or IPTV:



You create an IPTV plan, you can do it adding IPTV channel one by one, or importing it from a .m3u file.

A .m3u file is a plain text file that specifies the locations of one or more media files. Each media file must have the following structure:

```
#EXTINF:-1, Das Erste HD
rtp://@239.228.245.1:10000
rtp://@239.228.245.58:10000
```

Each media file must begin with the "#EXTINF:" label.

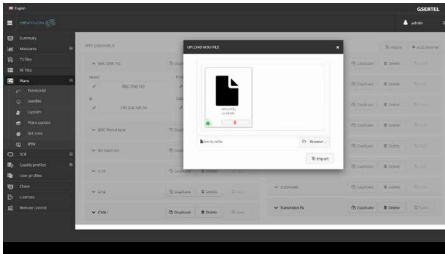
"-1" indicates that it is a streaming file.

"," indicated that the next field is the channel name (in this case Das Erste HD) . If there is no name for a channel, a default name will be assigned.

At last it must appear the protocol and the address of the source. HEXYLON only admits udp and rtp protocols.

If a channel does not meet some of these specifications, it will not be included in the plan.

When the user select to import an IPTV channel plan from a .m3u file, the web app will ask you to select the file:

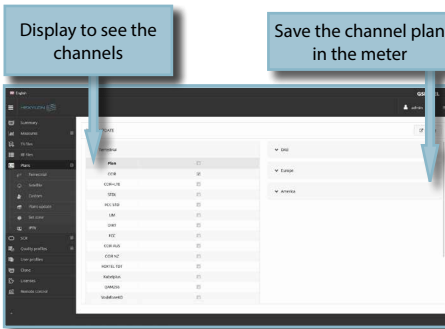


The user can select the channel plans using the feature Repository. In this window you can see all the channel plan grouped by zones.



EN

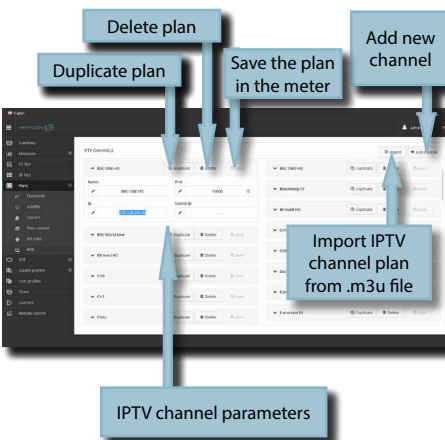
In this section, the user can also update the channel plans to the latest version saved in our server.



You can also upload to your meter the channel plans of a geographical zone automatically. To do that use the feature Set zone. In this window you can see a map of the world, and you can select the area where you will use the meter by clicking on it. With this and considering the language selected in your meter, the Hexylon will select automatically the channel plans both in terrestrial and satellite bands.



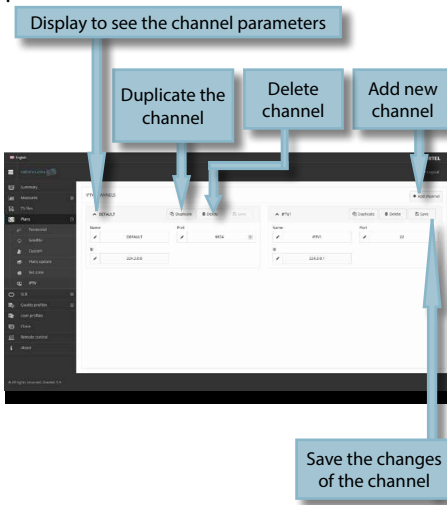
The application also allows to configure the channel plans according to the geographic area you will use the meter.



It is also possible to create an IPTV channel list using the feature IPTV.

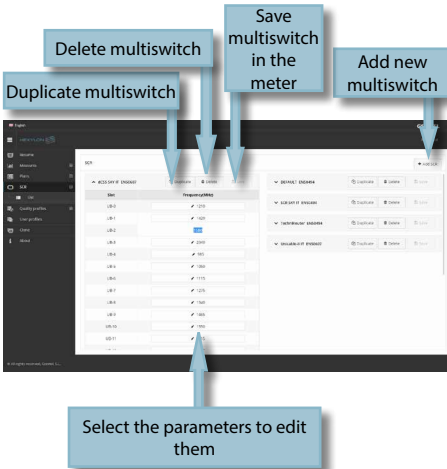
The meter has an IPTV channel named DEFAULT, but it can be edited or deleted.

For each channel, the user must indicate the IP address and the port



## 5. SCR

In this window, you can setup the multiswitches. The Hexylon includes a list of multiswitches by default, but you can add more or edit any of the existing ones.

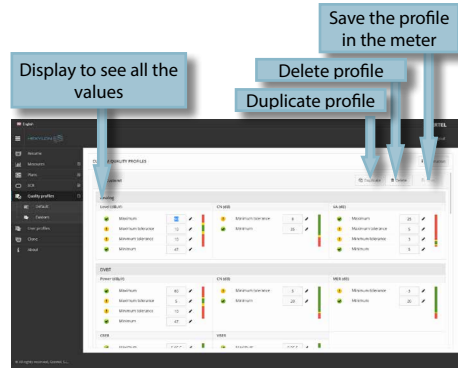


## 6. Quality profiles

Using the web application you can add new quality profiles. The Hexylon has two pre-defined quality profiles (head-end and outlet) that can not be edited, but they can be duplicated. The duplicated quality profiles are saved in the custom quality profiles, and the custom quality profiles can be edited.



Custom quality profiles can be edited:

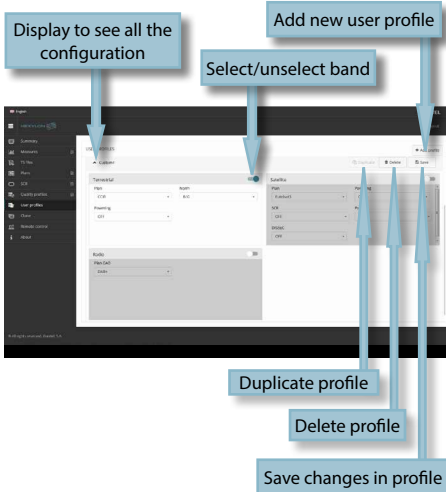


## 7. User profiles

Using the web application you can add new user profiles. The Hexylon has one pre-defined user profile (named Default) that is configured automatically according to the geographical area

selected by the user.

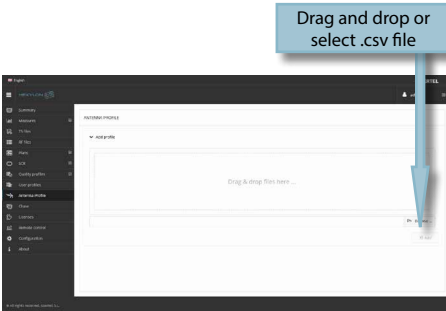
For each user profile, the user must select the band (or bands) that he or she wants to use in that profile, as well as the channel plan for each band other appropriate parameters, depending on the band.



## 8. Antenna profile

Using the web application you can add new antenna profile to your Hexylon, to be used in field strength measurement. See section *Inputs/Outputs* in *Top Menu* chapter.

The antenna profile will be load from a .csv file with three columns separated by comma (,): frequency (in MHz), K factor (in dB) when the antenna is being powered, K factor (in dB) when the antenna is not being powered.

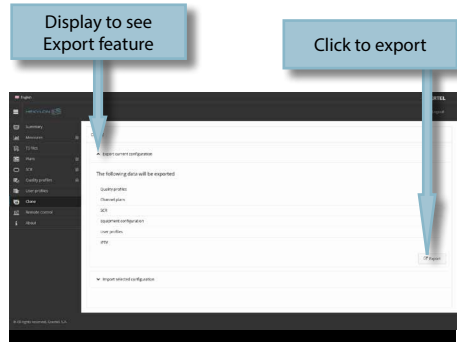


## 9. Clone

Using this feature it is very easy to have the same configuration in all your Hexylon meters.

You only have to export the configuration of the Hexylon that you want to copy, using the Export feature. So, the configuration will be saved in a file on your computer.

Then, connect other Hexylon where you want to copy the configuration to and select the Import feature.



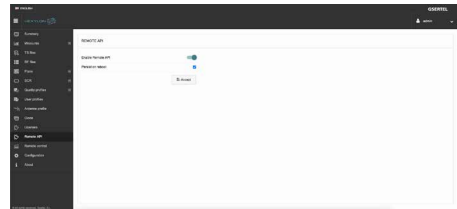
## 10. Licenses

This function shows the licenses of the Hexylon.

## 11. Remote API

This feature enables the Hexylon to be controlled through the remote API.

Check *Persist on reboot* to make sure that the remote API is enabled when the Hexylon reboots.



## 12. Remote control

Using this feature you can control your Hexylon remotely. For this to work, it is necessary that the Hexylon and the computer are connected to the same LAN.

To access to this feature you must enter the password admin at the right top part of the window. Then you will see the screen of the Hexylon in your computer:



Using the mouse you can control the Hexylon as with the hands, except the pinch/spread gestures.

## Hexylon Cloud

This functionality allows the user to have a replica of your meter in the cloud.

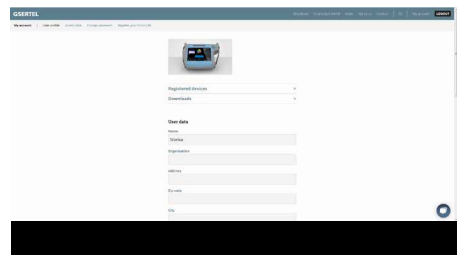
Each time the HEXYLON is connected to the internet, the data in the cloud and the data in the Hexylon will be synchronized.

So, the user can add new channels plans, profiles, or change any other configuration while the Hexylon is being used to measure. Then, once the job is finished, you can connect your Hexylon to the internet, and automatically all the new settings will be applied to the meter, and the measurements saved during the workday will be saved in the cloud to be easily reviewed without having the Hexylon in the office.

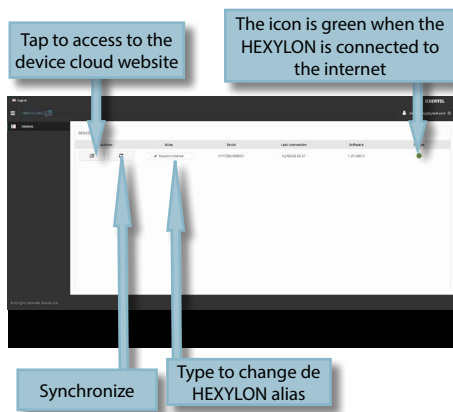
To use this functionality, please follow these steps:

- Register yourself in our web ([www.gsartel.com](http://www.gsartel.com)). You only need an e-mail account.
- Then register your HEXYLON in our web (See section *Before Starting*)
- Once both the user and the HEXYLON are registered, you can access to the cloud of your HEXYLON

To access to the cloud, please check in our web. Click on "My account" menu, and then on Registered devices:



Then, a list with all the HEXYLON meters registered by the user:



When the user access to the cloud website, a new page will be open:



The cloud website operates in the same way as the local website (see section *Web Application*).

The HEXYLON and the cloud synchronizes:

- When the HEXYLON is connected to the internet
- Every 60 minutes (as long as the HEXYLON is connected to the internet)
- Each time the user taps on the Synchronization button

All the data (measurements, profiles, channel plans, settings...), both on the HEXYLON and on the cloud, will be synchronized attending to the most recent date.

## Error messages

### LOW BATTERY

Indicates that the battery is about to finish. The battery icon is red now. It is recommended to connect the meter to the external power source.

### LOW BATTERY

Shutting down Some time after the LOW BATTERY message appears (time varies depending on the functions used), it will appear this message. If the meter is not connected to the external power source, it will switch off.

### BAD POWER

Unplug power source This message appears when the meter is connected to an external power source that does not supply it the right power. Please, use only the power source provided with the Hexylon.

### SHORT-CIRCUIT

#### Check installation

This message appears when the meter detects a short-circuit at the RF input. It is recommended to check the installation to find out why the shortcircuit is produced.

### DC OUTPUT LIMIT EXCEED

#### Switch DC OUTPUT off

This message appears when the meter detects an excessive consumption from the device that is being powered. It is recommended to turn off the powering feature of the Hexylon.

### DC AT RF INPUT

#### Check installation

This message appears when the meter detects DC at the RF input that is not generated by the Hexylon. It is recommended to check the installation.

## Maintenance

Always disconnect the unit before cleaning. Use only a mild solution of detergent and water applied with a soft damp cloth. Dry thoroughly before use.

Do not use aromatic hydrocarbons or chlorinated solvents. These products may damage the unit.

Do not use alcohol or alcohol based products on the front panel, especially the display. These products may damage the unit.

It is recommended to calibrate your Hexylon once every two years

## Technical support

For any questions, contact Technical Support at [www.gsertel.com](http://www.gsertel.com)

Before contacting Technical Support for repair, read the manual to ensure proper use and attempt to RESET the unit to clear any problems.

## Repair service

Do not return the unit without first contacting Gsertel Technical Support.

If the unit needs to be returned, Gsertel will arrange for free shipping. The unit will need to be appropriately packed for shipping.

In compliance with IATA Regulations, when using our shipping service follow these instructions:

- Label the package.
- The equipment should fit as snugly as possible in the box. It is recommended to use the original packing materials.
- Attach the precaution label to the package.



Failure to comply with these shipping requirements may result in the shipping agent rejecting the package.



## Warranty

Sistemas Integrados de Servicios de Telecontrol S.L. warrants, only to the original Purchaser, for a period of one (1) year from the date of original purchase, unless otherwise specified.

For the battery, due to the nature of the product, the warranty period is six (6) months.

Keep the purchase invoice to determine the warranty start date.

During the warranty period, Sistemas Integrados de Servicios de Telecontrol S.L. assumes any defect in materials or workmanship.

This warranty excludes any inoperability resulting from improper use, wear, service or repair performed by any third party not authorized, catastrophes o any cause unrelated to Sistemas Integrados de Servicios de Telecontrol S.L.

## Supplier's Declaration of Conformity.

## Compliance with standards

### FCC Compliance Statement

Contains FCC ID: VPYLB1ZM

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

### ISED Requirements

Contains ISED ID: 772C-LB1ZM

This Class A digital apparatus complies with Canadian CAN ICES-003(A) /NMB-003(A).

This device complies with Industry Canada license-exempt RSS standard(s).

Operation is subject

to the following two conditions:

- (1) This device may not cause interference, and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil numérique de la classe A est conforme à la norme CAN ICES-003(A)/NMB-003(A) du

Canada.

Le présent appareil est conforme aux CNR d'ISDE applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) L'appareil ne doit pas produire de brouillage, et
- (2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## Annex1: Glossary of acronyms

API	Application Programming Interface
ARP	Address Resolution Protocol
BER	Bit Error Ratio
BLER	Block Error Rate
BSSID	Basic Service Set Identifier
BW	Bandwidth
C/N	Carrier/Noise ratio
CAM	Conditional-access module.
CAT	Conditional Access Table
CBER	It is the BER before the error corrector
Cell ID	Cell Identifier
CRC	Cyclic Redundancy Check
CSO	composite second order
CT	Clock Time
CTB	composite triple beat
dCSS	Digital Communications Satellite Subsystem.
DHCP	Dynamic Host Configuration Protocol
DiSEqC	Digital Satellite Equipment Control.
DTT	Digital Terrestrial Television
E	Field Strength measurement
ECC	Extended Country Code
EPG	Electronic Program Guide
ETH	Ethernet
FEC	Forward Error Correction
FEF	Future Extension Frame
FFT	Fast Fourier Transform
FIB	Fast Information Block
FIC	Fast Information Channel
IP payload BR	IP Payload bitrate
L1	Layer 1
LCN	Logical channel number.

Link Margin	It is the difference between the minimum expected power received at the receiver's end, and the receiver's sensitivity
LNB	Low-noise block downconverter (LNB).
LTE	Long Term Evolution.
LwSh	Lower Shoulder
MER	Modulation Error Ratio.
MPX	Multiplex
MS	Music/Speech
MSC	Main Service Channel
NI	Network Interface
NMAP	Network mapping
OOB Emissions	Out Of Band Emissions
PAPR	Peak-to-Average Power Ratio
PAT	Program Association Table
PDP Echoes	Path Delay Profile.
PI	Program ID
PID	Packet Identifier
PID	Packet Identifier
Pkt. arrival max.	Maximum arrival interval between packets
Pkt. arrival min.	Minimum arrival interval between packets
PLP	Physical Layer Pipe
PLS Scrambling	Physical Layer Scrambling.
PMT	Program Map Table
Post-BER	It is BER after applying Reed Solomon Encoding
PreBCHBER	BER before Bose-Chaudhuri - Hoc-quengham) error correction
Pre-BER	It is BER before applying Reed Solomon Encoding
PreLDPCBER	BER before the LDPC (Low-density parity-check) error correction
PRS	Phase Reference Symbol
PS name	Program Service name

PTS	Presentation Time Stamps
PTY	Program Type
RBW	Resolution Bandwidth
RDS	Radio Data System
RST	Running Status Table
SCR	Satellite Channel Router.
SDT	Service Description Table
SFN	Single Frequency Network
SI	Service Information
SSID	Service Set Identifier
T2	DVB-T2
T2MI	Modulator Interface (T2-MI) for a second generation digital terrestrial television broadcasting system (DVB-T2)
TA	Traffic Announcement
TII	Transmitter Identification Information
TP	Traffic Program
TPS	Transmission Parameter Signalling
UDP	User Datagram Protocol
UpSh	Upper Showlder
VBER	It is the BER after the error corrector
VBW	Video Bandwidth
VC	Virtual Channel

# Annex2: Alarms

## ETSI TR 101 290 V1.3.1 Priority 1

Indicator	ID	Description
TS_sync_loss	11A1	Loss of synchronization in several consecutive packets
Sync_byte_error	12A1	Synchronization byte other than 0x47
PAT_error	13A2	Found in PID 0 another table that is not PAT
	13A3	Scrambling control field is not 0 in the packet with PID 0
	13A4	The PAT does not exist. The searching time is displayed in alarm 1.3.A.1
Continuity_count_error	14A1	Continuity error in a packet
PMT_error	15A1	The PMT does not occur every 0,5 seconds
	15A2	Scrambling control field is not 0 in the packets that transport the PMT
PID_error	16A1	Referred PID does not occur for a user specified period

## ETSI TR 101 290 V1.3.1 Priority 2

Indicator	ID	Description
Transport_error	21A1	The TEI bit equals 1 in the packet
CRC_error	22A1	CRC error in the tables CAT, CAT, PMT, NIT, EIT, BAT, SDT or TOT
PCR_repetition_error	23A1	Interval of time between two consecutive PCR is greater than 40 ms
PCR_discontinuity_indicator_error	23B1	The interval of time between two consecutive PCR is out of range 0-100 ms and the "discontinuity indicator" flag is not active
PCR_accuracy_error	24A1	A program PCR accuracy is out of the range -500-+500 ns
PTS_error	25A1	PTS repetition period more than 700 ms

Indicator	ID	Description
CAT_error	26A1	Packets with TSC field different of 0, but with CAT table not found
	26A2	Found a table different of CAT in the packets with PID 1
	26A3	CAT table not found

## ETSI TR 101 290 V1.3.1 Priority 3

Indicator	ID	Description
NIT_error	31A1	Found tables different to NIT, NIT2 or ST in the packets with PID 10
	31A2	The interval of time between two NIT tables is greater than threshold
	31A3	The interval of time between two NIT tables is shorter than threshold
	31A4	The NIT does not exist. The search time is showed in the alarm 3.1.A.2
	31B1	The interval of time between two equal sections of the NIT2 table (other) is greater than threshold
SI_repetition_error	32A1	The interval between any two sections of the BAT table is greater than the threshold
SI_repetition_error	32A2	The interval between any two sections of the BAT table is shorter than the threshold
	32A3	The interval between any two sections of the CAT table is greater than the threshold
	32A4	The interval between any two sections of the CAT table is shorter than the threshold
	32A5	The interval between any two sections of the SDT table is shorter than the threshold

Indicator	ID	Description
Buffer_error	33A1	Overflow in the transport buffer (Tbn) of the selected service
	33A2	Overflow in the system information transport buffer (Tbsys) of the selected service
	33A3	Buffer MB overflow or underflow
	33A4	Buffer EB (Elementary Buffer) overflow
	33A5	Buffer B overflow or underflow
	33A6	Buffer Bsys overflow
Unreferenced_PID	34A1	PID not referred to by a PMT or a CAT within 0,5 s
STD_error	35A1	Sections of the current SDT table not present in the TS in a period of time longer than the threshold
	35A2	Found tables different to SDT, SDT2, BAT or ST in the packets with PID 11
	35A3	The interval of time between two consecutive sections of the SDT table is shorter than threshold
	35A4	The SDT table does not exist. The search time is showed in the alarm 3.5.A.1
STD_error	35B1	The interval between two equal sections of the SDT table (other) is greater than the threshold
EIT_actual_error	36A1	Section 0 of the current EIT table is not present for a longer time than the threshold
	36A1	Section 1 of the current EIT table is not present for longer time than the threshold
	36A1	Section 0 of the current EIT table is not present for a longer time than the threshold
	36A2	Section 1 of the current EIT table is not present for longer time than the threshold
	36A3	Found tables with TID out of range 4e – 6f or 72 in packets with PID 12
	36A4	The interval of time between two consecutive sections of the EIT table is shorter than threshold
	36A5	EIT table does not exist and it should

Indicator	ID	Description
EIT_other_error	36B1	Section 0 of the EIT2 table (other) is not present for a period of time longer than the threshold
	36B2	Section 1 of the EIT2 table (other) is not present for a period of time longer than the threshold
EIT_PF_error	36C1	If either section ('0' or '1') of each EIT P/F subtable is present both should exist. Otherwise this error will be indicated
RST_error	37A1	Found a table different to RST or ST in the packets with PID 13
	37A2	The interval of time between two consecutive sections of the RST table is shorter than threshold
TDT_error	38A1	The interval between any two sections of the DTT table is greater than the threshold
	38A2	Found a table different to DTT, ST or TOT table in packets with PID 14
	38A3	The interval of time between two consecutive sections of the TDT table is shorter than threshold
	38A4	TDT table does not exist. The search time is showed in the alarm 3.8.A.1
Empty_buffer_error	39A1	TB buffer not flushed at least once per second
	39A2	Tbsys buffer not flushed at least once per second
	39A3	MB buffer not flushed at least once per second
Data_delay_error	3AA1	Data delay through buffers is greater than 1 second





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